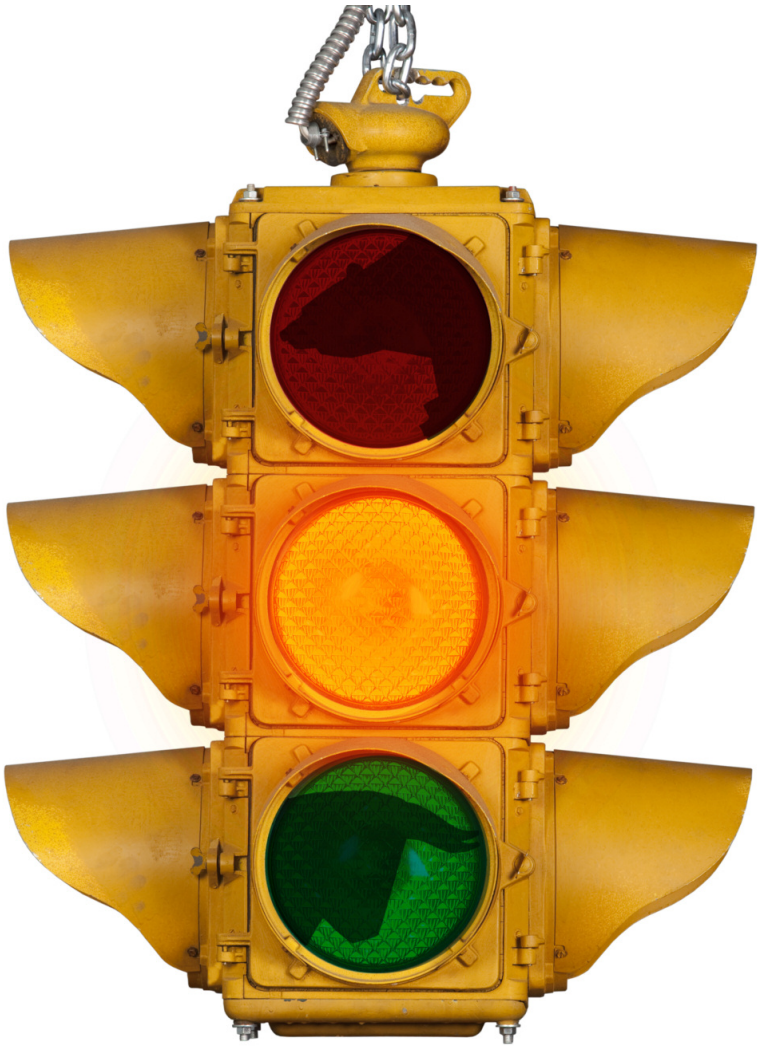
Goldman Sachs

GLOBAL STRATEGY PAPER NO. 25

Bear Necessities

Identifying signals for the next bear market



- Bear markets can be split into three categories: 'Cyclical', 'Event-driven' and 'Structural'.
- Cyclical and Event driven generally see price falls of 20-30%, compared with 50-60% for Structural ones.
- We construct a Bear Market Risk Indicator made of five factors; valuation, ISM, unemployment, inflation and the yield curve.
- The indicator points to high risk currently; however, inflation is not as worrisome as in the past, imbalances have reduced post the GFC and ex valuation the indicator is in the 'orange' zone.
- An extended period of low returns is more likely than an imminent bear market in our view.

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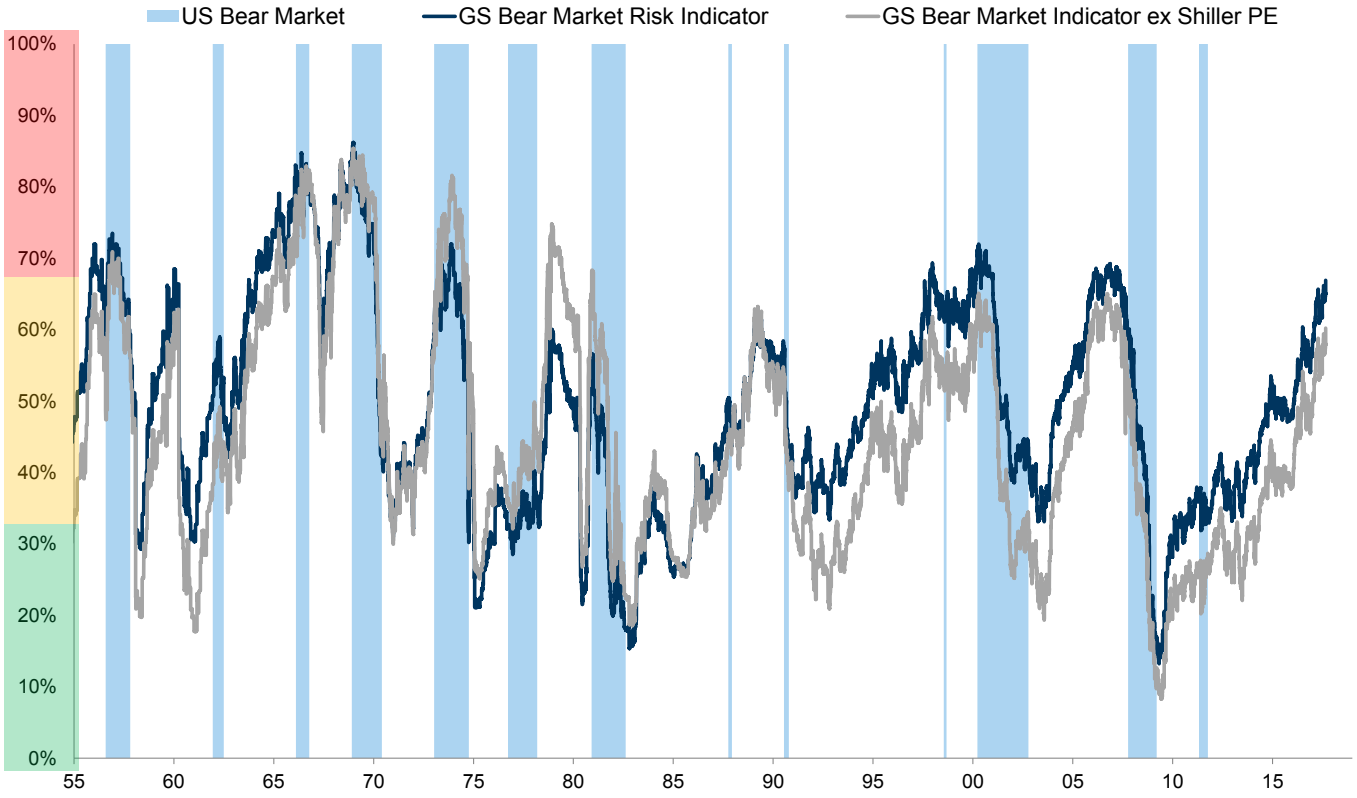
Summary

- Identifying the exact peak of a bull market is less important than recognising a bear market once it starts. Selling after the first 3 months of the market peak would, on average, put an investor in the same position as one who sold equities 3 months before the peak. **There is nearly always a bounce after the initial decline in a bear market that provides investors with another opportunity to reduce risks.** The key is to avoid the next 20-25% of declines that typically follow the initial period of volatility.
- Using US data (where we have most history), we split bear markets into three categories: **cyclical bear markets,** which typically relate to the economic cycle (the most common); **event-driven bear markets,** triggered by an exogenous shock (such as a war or oil price shock); and **structural bear markets,** triggered by structural imbalances and financial bubbles.
- Cyclical and 'event-driven' bear markets generally see price falls of around 30%, compared with around 50-60% for structural bear markets. Their longevity varies from an average of 6 months, 2 years and 3-4 years for event-driven, cyclical and structural bear markets, respectively. Event-driven bear markets tend to revert to their previous market highs after around 1 year, cyclical ones take 4 years and structural bear markets take an average of 10 years.
- We examined over 40 data variables (among macro, market and technical data) around bear markets. Most individually did not work consistently or provided too many false positives to be useful predictors. So, we developed a Bear Market Risk Indicator based on **five factors, in combination, that do provide a reasonable guide to bear market risk – or at least the risk of low returns: valuation, ISM (growth momentum), unemployment, inflation and the yield curve.**
- **Should we be worried now?** Our Bear Market Risk Indicator is currently at 67% and this would suggest that the risk of a bear market is high. **But there are three reasons to worry less than in the past. First,** inflation has played an important part in rising bear market risks in past cycles. Structural factors may be keeping inflation lower than in the past, and central bank forward guidance is reducing interest rate volatility and the term premium. Without monetary policy tightening much, concerns about a looming recession – and therefore risks of a 'cyclical' bear market – are lower. **Second,** financial imbalances and leverage in the banking system have been reduced post the financial crisis. This makes a structural bear market less likely than in the past. **Third,** valuation is currently the most stretched of the factors in the Indicator. This is largely a function of very loose monetary policy and bond yields. Excluding valuation (the grey line in Exhibit 1) reduces the level of the Indicator to a more comfortable level.

Exhibit 1: Our Bear Market Risk Indicator - rising to high levels
Average percentile (in US) for ISM, slope of yield curve, core inflation, unemployment and Shiller P/E



Source: Shiller, Haver, Datastream, Bloomberg, Goldman Sachs Global Investment Research

How to assess the risk? If we exclude valuation from the index, the level falls into the low 60% category. On historical relationships this would imply a 50/50 probability of a bear market in the next 12 months. The chances of a bear market are still high (based on the historical relationships) over the next 2 years, but remember that at any point in time the chances over 2 years can go up.

Exhibit 2: If you invest now…
Frequency of being at some point in a Bear Market

Indicator	Frequency of being in a Bear Market in the next			
	3m	6m	12m	24m
0% - 30%	24%	29%	31%	59%
30% - 40%	20%	24%	36%	52%
40% - 50%	25%	30%	38%	47%
50% - 60%	19%	21%	27%	52%
60% - 70%	35%	44%	62%	88%
70% - 100%	55%	63%	81%	97%

Source: Goldman Sachs Global Investment Research

Exhibit 3: If you invest now…
Frequency of losing more than 20%

Indicator	Frequency of losing more than 20% in the next			
	3m	6m	12m	24m
0% - 30%	3%	4%	4%	5%
30% - 40%	1%	1%	3%	3%
40% - 50%	4%	11%	19%	26%
50% - 60%	4%	6%	10%	14%
60% - 70%	1%	5%	16%	33%
70% - 100%	0%	5%	27%	44%

Source: Goldman Sachs Global Investment Research

We would like to thank Guillaume Jaisson for his contribution to this report.

It's all about the trend, not the peak

Bear markets are inevitable: the question is not if, but rather when, the next one will occur. The problem is that, while bear markets are very obvious with the benefit of hindsight, they are very difficult to identify in real time. Many corrections turn out to be short-lived and relatively benign, and it is difficult to know in the middle of a correction if it will be short-lived or turn into a full bear market. Some factors tend to lead bear markets but they also have a tendency to provide false signals at other times. Some are more reliable but can reach worrying levels a year or more before a bear market.

While it is not possible to find factors that give a reliable signal prior to the precise peak of a market, it is reassuring that it is less important to pinpoint the peak than to avoid a long bear market. Being a little too early, or even a little too late matters less than recognising the signals that avoid the longer decline.

Being a little early or a little late matters less than avoiding the longer decline

There are two reasons for this. First, while the final 3 months of the bull market (using US data as a proxy) tends to be a rise of 7%, the first 3 months of the decline is a rather similar amount (Exhibit 4). If you miss the peak but sell after the first 3 months, you are roughly at the same position as the investor who sold 3 months before the peak. The bigger issue is avoiding the further 20-25% of declines that often follow.

Exhibit 4: US bear markets since the 1960s; performance around the peak of the market

Bear Market			Performance before the start		Performance after the start	
Start	Length (m)	Performance	- 3m	- 1m	+ 1m	+ 3m
Dec-61	6	-28%	7%	2%	-2%	-6%
Feb-66	8	-22%	2%	1%	-1%	-2%
Nov-68	18	-36%	10%	4%	-4%	-9%
Jan-73	21	-48%	11%	1%	-1%	-10%
Sep-76	17	-19%	4%	5%	-5%	-4%
Nov-80	20	-27%	15%	10%	-9%	-13%
Oct-87	2	-32%	8%	4%	-3%	-7%
Jul-90	3	-20%	7%	2%	-2%	-7%
Jul-98	1	-19%	6%	7%	-7%	-5%
Mar-00	30	-49%	5%	12%	-11%	-5%
Oct-07	17	-57%	4%	8%	-7%	-4%
Apr-11	5	-19%	7%	3%	-3%	-6%
Median	**12**	**-28%**	**7%**	**4%**	**-4%**	**-6%**
Average	**12**	**-31%**	**7%**	**5%**	**-5%**	**-6%**

Source: Bloomberg, Goldman Sachs Global Investment Research

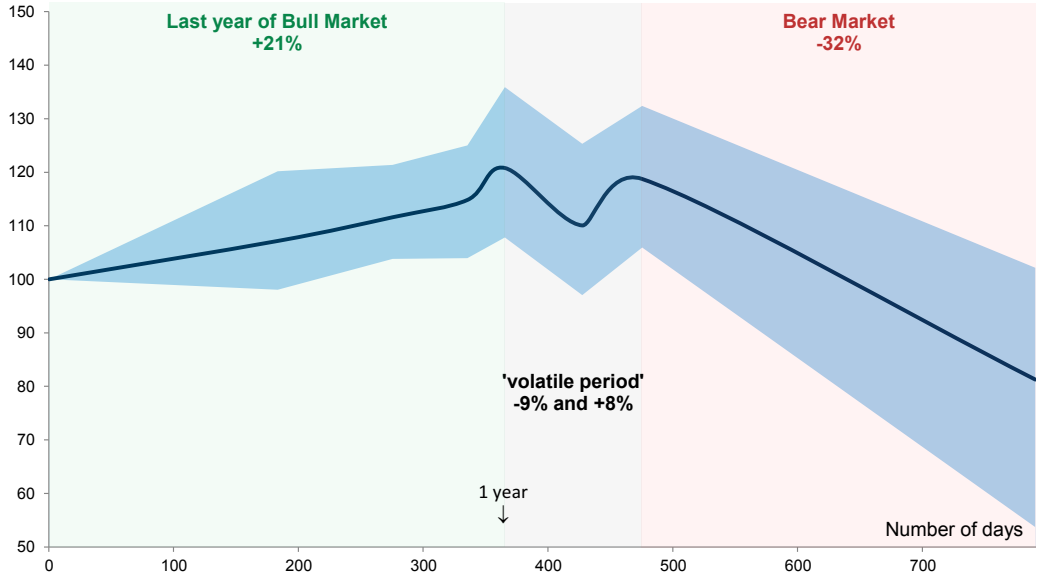
Bear markets don't tend to go in straight lines. There is typically a bounce after the initial fall.

The bear market bounce

Second, bear markets do not tend to occur in straight lines. There is nearly always a bounce after the initial decline, providing investors with another opportunity to reduce risks if there are sufficient signals at the time to suggest a further decline is likely.

The profile of the average bear market (starting in the post-war period and using US data) is shown in Exhibit 5.

