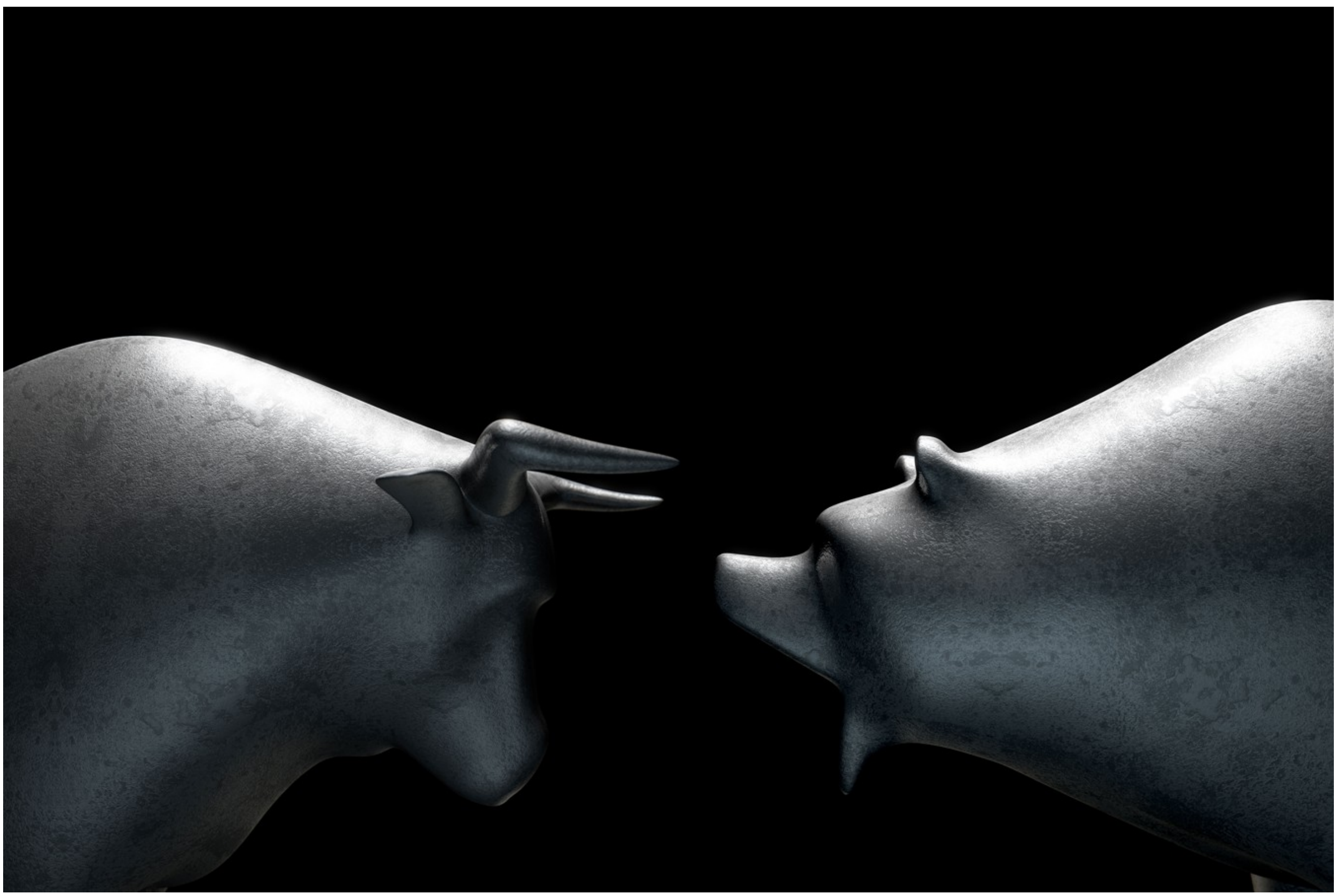
October 21, 2018 06:00 PM GMT

Cross-Asset Dispatches

A Spotter's Guide to Bull Corrections and Bear Markets, Revisited

Is the recent price action more consistent with a typical bull correction, or does it augur something more menacing?



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A Spotter's Guide to Bull Corrections and Bear Markets, Revisited

Bull market corrections often have common characteristics. One month from the peak, we look at what drawdowns typically mean across assets, and where we stand today: Global equities saw a sell-off of 6% since the local peak one month ago on September 21, with regional markets like the US, Europe and Japan following suit. We put these moves in the context of prior bull corrections and bear markets.