Exhibit 5: The 'typical' profile of the 'Bear Market Bounce'
Average returns and length of the S&P one year before and during a bear market (ex 1998)



Source: Bloomberg, Goldman Sachs Global Investment Research

Exhibit 5 shows an average profile, with the range of experiences in the blue shaded area. However, this is an oversimplification because the period over which the bounce occurs does vary, and sometimes the market has a correction and then a rally even before the actual peak (1987 and 2007 are examples). On most other occasions the market correction comes after the peak; this tends to be followed by a bounce as the market recovers towards the peak before reversing again. **But the common factor in all cases is that, with the exception of 1998, a correction and bounce can be clearly observed.** Exhibit 6 shows this experience for each of the US bear markets since 1960.

Exhibit 6: US bear markets tend to start with a fall, then bounce within a few months, before the dramatic final fall

Start	1st Drop		Bounce		Subsequent drop	
1st peak	# Months from 1st peak	% down from 1st peak	# Months from 1st peak	% up from bottom	# Months from 1st peak	% down from 1st peak
Dec-61	1.6	-7%	3.0	5%	6.4	-28%
Feb-66	1.1	-7%	2.3	6%	7.9	-22%
Nov-68	3.5	-10%	5.4	8%	17.8	-36%
Jan-73	7.3	-16%	9.0	11%	20.7	-48%
Sep-76	1.6	-8%	3.3	9%	17.4	-19%
Nov-80	2.8	-10%	3.8	8%	20.4	-27%
Aug-87*	0.9	-8%	1.3	6%	3.3	-34%
Jun-90*	0.7	-4%	1.4	5%	4.2	-20%
Jul-98**	-	-	-	-	1.5	-19%
Mar-00	0.7	-11%	5.3	12%	30.5	-49%
Jul-07*	0.9	-9%	2.7	11%	19.6	-56%
Apr-11	1.5	-7%	2.3	7%	5.1	-19%
Median	**1.5**	**-8%**	**3.0**	**8%**	**12.6**	**-28%**
Average	**2.1**	**-9%**	**3.6**	**8%**	**12.9**	**-32%**

* This first peak is not our official 'start date' for the bear market (see Exhibit 3)
** There was no bear market bounce during the 1998 bear market

Source: Bloomberg, Goldman Sachs Global Investment Research

The average decline in the first correction is 9% over 3 months but the average bounce after that is almost as large over a further 2 months before an eventual further decline of 32%. In reality, the final sharp down-leg of the bear market rarely comes in one straight line; it could also have a number of rallies along the way, although these are typically not as strong as the initial bounce and do not take the market close to previous highs. What can explain the initial bounce? There are generally two reasons:

1) Late in the bull market investors are unclear about small corrections; they often perceive them as buying opportunities and are worried about missing such opportunities to increase returns.

2) The bounce usually comes before there is any real 'confirmation' in the hard macro data that the initial correction is justified. When data start to confirm the justification for an initial market decline, prices tend to fall back further. Interestingly, EPS on average tends to start to fall 5 months after the peak of the market (although, as we discuss later, there is a wide variation around this).

The most 'unloved' of bull markets

The current bear market has been 'unloved' given fears of deflation.

Since the 2007 financial crisis, fears of recession and secondary bear markets and corrections have never been far away; for much of the past few years investors have struggled to shake off the shadow of the global financial crisis and the great recession. This has meant that **the current bull market is likely the least 'loved' and in many ways the most unusual in history. The current upswing in equity prices is already among the longest and strongest in history, and many investors are clearly wondering how much longer it can last.** This reflects both the very unusual nature of the economic and stock market recovery of recent years (plagued by weak economic and profit growth and persistent fears relating to the financial system), as well as the unprecedented role played by policy adjustments (and QE) adopted to soften its impact.

Reasons to worry

We see four main reasons why investors may be focusing on the increasing risk of a bear market:

1) The current bull market is already relatively long-lived and strong by the standards of history.

2) On many measures equity markets (and other financial assets) are expensive versus history.

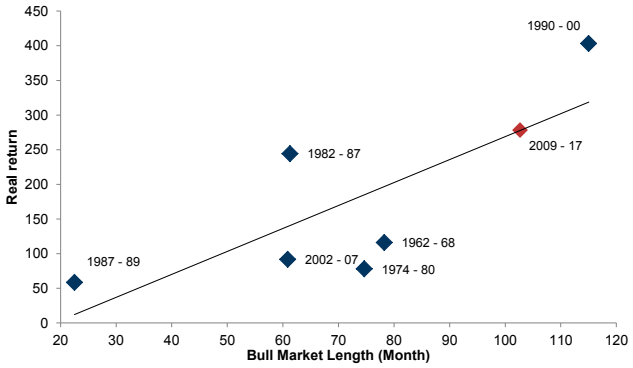
3) Margins (at least in the US) are at record highs, raising the prospect that they might have peaked.

4) After years of extraordinarily low interest rates and QE, which have driven and supported financial returns, we may be close to a turn in the policy cycle.

1) The current bull market has been long and strong

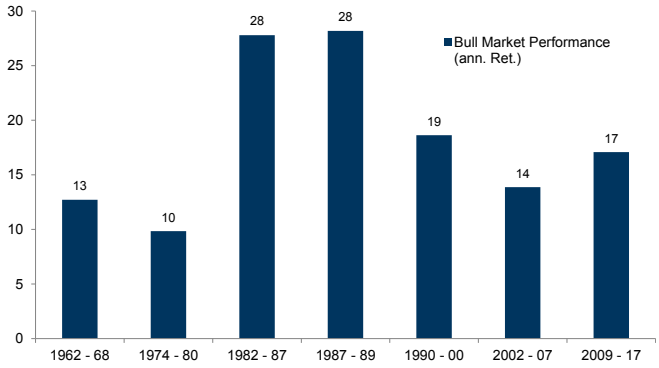
If we take the S&P 500 as a benchmark (given that it has been the strongest of the markets and we have the longest history), the current bull market is closing in on the longest in the post-war period. If we ignore the 2011 correction of 19% in the US (a bear market in Europe but technically just falling short of one in the US), we have now seen 102 months of bull market; the longest occurred from 1990 and lasted 115 months. If we define the 2011 downturn as a fully fledged bear market, this would make the current bull market 72 months in duration – more in line with the average.

Exhibit 7: This is the second-largest and longest bull market in recent financial history
Bull market length and real return performance



Source: GFD, Datastream, Goldman Sachs Global Investment Research

Exhibit 8: Current bull market has been particularly strong
Annualised total return performance (real) during S&P 500 bull markets



Source: GFD, Datastream, Goldman Sachs Global Investment Research

But as Exhibit 7 shows, it has not only been among the longest but is also the second-strongest equity bull market in history. Again this partly depends on definition; the great bull market that started in 1982 as global inflation and interest rates peaked could be argued to have continued until the peak in 1989. However, this remarkable period of rising real returns to stock (as well as bond) holders was interrupted by the 1987 equity crash (one of the few bear markets that didn't precede a recession). Consequently, we have looked at these as two separate bull markets (1982-1987 and 1987-1989), even though they were really part of the same extended secular trend of dis-inflation, falling equity risk premia (owing to the end of the 'cold war') and strong global growth (as a result of increased world trade).

2) Valuations are high

On most measures, equity valuations are high compared with history. This is particularly true of the S&P 500, as our US strategists point out. Exhibit 9 shows a number of popular valuation metrics relative to history. Where possible, most of these comparisons go back 40 years. The broad index is in the 88th percentile on average across these metrics. Meanwhile, the median company is at an even higher relative valuation than we have seen in the past (the 99th percentile). Other markets are less stretched on a relative basis. But even Europe, often seen as offering 'value', stacks up as rather high relative to its own history, particularly for the median company (Exhibit 10).

Exhibit 9: Valuations look very stretched in the US ...
S&P 500 valuation summary, data since 1976 for all metrics other than PEG ratio (1982) and free cash flow yield (1990)

S&P 500 valuation summary				
Valuation Metrics	Aggregate index		Median stock	
	Current	Historical %ile	Current	Historical %ile
P/E to growth (PEG)	1.4	88%	1.9	100%
EV / Sales	2.3	95%	2.8	99%
EV / EBITDA	11.6	88%	11.9	99%
Price / Book	3.2	86%	3.4	99%
Forward P/E	18.0	89%	18.3	97%
Free cash flow yield	4.3	46%	4.3	53%
Cyclically adjusted P/E *	25.8	87%	NA	NA
Median		**88%**		**99%**

** Based on operating earnings*

Source: Goldman Sachs Global Investment Research

Exhibit 10: ... but less in Europe
STOXX 600 Valuation summary, data since 2000 for all metrics other than PEG ratio (2002) and free cash flow yield (2006)

STOXX 600 valuation summary				
Valuation Metrics	Aggregate index		Median Stock	
	Current	Historical %ile	Current	Historical %ile
P/E to growth (PEG)	1.3	31%	NA	NA
EV / Sales	1.6	92%	2.0	95%
EV / EBITDA	9.1	87%	9.9	100%
Price / Book	1.8	57%	2.0	79%
Forward P/E	15.3	80%	16.1	94%
Free cash flow yield	5.4	69%	5.3	85%
Cyclically adjusted P/E	17.7	67%	NA	NA
Median		**69%**		**94%**

Source: FactSet, IBES, Datastream, Goldman Sachs Global Investment Research

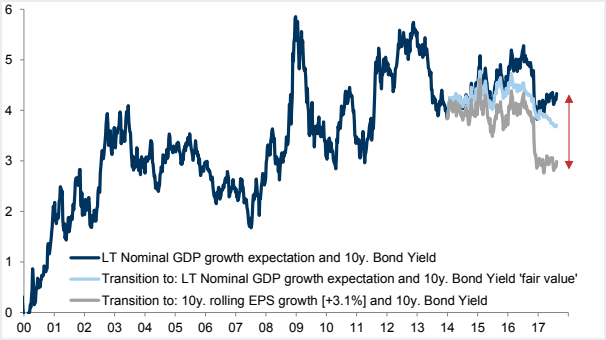
Factors that make equities look less expensive

Some factors argue against the idea that valuations are high, but these need to be interpreted carefully.

1) The free cash flow yield is high (this is true in most equity markets). While this appears to be a mitigating measure, suggesting that valuations are more moderate, **much of this can be explained by the lack of capex spend in recent years.** An overreliance on this measure can lead to investments in slower growing 'value traps'. Our US strategists have emphasised that capex as a share of cash flow from operations ranks in just the 5th historical percentile since 1990 (for more details, see Investing for the future: Use Adjusted Free Cash Flow for value and our Growth Investment Ratio to find growth, 2 August 2017).

2**) Equities are cheap verses bonds:** This is true on a standard ERP analysis – but part of the reason why ERP measures appear so high is because bond yields are so low. **If we plug into our standard ERP model the current 'fair value' bond yield that our rates strategists estimate (using their *Sudoku* framework), then the ERP would be much lower.** A similar point can be made about the Fed model that compares bond and equity yields (for a full discussion, see *Global Markets Analyst, Bonds vs. Equity: Fixing the Fed Model,* 16 June 2017). Furthermore, most standard ERP models (including our own) assume a constant long-run earnings growth rate. However, demographic factors and lower inflation may mean that long-term growth expectations should fall. If we plug in a continuation of the earnings growth rates of the past 10 years, the ERP would be lower still.

Exhibit 11: US equities look cheap relative to bonds
US ERP



Source: Datastream, Worldscope, Goldman Sachs Global Investment Research

Exhibit 12: European equities look cheap relative to bonds
Europe ERP

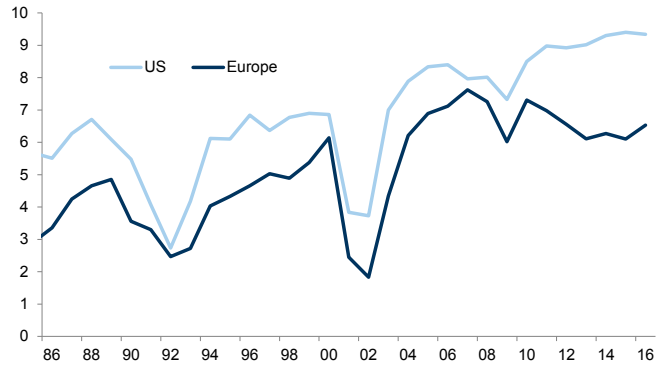
Source: Datastream, Worldscope, Goldman Sachs Global Investment Research

While it may be true that over the long run we should not assume higher yields *and* lower nominal growth, it does suggest that this could weaken the argument that equities are very cheap.

3) Margins are high

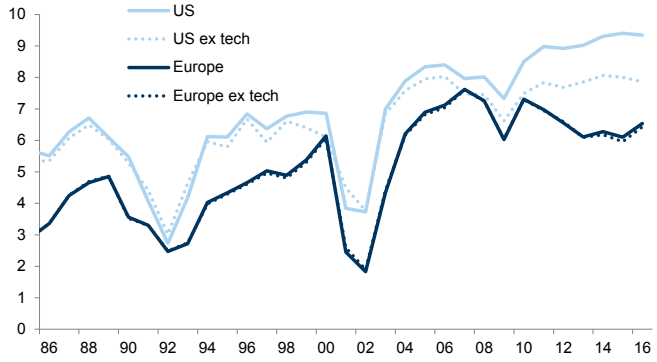
Another reason to worry about the next downturn is that corporate profit margins are very high. As with valuations, this is particularly the case in the US – but once again sector composition explains quite a lot of the differences across regions. Margins in the S&P 500 are at significant record highs and are close to a 30-year high relative to Europe (Exhibit 13). Technology has driven roughly 30% of the rise in US margins since the 2009 trough. If we exclude technology, the difference between the US and Europe continues to exist but at the same gap as we have seen on average historically – and even in Europe margins are back to historical highs. **While we do not generally see falling margins before a bear market, the fact that they are so high at least suggests that future profit growth may be lower.** Of course, one could have made this argument at any time in recent years but the difference now is that US unemployment is close to record lows (which is also the case in the UK and Germany) and our US economists argue that US wages are likely to be growing at around 3% by the end of this year, potentially squeezing margins at least in labour-intensive industries.

Exhibit 13: Net income margin gap between S&P 500 and STOXX 600 has widened post sovereign crisis
Net income margins for S&P 500 ex financials and STOXX Europe (SXXP) ex financials (%)



Source: Datastream, Goldman Sachs Global Investment Research

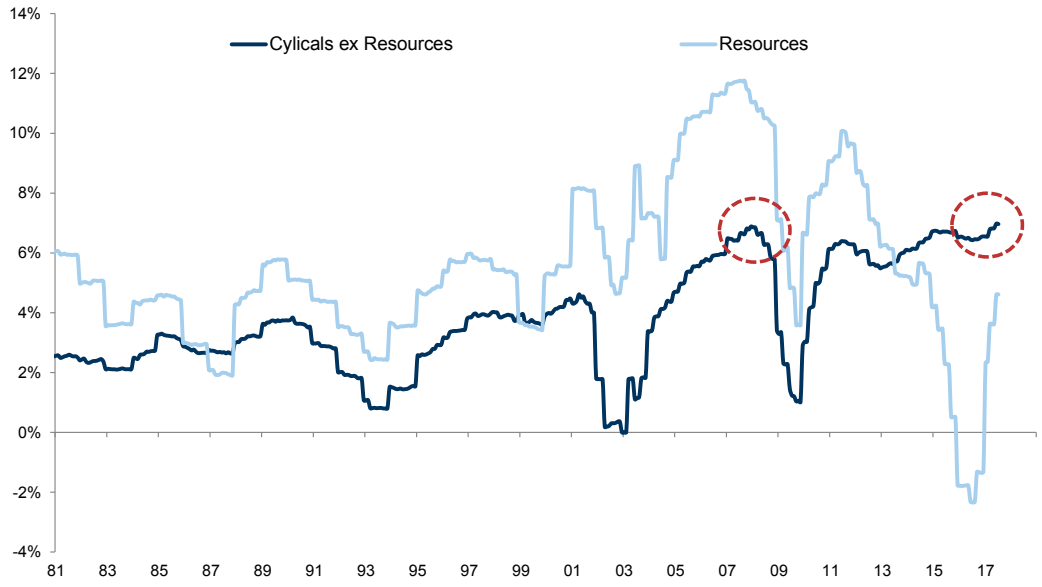
Exhibit 14: The gap between US and European margins halves if we exclude Technology
Net income margins, in all cases ex financials (%)



Source: Datastream, Goldman Sachs Global Investment Research

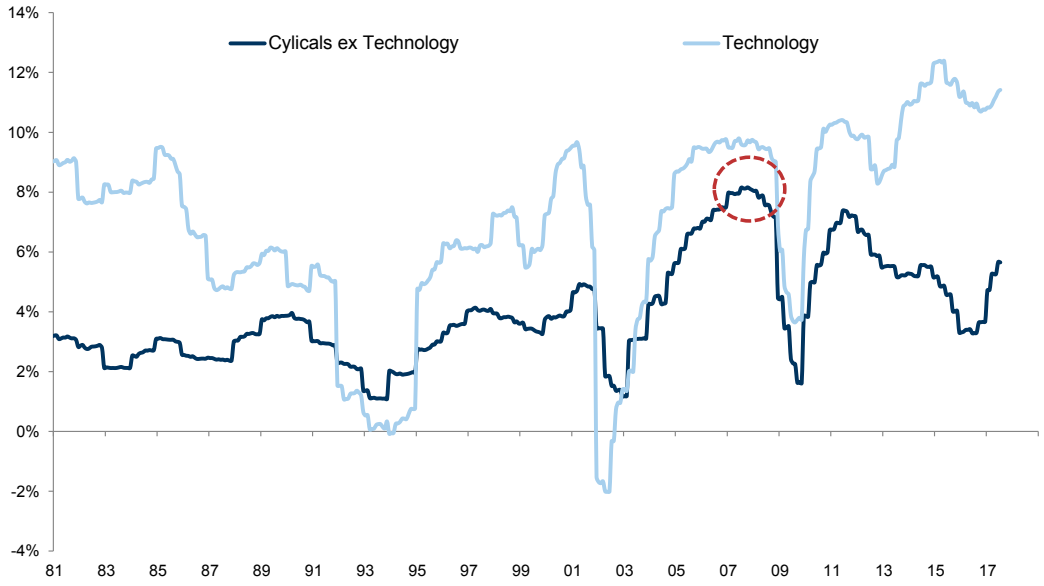
In addition, unlike earlier periods of the cycle when the most economically sensitive sectors tend to have very depressed margins (and can enjoy significant operational leverage as growth recovers), the margins of the most cyclical sectors globally are at record highs (with the exception of commodity sectors), as they have been prior to previous bear markets. True, some of this can be explained again by the particular success of the tech sector (see Exhibit 15). This may reflect the extent to which technology is both enabling and benefiting from disruption across many industries and at the same time holding down inflation and prices. The offset for the rest of the market is that wages are also being held down.

Exhibit 15: World margins for Cyclicals (ex-Resouces ex-Financials) are back at peak
Net income margins (%) - Cyclicals ex-Resources ex-Financials: Chemicals, Con & Mat, Inds Gds & Svs, Auto & Parts, Media, Travel & Leis, Technology. Resources : Oil & Gas and Basic Resource.



Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 16: World margins for Cyclicals (ex-Technology ex-Financials) - high, but below peak
Net income margins (%) - Cyclicals ex-Resources ex-Financials: Chemicals, Con & Mat, Inds Gds & Svs, Auto & Parts, Media, Travel & Leis, Oil & Gas and Basic Resource



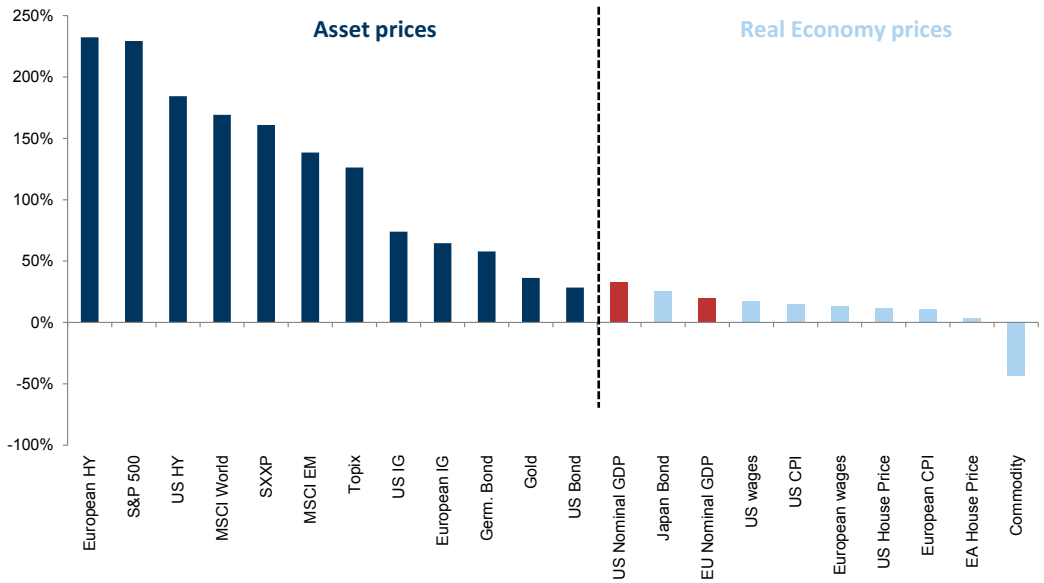
Source: Datastream, Goldman Sachs Global Investment Research

4) Monetary policy may be about to tighten

After years of falling interest rates, the policy cycle may be turning. This is important because falling interest rates have had such a dramatic effect on returns in financial assets during this cycle (more on this below). The long economic cycle that we have been enjoying is, in part, a reflection of loose monetary conditions and low interest rates.

Exhibit 17 is a simple but effective way to demonstrate this effect. Taking data back to 2009, the start of the period of extraordinary monetary policy, we can see a very big difference between 'prices' in the real economy – measures of wages, consumer price inflation, house prices, commodities – and asset prices. Also shown here is the long-run average nominal GDP growth and nominal GDP growth over this period for the US and Europe (in red). Financial assets have significantly outstripped both nominal GDP growth and inflation in the real economy, largely as a result of rates staying low.

Exhibit 17: Wide dispersion between asset price inflation and 'real economy' inflation
Total return performance in local currency since January 2009



Source: Goldman Sachs Global Investment Research

Any material rise in rates may compromise future growth expectations and undermine current (high) equity valuations.

The shape and profile of bear markets in the past

Bear markets historically have come in different shapes and sizes. No two bear markets are completely alike and the conditions that trigger them vary. In our analysis we have defined a bear market as a nominal price decline of 20% or more; while the average bear market has experienced declines of 35% over a period of 2 years, the standard deviation is very large indeed. In previous work (*Share Despair*, December 2002), we split historical bear markets into these three categories, taking data for the US back to the 19th century (see Exhibit 19). The classification is not scientific. For the earlier bear markets in particular, we have made an assessment about the triggers.

Defining different types of bear markets

In general, we can split bear markets into three categories:

1. **Cyclical bear markets** - typically a function of rising interest rates, impending recessions and falls in profits. They are a function of the economic cycle.
2. **Event-driven bear markets** - triggered by a one-off 'shock' that does not lead to a domestic recession (such as a war, oil price shock, EM crisis or technical market dislocation).
3. **Structural bear market** - triggered by structural imbalances and financial bubbles. Very often there is a 'price' shock such as deflation that follows

Exhibit 18: Characteristics of a bear market

Pre Bear	Cyclical	Event	Structural
Rising rates	✓	Maybe	✓
Exogenous shock	Maybe	✓	Maybe
'Speculative Rise' in equity prices	×	×	✓
Economic Imbalances	×	×	✓
Rising productivity	Maybe	-	✓
Unusual strength in economy	×	×	✓
' New Era' belief	×	×	✓
Post Peak	**Cyclical**	**Event**	**Structural**
Economic recession/downturn	Usually	Maybe	Usually
Profits collapse	✓	Maybe	✓
Interest rates fall & trigger rise in equity prices/fall in bonds	✓	Usually	×
Price shock	×	×	✓

Source: Goldman Sachs Global Investment Research

Exhibit 19: US bear markets since the 1800s
S - Structural bear market, E - Event-driven bear market, C - Cyclical bear market

S&P 500 - Bear Market					Time to recover back to previous level	
Type	Start	End	Length (m)	Decline (%)	Nominal (m)	Real (m)
S	May-1835	Mar-1842	82	-56	259	-
C	Aug-1847	Nov-1848	15	-23	42	-
C	Dec-1852	Oct-1857	58	-65	67	-
C	Mar-1858	Jul-1859	16	-23	11	-
C	Oct-1860	Jul-1861	9	-32	15	-
C	Apr-1864	Apr-1865	12	-26	48	-
S	Feb-1873	Jun-1877	52	-47	32	11
C	Jun-1881	Jan-1885	43	-36	191	17
C	May-1887	Aug-1893	75	-31	65	49
C	Sep-1902	Oct-1903	13	-29	17	22
E	Sep-1906	Nov-1907	14	-38	21	250
C	Dec-1909	Dec-1914	60	-29	121	159
C	Nov-1916	Dec-1917	13	-33	85	116
C	Jul-1919	Aug-1921	25	-32	39	14
S	Sep-1929	Jun-1932	33	-85	266	284
S	Feb-1937	Apr-1942	62	-57	48	151
C	May-1946	Feb-1948	21	-25	27	73
E	Aug-1956	Oct-1957	15	-22	11	13
E	Dec-1961	Jun-1962	6	-28	14	18
E	Feb-1966	Oct-1966	8	-22	7	24
C	Nov-1968	May-1970	18	-36	21	270
S	Jan-1973	Oct-1974	21	-48	69	154
C	Sep-1976	Mar-1978	17	-19	17	93
C	Nov-1980	Aug-1982	20	-27	3	8
E	Oct-1987	Dec-1987	2	-32	19	22
C	Jul-1990	Oct-1990	3	-20	4	6
E	Jul-1998	Aug-1998	1	-19	3	4
S	Mar-2000	Oct-2002	30	-49	56	148
S	Oct-2007	Mar-2009	17	-57	49	55
E	Apr-2011	Oct-2011	5	-19	5	5
Average			**26**	**-35**	**54**	**82**
Median			**17**	**-31**	**29**	**37**
Average Structural			**42**	**-57**	**111**	**134**
Average Cyclical			**26**	**-30**	**48**	**75**
Average Event Driven			**7**	**-26**	**11**	**48**

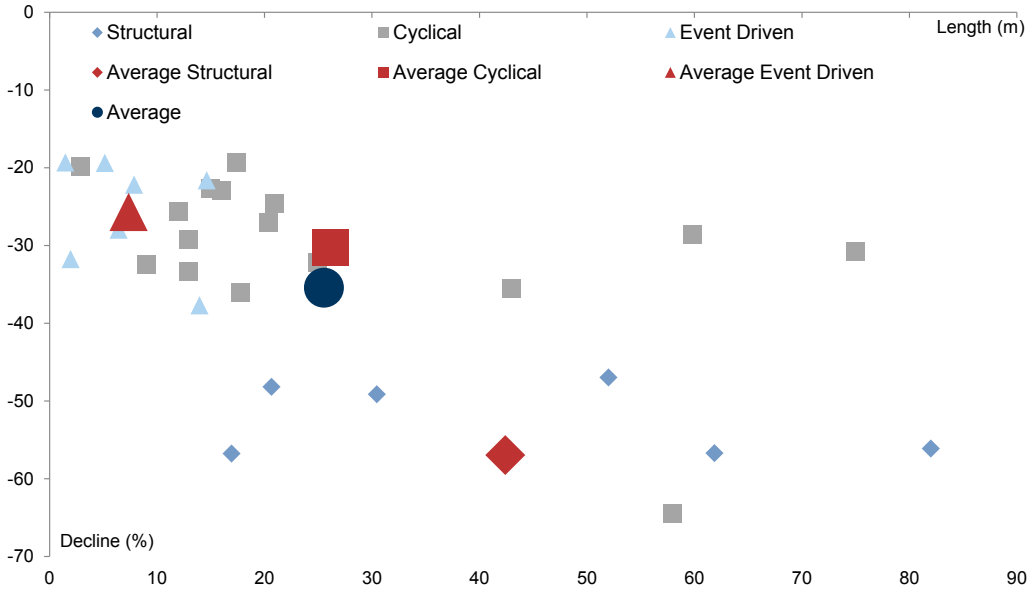
Source: GFD, Datastream, Bloomberg, Goldman Sachs Global Investment Research

By splitting bear markets into these groups we find that:

- **Cyclical and 'event-driven' bear markets generally see price falls of around 30%, while structural ones see much large falls, of around 50%.**
- **Event-driven bear markets tend to be the shortest, lasting an average of 7 months, cyclical bear markets last an average of 26 months and structural bear markets last an average of three and a half years.**
- **Event-driven and cyclical bear markets tend to revert to their previous market highs after around 1 year, while structural bear markets take an average of 10 years to return to previous highs.**

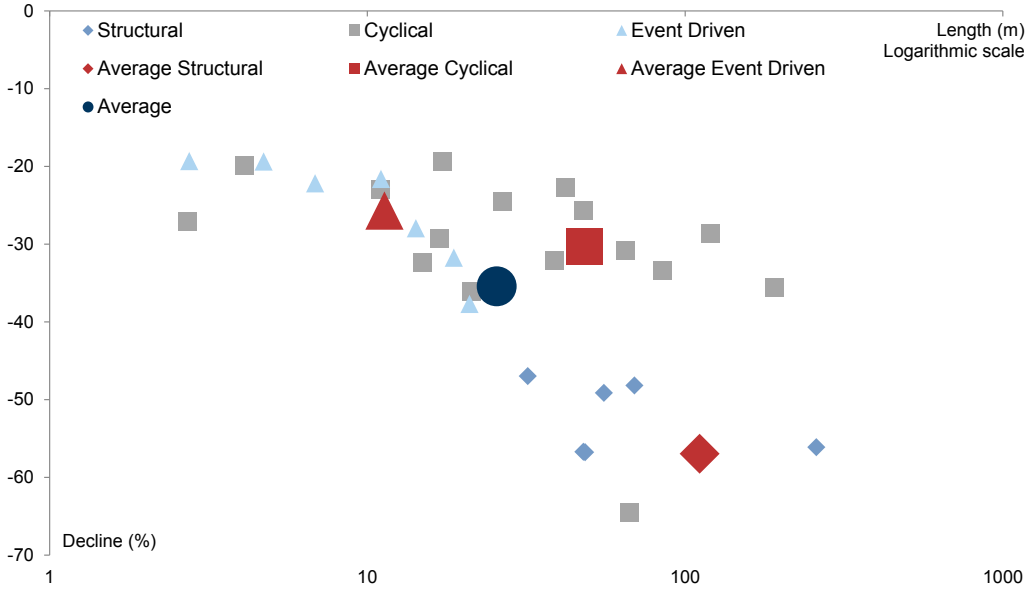
It is worth noting that these data are in nominal terms, whereas in reality the bear markets of the 1970s were more pronounced given the very high inflation.

Exhibit 20: Structural bear markets tend to be deeper, longer...
US bear markets since the 1800s



Source: Bloomberg, Goldman Sachs Global Investment Research

Exhibit 21: ... and take longer to recover
US bear markets since the 1800s



Source: Bloomberg, Goldman Sachs Global Investment Research

How much of a Bear market is driven by earnings?

Exhibit 22 shows bear markets since the 1960s and the change in EPS during and around the bear market. On average, since 1960 EPS has fallen by just 5% during bear markets, but this is distorted by two things:

1. EPS does not typically fall (or falls very little) in event-driven bear markets – these are all about de-risking and hence a decline in valuation; they are not directly cyclically driven.
2. The actual period of decline in EPS does not coincide exactly with the dates of the bear market in prices; nor would we expect it to given that we would expect equity investors to try to anticipate the cycle.

Removing event-driven bear markets gives an average EPS decline during these bear markets of 17%. Removing e**vent-driven bear markets *and* looking at the entire decline around the bear market (taking into account that the precise timing of the EPS decline differs in each cycle) gives an average EPS fall of 38%. This fall is similar to the average price fall in bear markets since the 1960s (excluding event-driven bear markets) of 40%.**

Exhibit 22: EPS around bear markets - EPS falls as much as prices in Cyclical & Structural Bear markets but the timing is different
S - Structural bear market, E - Event-driven bear market, C - Cyclical bear market

Bear Market						EPS decline period**				
Type	Start	End	Length (m)	Performance	% Change in EPS	Start	End	EPS decline	Length (m)	Lag to start of Bear market (m)
E	Dec-61	Jun-62	6	-28%	9%	-	-	0%	0	-
E	Feb-66	Oct-66	8	-22%	4%	Dec-66	Sep-67	-5%	9	10
C	Nov-68	May-70	18	-36%	-3%	Sep-69	Dec-70	-13%	15	9
S	Jan-73	Oct-74	21	-48%	38%	Sep-74	Sep-75	-15%	12	20
E	Sep-76	Mar-78	17	-19%	14%	-	-	0%	0	-
C	Nov-80	Aug-82	20	-27%	-7%	Dec-81	Mar-83	-19%	15	12
E	Oct-87	Dec-87	2	-32%	7%	-	-	0%	0	-
C	Jul-90	Oct-90	3	-20%	1%	Jun-89	Dec-91	-37%	30	-13
E	Jul-98	Aug-98	1	-19%	-1%	Sep-97	Dec-98	-7%	15	-10
S	Mar-00	Oct-02	30	-49%	-43%	Sep-00	Dec-01	-54%	15	5
S	Oct-07	Mar-09	17	-57%	-91%	Jun-07	Mar-09	-92%	21	-4
E	Apr-11	Oct-11	5	-19%	6%	Mar-12	Sep-12	-2%	6	10
Median			**12**	**-28%**	**3%**			**-10%**	**13**	**9**
Average			**12**	**-31%**	**-5%**			**-20%**	**11**	**4**
Average (ex Event driven)			**18**	**-40%**	**-17%**			**-38%**	**18**	**5**
Average (Event-driven only)			**7**	**-23%**	**7%**			**-2%**	**5**	**3**

** Change in EPS during the actual Bear market*

*** This includes the entire period of EPS decline around each Bear market from peak to trough in EPS*

Source: Bloomberg, Shiller, Goldman Sachs Global Investment Research

This suggests that bear markets (excluding event-driven) are largely EPS-driven, although they may appear to be P/E-driven at first, given that valuations may decline before EPS. Can we say anything on the timing of earnings declines? This is tricky. The average (ex event-driven) is for EPS declines to lag the start of the bear market by 5 months. Or, put another way, **prices start to fall 5 months before EPS does. But the range is very wide.** In 1973 it took 20 months, whereas in 1990 the decline in EPS started 13 months before the bear market. The most recent non-event-driven bear market, in October 2007, saw EPS start to decline 4 months before prices started to fall. We have described this in the past as an end of cycle 'optimism phase', where the market continues to rally contrary to the evidence that earnings have already peaked. (See the decomposition of the cycle in the Appendix.)

Defining the financial crisis - a 'structural' bear market with a difference

Earnings falls are an important driver of bear markets.

The 2007 financial crisis and bear market was rather unique in an historical context – or rather, the response to it was. In many ways, it has the hallmark of a structural bear market with rising imbalances as an important feature. But there was less of a

speculative bubble in the stock market, or 'new era' belief, that has characterised structural bear markets in the past. The bubble was perhaps more a function of real estate than of equity prices per se. **What really sets the 2007-09 bear market apart from other structural bear markets is the policy response. The rapid cuts in interest rates and adoption of QE resulted in a sharper rebound in equity (as well as other financial asset) prices than we have seen in the past.** Lower risk-free rates have triggered a search for yield in nominal assets such as bonds, while also pushing up the present value of future income streams.

This unusual backdrop, supported by very low inflation, even in countries with full employment, may well soften the impact of other factors that would more normally be associated with increased market risk. On the other hand, the higher valuations that have resulted from such low interest rates are likely to reduce future returns in financial assets across the board. **The upside is that the cycle may be much longer and less volatile than those of old, but the downside is that returns are likely to be lower for longer. Furthermore, the higher valuations suggest that when a bear market does eventually come, it is likely to be deeper – particularly with less room for a renewed easing of monetary policy.**

A bear market signal system

Given the potential growing risk of a bear market, we look for reliable indicators that might signal bear market risk.

Investors face two main problems:

- **All bear markets are unique -** while there are similarities in terms of profile and performance when they start, the triggers are often very different.
- **There are many 'false negatives' –** many indicators that may move in a certain way prior to a bear market may move in the same way even without a bear market. The reliability of indicators, therefore, tends to be low.

While bear markets tend to evolve in a rather similar way over time (depending on whether they are 'cyclical', 'event-driven' or 'structural'), in reality it is very difficult to know this at the time. They are difficult to predict because the precise factors that drive them vary. Sometimes it is not a single factor or event but a combination that can contribute to a bear market. On occasion it is not even possible to identify the key trigger even after it is over.

Exhibit 23 shows a summary of the key factors that (at least in retrospect) can explain the downturn in prices - many of these are difficult to capture on a fundamental-based signal system.

Exhibit 23: Bear markets are triggered by different factors each time

Bear Market	Bear markets are triggered by different factors each time	Did recession follow?	
1961-1962	'Kennedy Slide' - Rising rates from 1959 Cold War tension	No	-
1966	Inflation following Johnson Great Society program. Fed raised rates by approximately 1.5% in one year	No	-
1968-1970	Vietnam war and inflation. Fed raised rates to 9% from 4% two years before. Between the start of 1968 and mid-1968 rates rose by 3%.	Yes	Dec 1969 - Nov 1970
1973-1974	The crash came after the collapse of the Bretton Woods system over the previous two years, with the associated 'Nixon Shock' and USD devaluation under the Smithsonian Agreement. 1973 Oil Crisis - Price of oil rose from $3 per barrel to nearly $12	Yes	Nov 1973 - Mar 1975
1976-1978	Stagflation. Flat real earnings growth and deepening trade deficit. Gold rose as an inflation hedge.	No	-
1980-1982	'Volcker crash'. The 1979 second oil crisis was followed by strong inflation. The Fed raised its rates from 9% to 19% in six months.	Yes	Jan 1980 - July 1980 Jul 1981 - Nov 1982
1987	Black Monday - Flash Crash : computerized "program trading" strategies swamped the market. Tensions between the US and Germany over currency valuations.	No	-
1990	Gulf War: Iraq invasion of Kuwait; oil prices doubled.	Yes	July 1990 - Mar 1991
1998	July 1997 - Asian financial crisis. Aug 1998 - Russian financial crisis: Russia devalues the Ruble, defaults on domestic debt, and declares a moratorium on payment to foreign creditors.	No	-
2000-2002	'dot-com bubble' Technology companies bankruptcy Enron Scandal, 09/11 attacks.	Yes	Mar 2001 - Nov 2001
2007-2009	'Housing bubble' Subprime loan & CDS collapse, US housing market collapse	Yes	Dec 2007 - Jun 2009
2011	Fears of contagion of the European sovereign debt crisis Slow economic growth, credit rating being downgraded and severe volatility	No	-

Source: Goldman Sachs Global Investment Research

Common features of bear markets

Despite the obvious differences, we explore a wide range of variables to see how they behaved over time and in particular in the periods prior to bear markets. We initially looked at over 40 variables and grouped them into **three categories: macro, market-based and technical (**Exhibit 44 in the Appendix shows the initial datasets that we looked at). We conducted our analysis on the US equity market because in both Europe and Asia the many different equity markets with their own economic conditions (particularly in Europe pre-2000) make the averages not very useful.

To analyse the data, we applied a 'rule'-based system to assess whether each indicator has met a pre-determined (although subjective) threshold prior to a bear market. For

example, the Shiller P/E needs to be at its 3-, 6- and 12-month average and also start at a level greater than the 70th percentile, OR just start at a level higher than the 90th percentile (this tries to capture the idea that valuation needs to be either high and rising OR very high).

While such a rule-based system is not perfect, we also cross-checked the results by making our own judgemental assessment, looking at the charts to assess how we would have perceived the data at the time. While there were differences between the two approaches, the results were pretty close. Having analysed these variables, we were immediately able to dismiss many as having no consistent value in signalling bear market risk (either because they lagged the market itself or were too volatile to rely on). We then reduced the list to variables that hit their defined risk 'threshold' at least 60% of the time prior to bear markets since 1960.

Exhibit 24: Variables hitting 'bear market' thresholds prior to previous downturns

	Start	Dec-61	Feb-66	Nov-68	Jan-73	Sep-76	Nov-80	Oct-87	Jul-90	Jul-98	Mar-00	Oct-07	Apr-11	
Rule *	**Economic**													**Accuracy**
Low	Unemployment	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	-	✓	83%
High	M2 yoy growth (Nominal)	✓	✓	-	✓	-	✓	-	✓	✓	-	✓	✓	67%
High	M2 yoy growth (Real)	✓	-	-	✓	✓	✓	-	✓	✓	-	✓	✓	67%
High	ISM	-	✓	✓	✓	✓	-	✓	-	✓	✓	-	✓	67%
High	GS Recession Prob. (Next 8 Q)						✓	-	-	✓	✓	✓	-	57%
High	GS Recession Prob. (Next 4 Q)						✓	-	✓	-	-	✓	-	43%
High	CPI (yearly inflation)	-	✓	✓	-	-	-	✓	-	-	✓	✓	-	42%
Rule *	**Market**													**Accuracy**
High	Shiller PE (Percentile)	✓	✓	✓	✓	-	-	✓	✓	✓	✓	✓	✓	83%
Low	Value vs. Growth						✓	✓	✓	✓	✓	-	-	71%
High	PE (Percentile)	✓	-	✓	✓	-	-	✓	✓	✓	✓	✓	-	67%
Low	BAA-AAA	✓	✓	-	✓	✓	-	✓	-	-	✓	✓	✓	67%
Low	Yield Curve (10y-2y)	✓	✓	✓	✓	-	✓	-	-	✓	✓	-	-	58%
Low	DJ Transportations vs. S&P	✓	-	-	✓	-	-	✓	✓	✓	✓	✓	-	58%
High	HY Defaults								✓	-	✓	-	-	40%
Low	10 y BY	-	-	✓	-	✓	-	-	-	✓	-	✓	-	33%
Low	Real BY (10y BY)	-	-	✓	-	-	-	✓	-	✓	-	-	✓	33%
High	Nasdaq vs. S&P					-	✓	-	-	-	✓	-	-	25%
Rule *	**Technical**													**Accuracy**
High	S&P 12m vol	-	✓	-	-	-	✓	-	✓	-	✓	✓	-	42%
Low	Market breadth (Nb)					-	-	-	✓	✓	-	-	✓	37%
Low	Market breadth (MV)					-	-	-	-	✓	✓	-	✓	37%
Low	% at new 52w high					-	-	-	-	✓	✓	-	-	25%
Low	% at new 52w high					-	-	-	-	✓	✓	-	-	25%

** Level at the start of the bear market versus level during the previous year*

Source: Goldman Sachs Global Investment Research

Exhibit 24 summarises the main indicators that we chose to look at. A 'tick' means that the indicator hit the rule before the bear market, while a 'dash' indicates that it had not. The percentages at the end of each row show the percentage of times the indicator was a reliable predictor.

The exhibit shows that there were no bear markets where all indicators hit their rules. The closest were in 1998 and 2000, when just over 70% of the indicators were flashing 'red'. Equally, no single indicator has a 100% hit rate of breaching its risk rule prior to every recession. The most consistently useful pre-bear market indicators were unemployment and valuation, which both hit their thresholds around 80% of the time. It is worth noting that the 'technical' variables that we looked at were particularly poor: most are simply lagging the market itself. Several of the factors that looked promising were in a sense closely aligned: different measures of valuation, for example, or different measures of growth momentum.

When we back tested this, however, using only information that would have been available in real time, we found that it was not a reliable indicator. There were too many exceptions and false positives to rely on it, so it would not have been a very good indicator on most occasions.

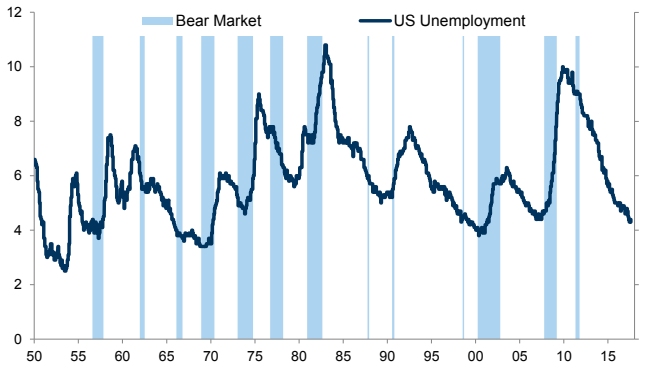
The 'Famous 5' - the indicators that worked best together

The most common features of bear markets are some combination of deteriorating growth momentum and tightening of policy at a time of high valuation. These are factors explained in related pieces (see *GOAL post, The lowdown on when to worry about a slowdown*, 23 May 2017, and *GOAL: Equity drawdown risk - is the trend still your friend?*, 14 March 2017).

While it has been difficult to find variables that consistently turn just prior to a peak in the market, we found a small number of variables that, in combination, tend to move in a particular way in the build-up to a bear market. While some of these start to exhibit 'risky' levels well in advance, it is the combination that provides a useful indicator of risk. **At the very least, in combination they could provide valuable information after the peak of the market on whether a 'bear market bounce' is genuinely the start of a bigger fall rather than a shorter correction.**

1. Unemployment - rising unemployment tends to be a good indicator of recession: unemployment has risen prior to every post-war recession in the US. The problem is that rising unemployment (and of course recessions) lag the equity market. But we do find that very low unemployment is a consistent feature prior to most bear markets (Exhibit 25). Exhibit 26 shows that combining periods when unemployment has hit a low with valuations provides a useful signal: **the combination of cycle low unemployment and high valuations does tend to be followed by negative returns.**

Exhibit 25: Unemployment tends to be low (and falling) in the months before a bear market...
US unemployment and S&P 500 bear markets since WWII



Source: Haver, Goldman Sachs Global Investment Research

Exhibit 26: ...when unemployment is low and Shiller PE high this on average is associated with a decline in S&P of >20% over 12m

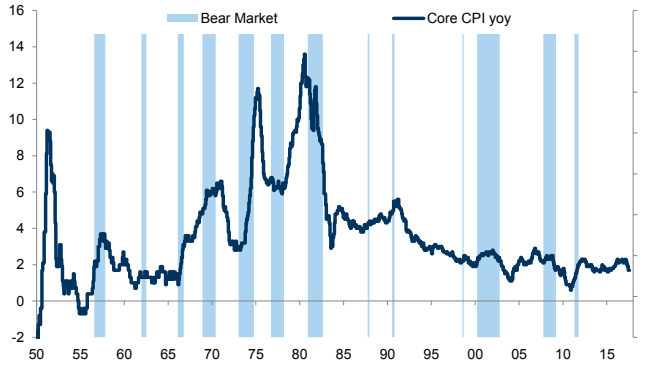
	Shiller PE %ile	Max drawdown after unemployment reached a low			
		+1m	+3m	+6m	+12m
Apr-00	100%	-3%	-3%	-6%	-22%
May-07	95%	-3%	-8%	-8%	-17%
May-69	88%	-6%	-13%	-13%	-33%
Feb-60	83%	-2%	-2%	-2%	-5%
Mar-57	63%	0%	0%	-5%	-12%
Mar-89	56%	0%	0%	0%	0%
Oct-73	55%	-11%	-14%	-17%	-42%
Jun-53	29%	-1%	-7%	-7%	-7%
May-79	9%	0%	0%	0%	-1%
Average		**-3%**	**-5%**	**-6%**	**-15%**
Average	**< 40%**	**0%**	**-3%**	**-3%**	**-4%**
Average	**> 60%**	**-3%**	**-5%**	**-7%**	**-18%**

Source: Haver, Bloomberg, Goldman Sachs Global Investment Research

2. Inflation - rising inflation has been an important contributor in past recessions and, by association, bear markets because rising inflation tends to tighten monetary policy. This indicator is not useful at the precise peak of the market because the peak of inflation

lags the equity market (and often the economic cycle). But rising inflation has been an important feature of the environment prior to bear markets in the past, particularly before the period of 'great moderation' in the 1990s. **It is important to emphasise, however, that the lack of inflation and inflation expectations is one of the factors in the current environment that supports a much longer economic cycle and less volatility. In the absence of inflation pressures, monetary policy may remain much looser and reduce the risks of recession and, by association, bear markets.**

Exhibit 27: High and rising inflation was associated with bear markets in the 1970s and 1980s...but inflation often peaks after the end of a bear market...
US core inflation and S&P 500 bear markets since WWII



Source: Haver, Goldman Sachs Global Investment Research

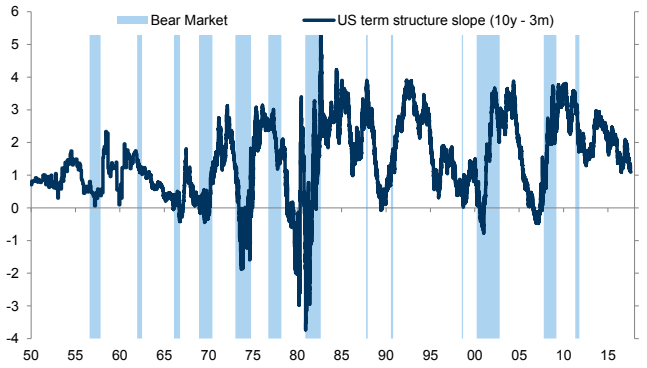
Exhibit 28: ...meaning that often we do not see sharp falls in equities after inflation has actually peaked

	Shiller PE %ile	Performance after Core Inflation reached a high			
		+1m	+3m	+6m	+12m
Nov-01	96%	0%	-4%	-10%	-31%
Sep-06	93%	0%	0%	0%	0%
Mar-57	63%	0%	0%	-9%	-13%
Jan-91	57%	-2%	-2%	-2%	-2%
Nov-70	47%	0%	0%	0%	0%
Feb-51	34%	0%	-1%	-2%	-2%
May-84	13%	0%	-1%	-1%	-1%
Feb-75	12%	-5%	-5%	-5%	-5%
Jun-80	8%	0%	0%	0%	0%
Sep-81	5%	-1%	-4%	-10%	-14%
Average		**-1%**	**-2%**	**-4%**	**-7%**
Average	**< 40%**	**-1%**	**-2%**	**-4%**	**-4%**
Average	**> 60%**	**0%**	**-1%**	**-6%**	**-15%**

Source: Haver, Bloomberg, Goldman Sachs Global Investment Research

3. The yield curve - related to the point about inflation, tighter monetary policy often leads to a flattening or even inverted yield curve. Since many, although by no means all, bear markets are preceded by periods of tightening monetary policy, we also find that flat yield curves, prior to inversion, are also followed by low returns or bear markets (Exhibit 29). Once again, if we combine the signal with valuation, we find a combination of flat or inverted yield curves together with high valuation is a useful bear market indicator (Exhibit 30).

Exhibit 29: A flatter yield curve normally precedes a bear market
US term structure solpe and S&P 500 bear markets since WWII



Source: GFD, Goldman Sachs Global Investment Research

Exhibit 30: Once the yield has become inverted returns are often weak

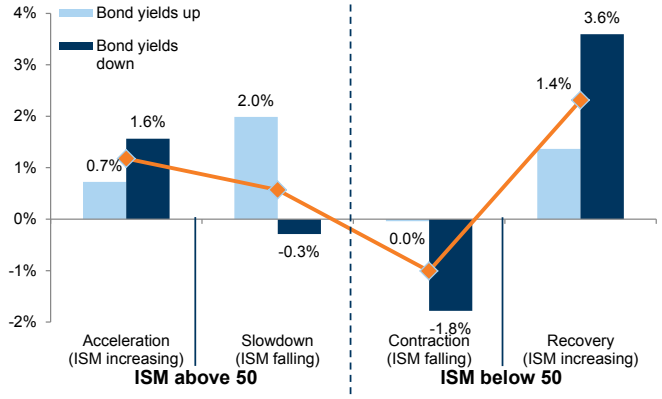
	Shiller PE %ile	Max drawdown after term slope became negative			
		+1m	+3m	+6m	+12m
Jul-00	100%	-4%	-10%	-14%	-25%
Jan-66	98%	-1%	-6%	-10%	-21%
Dec-68	94%	-6%	-8%	-10%	-17%
Aug-06	91%	0%	0%	0%	0%
May-89	63%	-1%	-1%	-1%	-1%
Jun-73	58%	-2%	-3%	-8%	-16%
Oct-80	12%	-1%	-1%	-1%	-12%
Nov-78	11%	-5%	-5%	-5%	-5%
Feb-82	5%	-6%	-6%	-10%	-10%
Average		**-3%**	**-5%**	**-7%**	**-12%**
Average	**< 40%**	**-1%**	**-1%**	**-3%**	**-6%**
Average	**> 60%**	**-3%**	**-6%**	**-8%**	**-15%**

Source: GFD, Bloomberg, Goldman Sachs Global Investment Research

4. ISM at a high - typically very high levels of momentum indicators, such as the ISM and PMIs, tend to be followed by lower returns when the pace of growth starts to

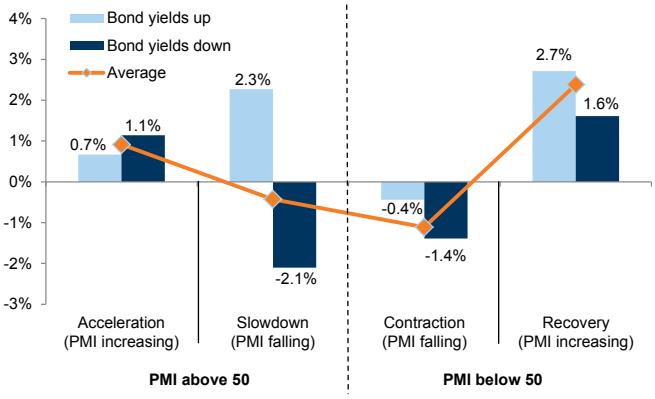
moderate. Exhibit 31 for the US and Exhibit 32 for Europe illustrate this. The highest returns are when the ISM is low but recovering, while the lowest are when it is low and deteriorating. On average the slowdown phase, when momentum indicators are high but deteriorating, tends to be accompanied by lower returns, and so when momentum indicators are very elevated, there is a reasonable chance that they will deteriorate and eventually move below 'recession' levels.

Exhibit 31: US equity performance during different permutations in ISMs and bond yields
% monthly price return. US Man. ISM, US 10-year BY, data back to 1990



Source: Datastream, Goldman Sachs Global Investment Research

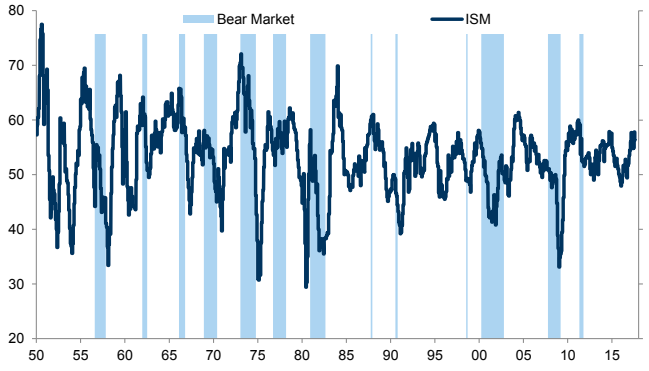
Exhibit 32: European equity performance during different permutations in PMIs and bond yields
% monthly price return, Euro area Man. PMI, German 10yr bond yield, data to 1997



Source: Datastream, Goldman Sachs Global Investment Research

We find that periods when the ISM is in the highest quartile relative to history tend to be followed by lower returns.

Exhibit 33: It's not unusual to see the ISM peak just before a Bear market
US ISM and S&P 500 bear markets since WWII



Source: Haver, Goldman Sachs Global Investment Research

Exhibit 34: Market returns post peak in ISM

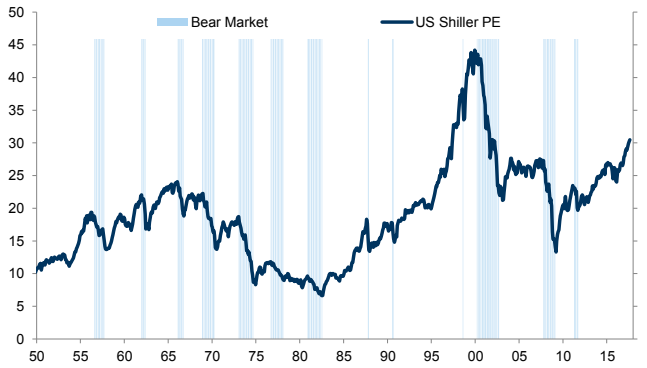
	Shiller PE %ile	Max drawdown after ISM peak			
		+1m	+3m	+6m	+12m
Jul-97	100%	-6%	-8%	-8%	-8%
Nov-99	100%	0%	-4%	-4%	-5%
Jan-66	98%	-4%	-6%	-11%	-21%
Dec-61	96%	-5%	-5%	-27%	-27%
May-04	94%	0%	-5%	-5%	-5%
Nov-68	94%	-4%	-10%	-10%	-17%
Aug-14	92%	-2%	-7%	-7%	-7%
Feb-11	89%	-5%	-5%	-16%	-17%
Oct-94	88%	-5%	-6%	-6%	-6%
May-59	85%	-4%	-4%	-6%	-9%
Jan-60	83%	-2%	-4%	-4%	-6%
Sep-56	79%	-1%	-2%	-7%	-7%
Jan-73	79%	-4%	-8%	-13%	-21%
May-55	70%	0%	0%	0%	0%
Dec-87	42%	-2%	-2%	-2%	-2%
Aug-52	39%	-2%	-5%	-5%	-7%
Feb-76	24%	-1%	-1%	-1%	-1%
Jul-50	19%	0%	0%	0%	0%
Dec-83	16%	-1%	-6%	-10%	-10%
Nov-80	13%	-9%	-10%	-10%	-20%
Jul-78	11%	0%	-6%	-8%	-8%
Average		**-3%**	**-5%**	**-8%**	**-10%**
Average	**< 40%**	**-2%**	**-5%**	**-6%**	**-8%**
Average	**> 60%**	**-3%**	**-5%**	**-9%**	**-11%**

Source: Haver, Bloomberg, Goldman Sachs Global Investment Research

5. Valuation - high valuations are a feature of most bear market periods. Valuation is rarely the trigger for a market fall - often valuations can be high for a long period before a

correction or bear market. But when other fundamental factors combine with valuation as a trigger, bear market risks are elevated.

Exhibit 35: Surprise, surprise, high valuation precedes a bear market...but it can be rising for years before you see one
US term structure solpe and S&P 500 bear markets since WWII



Source: Robert Shiller, Goldman Sachs Global Investment Research

Exhibit 36: Drawdowns when valuation is high are the deepest

Shiller PE				S&P 500			
Percentile		Level		Average MAX drawdown			
From	To	From	To	+6m	+12m	+2y	+3y
0%	10%	4.8	9.1	-5%	-7%	-10%	-13%
10%	20%	9.1	11.1	-4%	-6%	-7%	-8%
20%	30%	11.1	12.7	-4%	-7%	-8%	-9%
30%	40%	12.7	14.6	-5%	-7%	-9%	-10%
40%	50%	14.6	16.2	-5%	-7%	-9%	-12%
50%	60%	16.2	17.6	-6%	-9%	-13%	-15%
60%	70%	17.6	19.3	-6%	-10%	-15%	-19%
70%	80%	19.3	21.5	-5%	-8%	-12%	-14%
80%	90%	21.5	25.4	-5%	-8%	-11%	-12%
90%	100%	25.4	44.2	-4%	-8%	-15%	-20%

Source: Robert Shiller, Bloomberg, Goldman Sachs Global Investment Research

Putting these indicators together

Developing an aggregate indicator of bear market risk

While no single indicator is reliable on its own, the combination of these five seems to provide a reasonable signal for future bear market risk. All of these variables are related. Tight labour markets are typically associated with higher inflation expectations. These, in turn, tend to tighten policy and weaken expectations of future growth. High valuations, at the same time, leave equities vulnerable to de-rating if growth expectations deteriorate or the discount rate rises, or, worse still, both of these occur together.

To aggregate these variables in a signal indicator we took each variable and calculated its percentile relative to its history since 1948. For the yield curve and unemployment we took the lowest percentiles relative to history, while for the other indicators we took the highest (see Exhibit 37). We then took the average of these.

Exhibit 37: Our Bear Market Risk Indicator
Current level of GS Bear Market Risk Indicator's sub-components

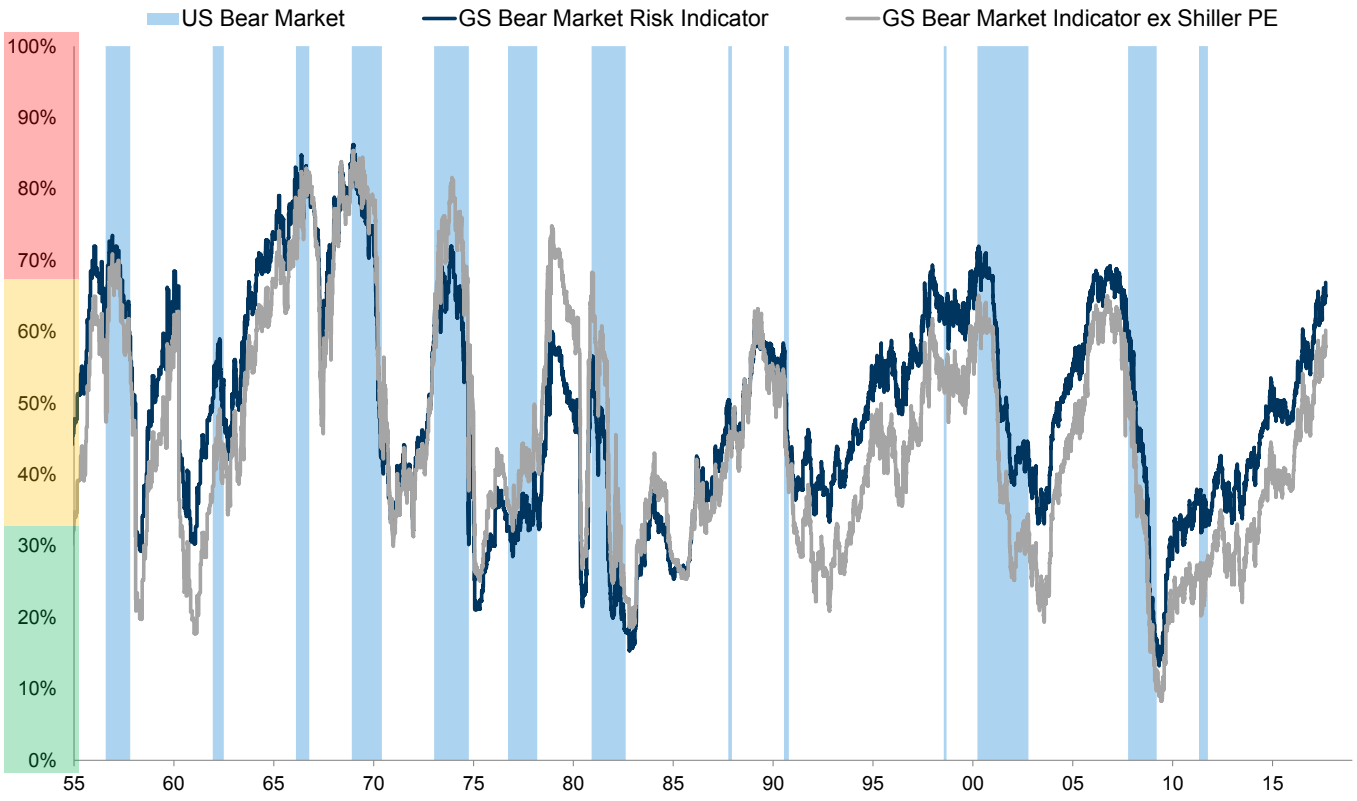
	Level	Percentile
Shiller PE	30.5	94%
ISM	58.8	82%
Unemployment	4.4	81%
Term Structure of Yield Curve	1.1	60%
Core Inflation	1.7	20%
GS Bear Market Risk Indicator		**67%**

* 100 percentile means these variables are at their highest level except for SYC and Unemployment where 100% means they are at their lowest

Source: Haver, Bloomberg, Goldman Sachs Global Investment Research

Our aggregate Bear Market Risk Indicator shows the average of these factors. Historically, when the Indicator rises above 60% it is a good signal to investors to turn cautious, or at the very least recognise that a correction followed by a rally is more likely to be followed by a bear market than when these indicators are low. By the same token, when the Indicator is very low, below 40% (as was the case in 1975, 1982 and 2009), investors should see any market weakness as an opportunity to buy.

Exhibit 38: GS Bear Market Risk Indicator
Average percentile (in US) for ISM, Slope of yield curve, core inflation, unemployment and Shiller PE



Source: Shiller, Haver , Datastream, Goldman Sachs Global Investment Research

Exhibit 39 shows the maximum drawdown over 6 and 12 months following different levels of the Indicator. **The maximum drawdown on a 6- and 12-month basis is highest when the Indicator is above 60% and lowest when it is below 40%.**

The opposite is also the case: while the Indicator does not always successfully signal a bear market when it is high, the **maximum upside over 6 and 12 months when the Indicator is above 60% is clearly much lower than when it is below 40%. In this sense the Indicator also provides some comfort to investors thinking of buying towards the bottom of a bear market.**

Exhibit 39: When our indicator is high drawdowns tend to be larger...
Average maximum drawdown during the next 6 and 12 months for different levels of GS Bear Market Indicator

Indicator	Average MAX drawdown	
	+ 6m	+ 12m
0% - 30%	-5%	-6%
30% - 40%	-5%	-6%
40% - 50%	-8%	-11%
50% - 60%	-6%	-8%
60% - 70%	-8%	-11%
70% - 100%	-7%	-13%

Source: Bloomberg, Goldman Sachs Global Investment Research

Exhibit 40: ...and the upside tends to be smaller
Average maximum upside during the next 6 and 12 months for different levels of GS Bear Market Indicator

Indicator	Average MAX upside	
	+ 6m	+ 12m
0% - 30%	15%	26%
30% - 40%	10%	16%
40% - 50%	8%	14%
50% - 60%	9%	17%
60% - 70%	8%	12%
70% - 100%	6%	8%

Source: Bloomberg, Goldman Sachs Global Investment Research

The signal is near red - should we worry?

Even though the Indicator is close to flashing red currently (67%), we think the outlook for equity markets over the next 12 months is likely to be very low returns rather than a sharp decline.

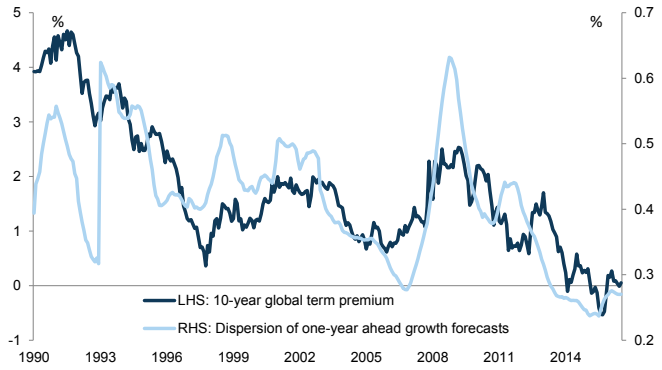
Why should we 'override' the signal in this way?

There are good reasons to expect low returns rather than an imminent bear market

Our main reason for overriding the signal is the shift in inflation risk since the financial crisis and, with it, the risk of sharp monetary tightening and therefore recession. While very low inflation typically is a reason to worry, as it tends to precede higher inflation and an inverted yield curve, this seems much less likely today. As Exhibit 37 shows, inflation is the one variable that is very low in terms of its percentile relative to the past. Without rising inflation expectations, monetary policy can stay looser with interest rates much lower and more stable than in the past. This makes a recession in the near term much less likely and therefore the prospects of a cyclical bear market are also lower than the average level of this indicator would have suggested in the past.

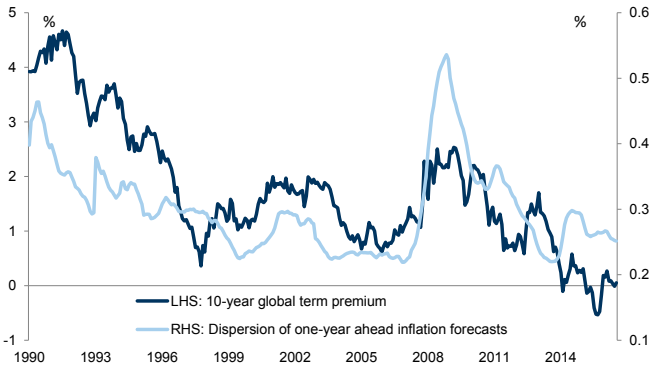
As our rates strategists point out (see Exhibit 41 and 42), the exhibits plot the dispersion of analysts' forecasts for 1-year-ahead growth and inflation and their estimates of the 10-year term premia in G-4 government bonds. Both the measures of growth and inflation uncertainty co-move positively with term premia in bonds, suggesting that uncertainty may influence the market pricing of interest rate risk. The pattern is particularly pronounced in the period following the financial crisis when the dispersion of analysts' expectations and term premia both sharply fell (see *Global Markets Daily: On the macro determinants of Term Premium*, 6 September 2017).
Confidence in the low future path for inflation is leading to similar confidence that low interest rates today are not likely to spike sufficiently to generate a recession. This helps to explain why volatility is low.

Exhibit 41: Term premium is driven by growth uncertainty...
Equal-weighted average dispersion of survey forecasts of one-year-ahead GDP growth rate in the Euro area, Japan, UK and US and equal-weighted average of 10-year term premium



Source: BoE, Bloomberg, Consensus Economics, ECB, Haver, Goldman Sachs Global Investment Research

Exhibit 42: ...and even more so by inflation uncertainty
Equal-weighted average dispersion of survey forecasts of one-year-ahead inflation in the Euro area, Japan, UK and US and equal-weighted average of 10-year term premium

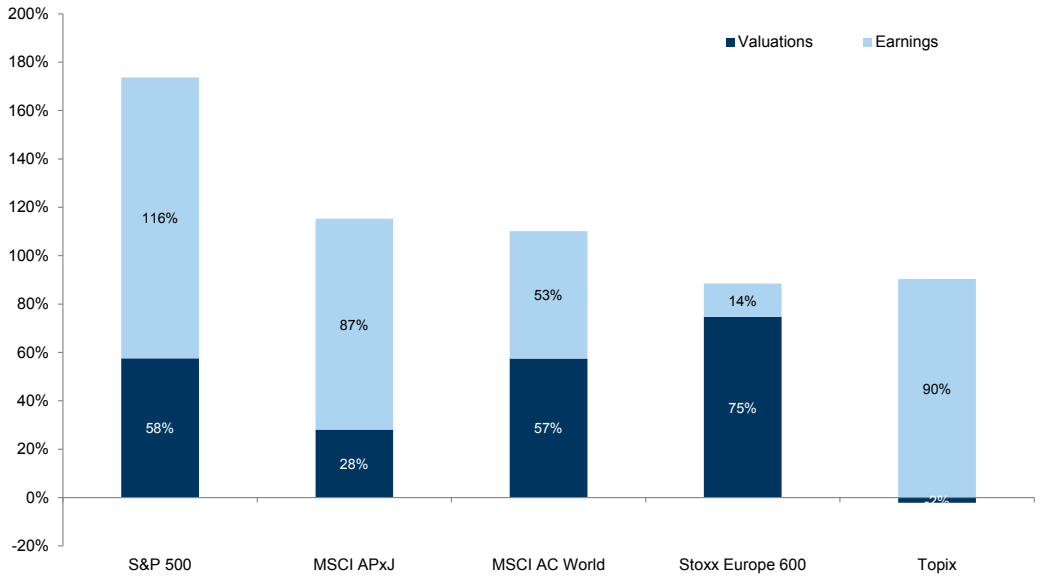


Source: BoE, Bloomberg, Consensus Economics, ECB, Goldman Sachs Global Investment Research

Furthermore, the post financial crisis era has bought with it a raft of regulation that has led to lower leverage in the financial sector and in the corporate sector. The lack of imbalances also makes a structural bear market less likely.

The variable in our Bear Market Risk Indicator that is showing the most extreme levels relative to history is the valuation of the market (particularly in the US). But valuation in isolation is unlikely to be the trigger for a bear market, in our view. The rise in valuation is largely a function of very low inflation, bond yields and the impact of QE. In recent years, equity returns have been driven more by rising valuations (as a result of falling interest rates) than we would normally see in a growth phase of the market, when valuations typically do not rise but markets are driven mainly by profit growth. The application of QE has been instrumental in driving these higher valuations, in our view. As Exhibit 43 shows, some markets have seen more of a contribution of returns coming from valuation than others. Europe, for example, has seen nearly an 80% expansion in valuations since 2009, while delivering earnings growth of just 14%. The US has seen much higher profit growth but has still seen valuations expand by nearly 60%. Only Japan has seen valuations contract, albeit modestly.

Exhibit 43: Returns have been driven by a mix of re-rating and earnings
Decomposition of returns since 2009



Source: Datastream, Company data, Goldman Sachs Global Investment Research

The combination of higher valuations but lower prospects for interest rates and inflation volatility leads us to expect lower future returns as a central case rather than an imminent bear market. Nonetheless, should inflation expectations rise, necessitating higher interest rates, then the probability would rise that the next bear market would be sharp and, with fewer options to ease monetary policy, it would likely be long.

Appendix

Factors initially examined for the Bear Market Risk Indicator

Exhibit 44: Indicators considered

Indicators considered		
Economic	**Market**	**Technical**
CPI (yearly inflation)	2 y. BY	% above 52 week avg
Capacity Utilisation	10 y. BY	% at new 52w high
Industrial Production	Real BY	S&P returns dispersion
ISM	Yield Curve	S&P 1m Volatility
M2 yoy growth (Nominal)	BAA-AAA	S&P 3m Volatility
M2 yoy growth (Real)	HY Defaults	S&P 6m Volatility
US - CAI	Gold	S&P 12m Volatility
US - CAI Innovation	Shiller PE	Market breadth (up-down/total)
US - FCI	PE	Market breadth weighted (up-down/total)
US Debt / GDP	Nasdaq vs. S&P	
US Economic Uncertainty (EPU)	Value vs. Growth	
US GDP	Dow Jones Industrials vs. S&P	
US Industrial Production	Dow Jones Transportations vs. S&P	
US Inflation	Dow Jones Utilities vs. S&P	
US Unemployment	Real Estate vs. S&P	
GS Recession Proba (Next 4 Q)	Real Estate Valuation	
GS Recession Proba (Next 8 Q)	Russell vs. S&P	

Source: Goldman Sachs Global Investment Research

A discussion on why the current bull market is so unusual

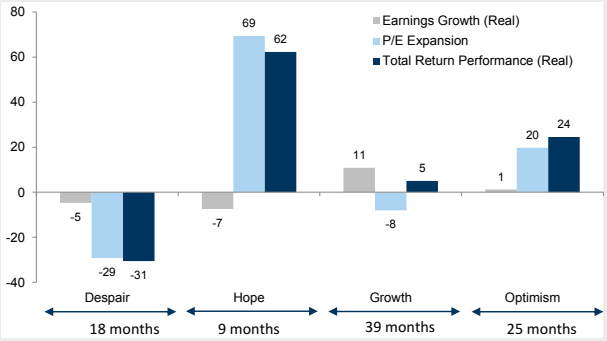
While already long and strong, there have been important differences about the current bull market in equities compared with historical examples that merit discussion.

1) QE has distorted returns - valuations rather than earnings have been key

All equity bull markets are driven by a combination of factors: at times by valuation expansion and at times by earnings (or a combination of the two). **In 'typical' bull markets, historically the drivers of the price appreciation have come in fairly predictable 'phases'.** In both the US and Europe, for example, we find that on average we can identify four separate phases, each defined by the distinct nature of the drivers.

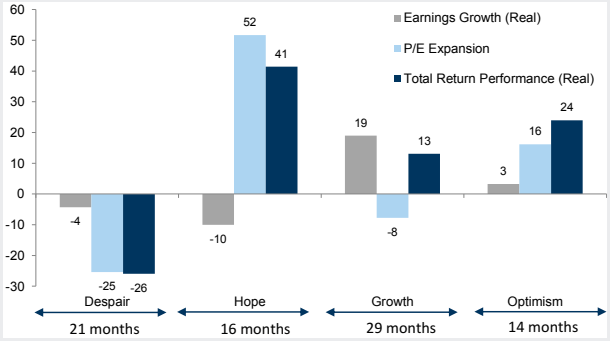
As Exhibit 45 and 46 for the US and Europe show, the average pattern over equity cycles since the early 1970s.

Exhibit 45: Decomposition of returns during US Equity phases
Annualised return (%), data since 1973



Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 46: Decomposition of returns for European equity phases
Annualised return (%), data since 1973



Source: Datastream, Goldman Sachs Global Investment Research

1. **The Despair phase**: The period when the market moves from its peak to its trough – or the bear market. This correction is mainly driven by P/E multiple contraction as the market anticipates and reacts to a deteriorating macro-economic environment and its implications in terms of lower expected earnings.

2. **The Hope phase.** Typically a short period (on average 10 months in the US and 16 months in Europe), when the market rebounds from its trough through multiple expansion. This occurs in anticipation of a forthcoming trough in the economic cycle, as well as future profit growth, and leads to a local peak in the trailing P/E multiple. We define the end of the Hope phase as around the peak of the trailing P/E multiple.

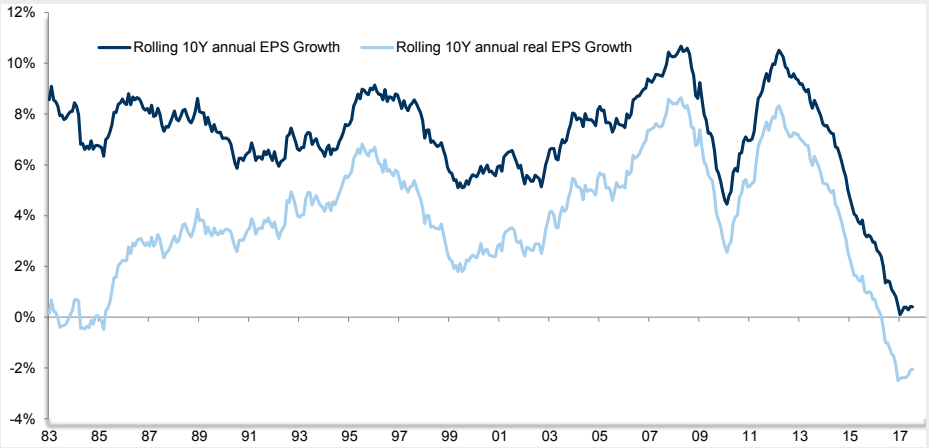
3. **The Growth phase.** Usually the longest period period (on average 39 months in the US and 29 in Europe), when earnings growth drives returns.

4. The Optimism phase. The final part of the cycle, when returns driven by P/E multiple expansion outpace earnings growth, thereby setting the stage for the next market correction. Typically this has lasted 25 months in the US and 14 months in Europe.

The framework demonstrates that the relationship between earnings growth and price performance changes systematically over the cycle. While earnings growth is what fuels equity market performance over the very long run, most of the earnings growth is not paid for when it occurs but rather when it is correctly anticipated by investors in the Hope phase and when investors turn overly optimistic about the potential for future growth during the Optimism phase.

What makes this bull market very unusual, however, is that it has been accompanied by very weak profit growth throughout. This has been the case everywhere but particularly outside of the US. The rolling 10-year annualised earnings growth for the global equity market has been steadily declining.

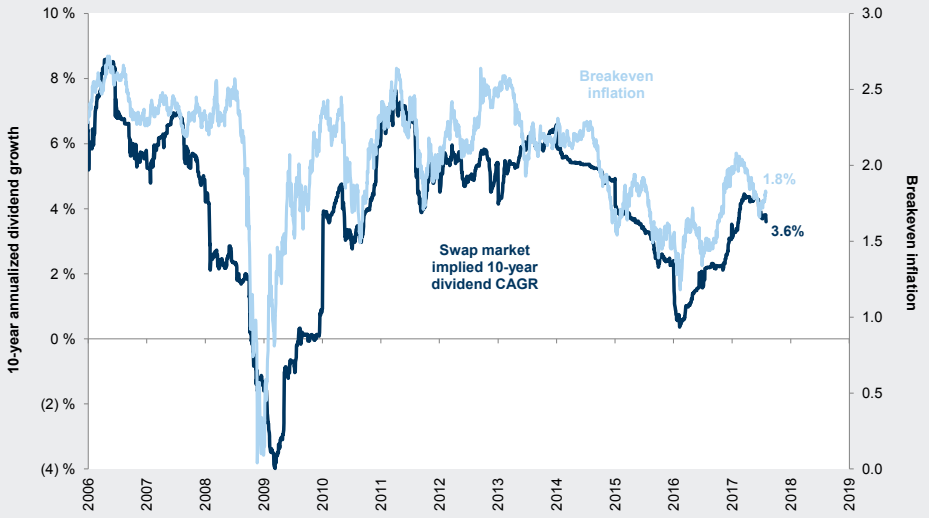
Exhibit 47: Earnings growth has been very weak at the global level recently
10-year rolling annualised earnings growth



Source: Datastream, Goldman Sachs Global Investment Research

Part of this reflects the depth of the profit collapse around the 'great recession', but partly it also reflects lower inflation.In relation to this, the market forward price for longer-dated dividends in the US is closely correlated with break-even market-implied inflation.

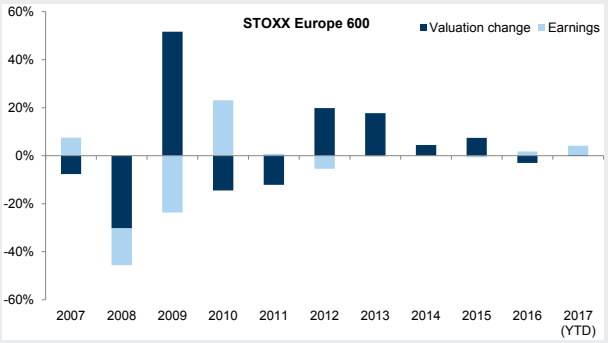
Exhibit 48: Longer-dated S&P 500 dividends have retraced lower after weak inflation prints
as of July 31, 2017



Source: Haver Analytics, Goldman Sachs Global Investment Research

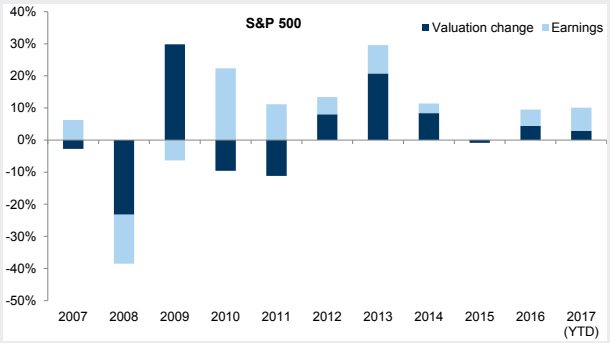
The unusual nature of this cycle and the reliance on valuation increases to drive returns can be see in Exhibit 49 and 50 for Europe and the US.

Exhibit 49: From 2011 to 2016 returns in Europe were driven by valuation (not earnings)
Contributions to returns of STOXX Europe 600 since 2007



Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 50: The US has seen some contribution from earnings but also rising valuations
Contributions to returns of S&P 500 since 2007

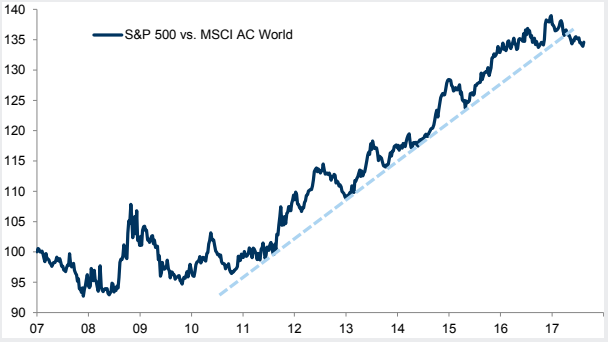


Source: Datastream, Goldman Sachs Global Investment Research

2) The bull market has been very concentrated in the US (until recently).

The success of the US equity market, which has been unique in enjoying both meaningful earnings growth and valuation expansion, has been reflected in relative returns. Exhibit 51 shows the US versus the rest of the world in US$ terms. Since 2010 the US has outperformed the rest of the world by nearly 40%. This year has finally seen the relative performance uptrend of the US equity market broken, partly a result of the weak dollar.

Exhibit 51: The US has outperformed the rest of the World for most of the past decade
S&P 500 vs. MSCI AC World (in USD)



Source: Datastream, Goldman Sachs Global Investment Research

Exhibit 52: US returns have been strong compared with all other regions
Performance of regional indices

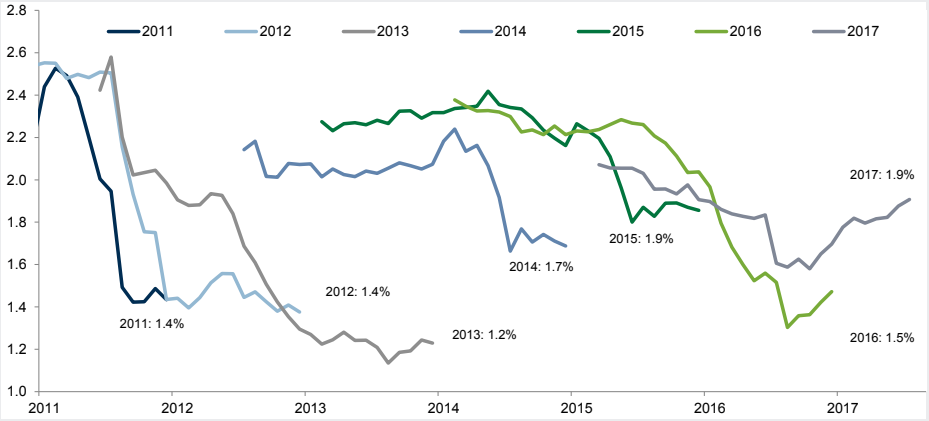
	Returns since 2010	
	Return vs. S&P (USD)	Annualised return vs. S&P (USD)
STOXX Europe 600	-44%	-7%
MSCI APxJ	-42%	-7%
Topix	-33%	-5%
MSCI EM	-51%	-9%
MSCI AC World	**-28%**	**-4%**

Source: Datastream, Goldman Sachs Global Investment Research

We have argued that in an unusually uncertain economic and political environment investors have sought low volatility, stable predictable returns and have paid a significant premium for this. This has been the case for sectors and styles, as well as for countries. For much of the period since the financial crisis, global bond yields have fallen alongside global growth and inflation expectations.

While this pattern has favoured the US market until now, this year is the first in several when global growth expectations have been positive. This should reduce the relative valuation premium that investors are prepared to pay for the US (just as it has for other defensive/stable sectors).

Exhibit 53: World GDP has been revised down consistently, until recently
Consensus G7 Real GDP growth expectations



Source: Datastream, Goldman Sachs Global Investment Research

The exceptional outperformance of the US relative to the rest of the world could point to a relative reversal as other markets finally 'catch up' as they leave the negative effect of the financial crisis behind them. But this would require a continuation of the elongated economic cycle to be sustained.

3) The bull market 'phases' have been disrupted by the 'waves' of the financial crisis

The current cycle shows similar characteristics to the 'typical' pattern described above. But **the financial crisis has come in waves and as a result stalled the pattern of recovery from the recession of 2009 that we would normally expect to see post a recession.**

We argued in *The Third Wave, GOAL Global Strategy Paper 17,* October 7, 2015 that the financial crisis can be viewed as a number of separate but related 'waves'.

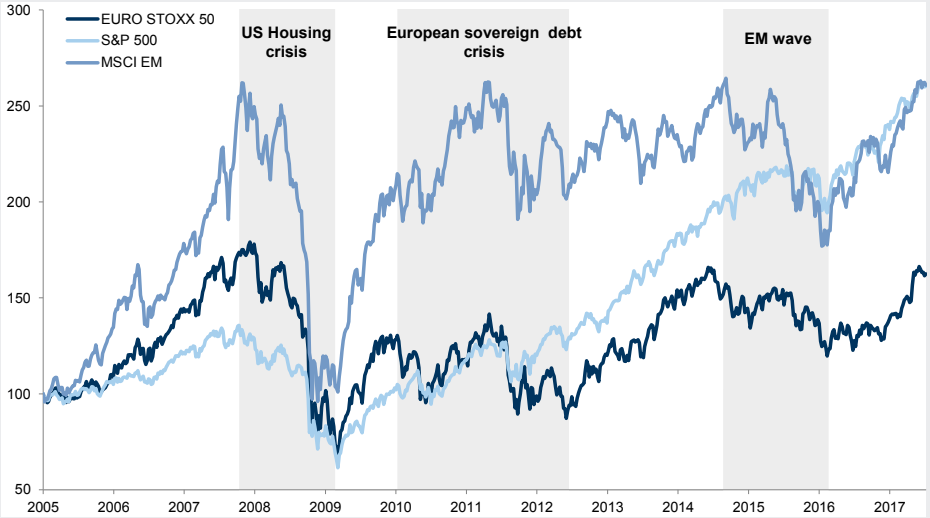
Wave 1 in the US – started with the housing market collapse, spread into a broader credit crunch and ended with the Lehman collapse and the start of TARP and QE.

Wave 2 in Europe – began with the exposure of banks to leveraged losses in the US and spread to a sovereign crisis given lack of a debt sharing mechanism across the Euro area. It ended with the OMT, the ECB's commitment to do "whatever it takes", and finally the introduction of QE.

Wave 3 in EM – coincided with the collapse in commodity prices that hit EM equities very hard, particularly between June 2013 and the start of 2016.

Since the middle of 2016, as Exhibit 54 shows, all equity markets have moved higher together, finally shaking off the impact of the financial crisis, as the 'reflation' story took hold. For the US it appears that we have entered the Optimism phase, while for Europe and EM, which are lagging, we may be in the Growth phase. **This suggests that the bull market still has further to run.**

Exhibit 54: Strong relief as the EM wave ended
Total return performance in USD

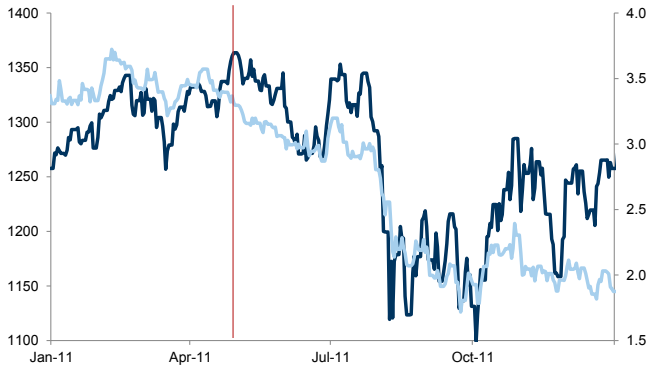


Source: Datastream, Goldman Sachs Global Investment Research

The impact of these three phases on the US, Europe and EM equity markets is highlighted in Exhibit 54. The US phase quickly became a global phase, with the main markets falling together and EM suffering the biggest declines. The rebound initially was also enjoyed globally, and particularly in EMs. The European phase started in 2010 and really came in two waves; but the US market was relatively immune to the European phase as it commenced a long period of strong outperformance. The EM phase has also had a global impact but EM markets have suffered far more acutely.

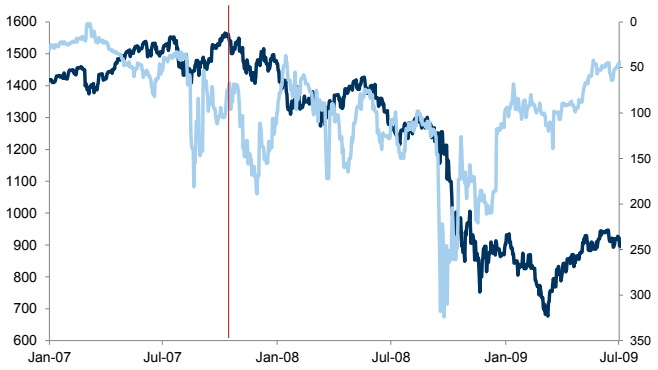
Some key drivers around previous bear markets

Exhibit 55: S&P 500 in the 2011 bear market
with US 10y. BY (RHS)



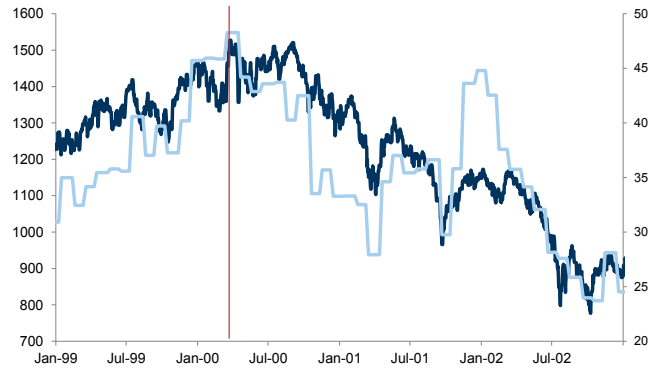
Source: Bloomberg, Datastream, Goldman Sachs Global Investment Research

Exhibit 56: S&P 500 in the 2008 bear market
with Ted spread = 3m LIBOR - 3m TBill (RHS, Inverted)



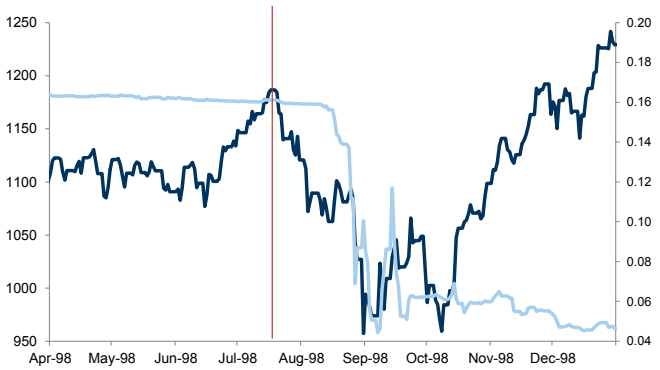
Source: Bloomberg, Datastream, Goldman Sachs Global Investment Research

Exhibit 57: S&P 500 in the 2000-2002 bear market
with US Tech NTM PE (RHS)



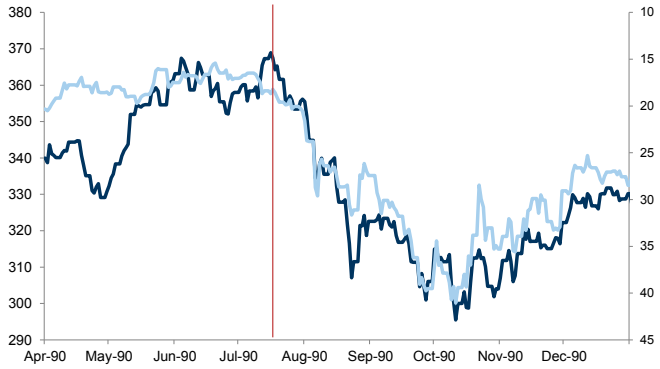
Source: Bloomberg, Datastream, IBES, Goldman Sachs Global Investment Research

Exhibit 58: S&P 500 in the 1998 bear market
with RUB/USD (RHS)



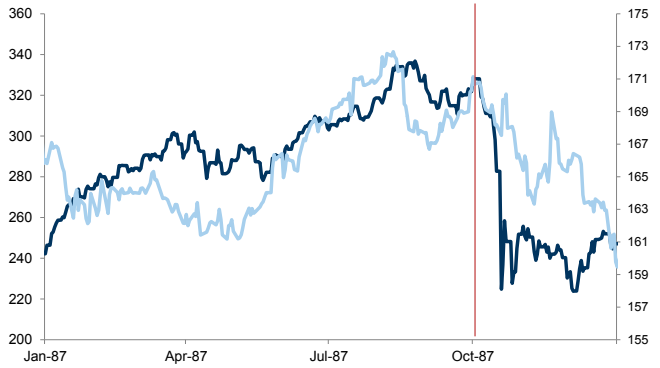
Source: Bloomberg, Datastream, Goldman Sachs Global Investment Research

Exhibit 59: S&P 500 in the 1990 bear market
with WTI Oil price (RHS, Inverted)



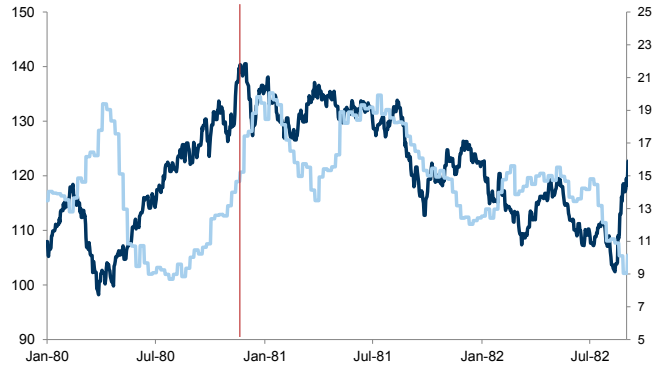
Source: Bloomberg, Datastream, Goldman Sachs Global Investment Research

Exhibit 60: S&P 500 in the 1987 bear market
with USD TWI (RHS)



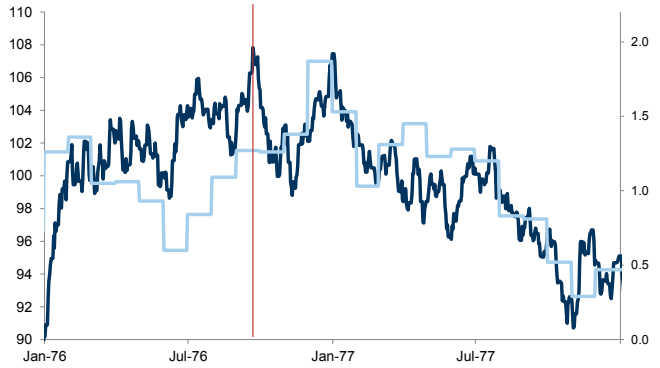
Source: Bloomberg, Goldman Sachs Global Investment Research

Exhibit 61: S&P 500 in the 1981-1982 bear market
with Federal Funds Rate (RHS)



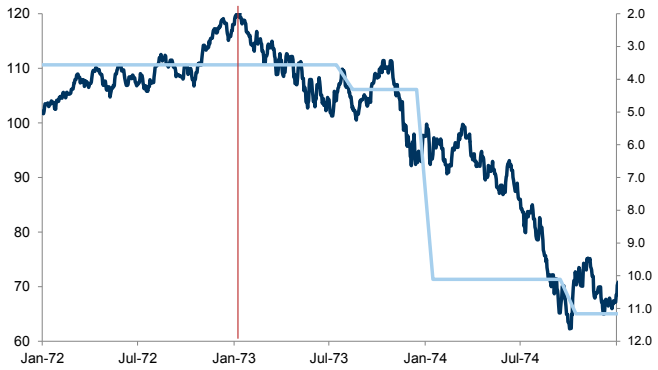
Source: Bloomberg, Fred, Goldman Sachs Global Investment Research

Exhibit 62: S&P 500 in the 1976-1977 bear market
with Yield Curve (RHS)



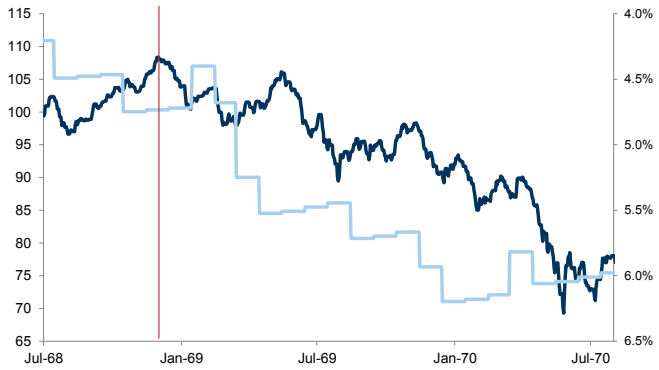
Source: Bloomberg, Fred, Goldman Sachs Global Investment Research

Exhibit 63: S&P 500 in the 1973-1974 bear market
with Oil price (RHS, Inverted)



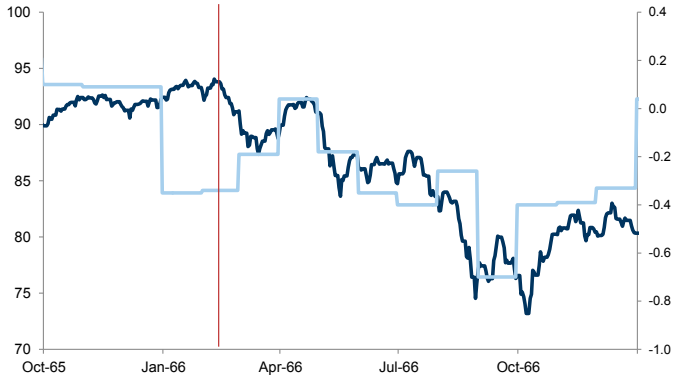
Source: Bloomberg, Fred, Goldman Sachs Global Investment Research

Exhibit 64: S&P 500 in the 1969-1970 bear market
with Inflation (RHS, Inverted)

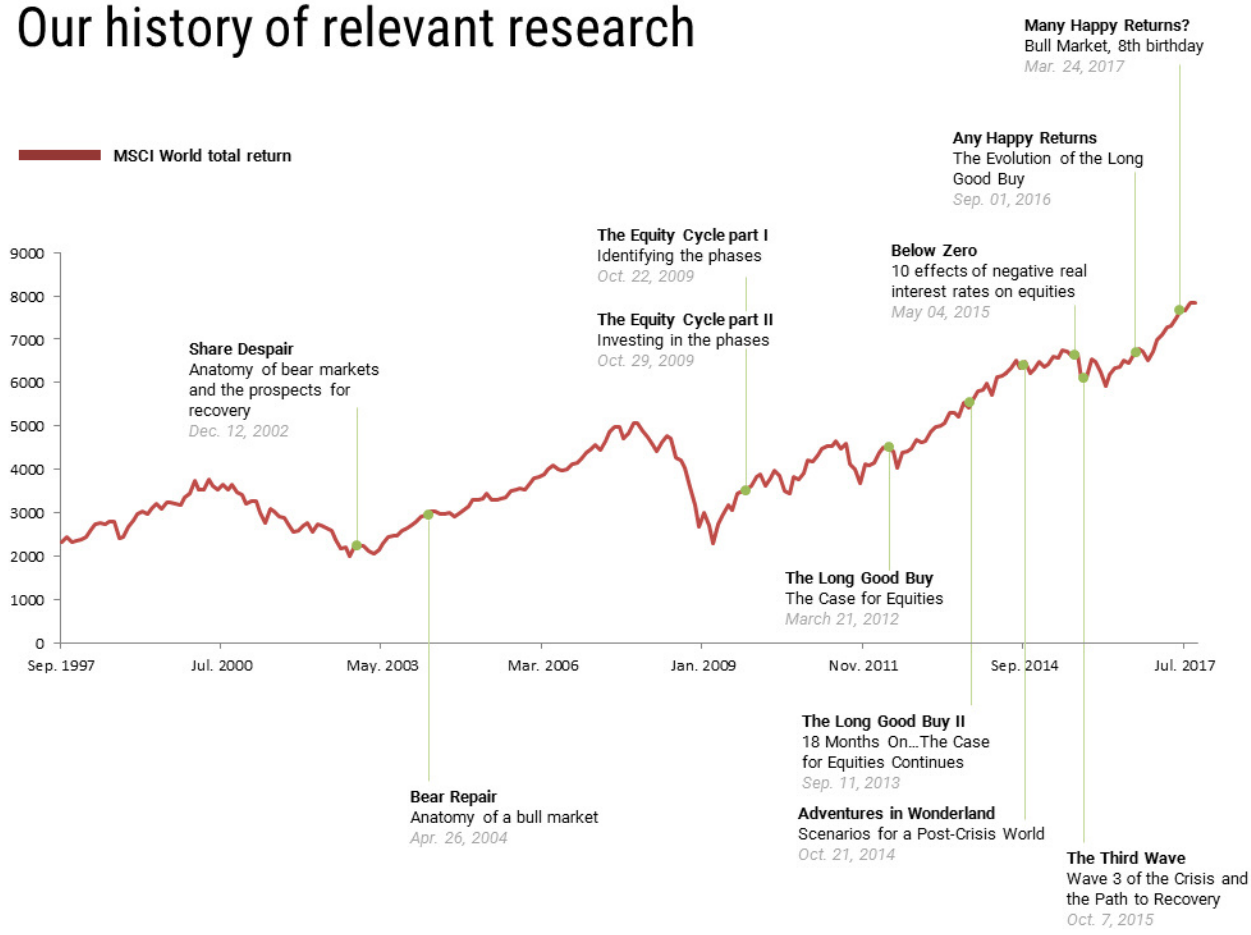


Source: Bloomberg, Datastream, Goldman Sachs Global Investment Research

Exhibit 65: S&P 500 in the 1966 bear market
with Yield Curve (RHS)



Source: Bloomberg, Fred, Goldman Sachs Global Investment Research



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