What's more like a 'normal' correction? Credit and equity moves: The run-up in global equities has not been as strong as prior bear markets. The sideways/tighter path of US HY credit over the past year also resembles a typical bull correction episode rather than a bear market. A number of other factors like UST-DBR differentials and regional equity market performance deviate from past bull corrections *and* bear market experience.

What's looking more worrisome? Moves in rates and commodities: The ~80bp move in UST 10Y yields over the last 12 months looks more in line with the typical experience in the run-up to bear markets. Similarly, crude has rallied into the latest equities peak, reminiscent of lead-ins to prior bear market episodes.

Our bull/bear 'cheat sheet' leans towards a typical correction, but with more mixed readings than February 2018: This global sell-off looked relatively severe, more akin to the fast and furious drawdowns of bull corrections rather than the slower bleed of bear markets. But other aspects of our bull/bear 'cheat sheet' are more equivocal, and we have less confidence than in February that the latest price action is not the start of a full-blown bear market.

We highlight what we'd be watching in our rolling bear market checklist, and preferred hedges: The checklist for the bear market is also getting ticked off one by one – credit wider, sectors and regional markets rolling over; yields is the thing still to make a top. Even if this does not turn out to be the start of the bear market, we think that the end is probably closer than it was in the February episode. We recommend hedges in CDX HY puts, buying JPY vol and US rates vol.

Recent Research:

Cross-Asset Brief: Closing Hedges on Russell 2000, Replacing with JPY Vol, 15 October 15, 2018

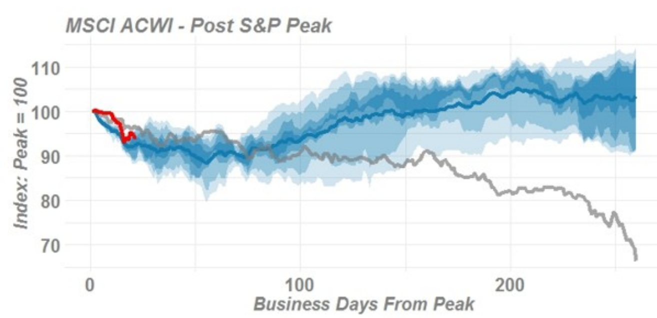
Cross-Asset Dispatches: If Bonds Can't Diversify, What Can?, October 14, 2018

Cross-Asset CANARI Watch: ACWI 3M CANARI at Neutral, October 11, 2018

Cross-Asset Brief: FAQs After a Large Decline, October 11, 2018

Exhibit 1:

Bull corrections tend to see sharper early declines



Source: Bloomberg, Morgan Stanley Research; Note: Shows summary of episodes where S&P sold off by 10% or more. Dark blue line is mean for bull corrections, each band represents decile starting at 10% to 90%. Grey line is mean for bear markets. Red line is current sell-off. Data since 1950, or whenever history begins.

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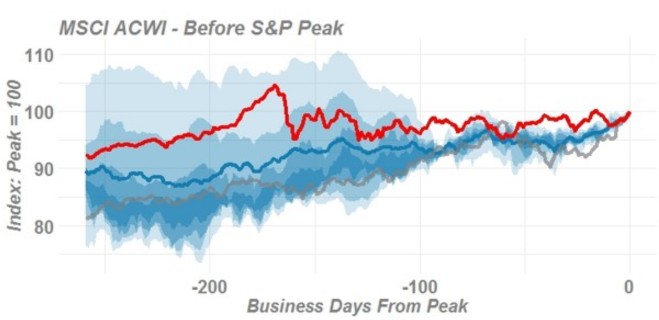
A spotter's guide to bull corrections and bear markets, revisited

During the fear and loathing of the sell-off in recent days, the question of whether this is *the* bear market, or whether it's 'just' a bull correction must have crossed the mind of many investors (and strategists!). In this report, we revisit our analysis on the common characteristics of equity bull market corrections and bear markets, and see how the current sell-off compares to past episodes. We find that:

- **Some qualities of bear markets...** The large rise in US real and nominal yields in the run-up to the latest sell-off is very typical of a bear market experience, where tighter financial conditions tip equities over. Similarly, the rally in crude and credit (ex US HY) spread widening over the last 12 months is also reminiscent of prior bear market episodes.
- **...but aspects of bull corrections too:** The global equity rally in the run-up to the latest sell-off has been mild. The sideways/tighter path of US HY credit over the past year also resembles a typical bull correction episode rather than a bear market. Credit in general has held in ok during the latest sell-off, close to what's generally observed in bull corrections.
- **Bad is good...and it was bad** – heavy equity sell-offs are more common in bull corrections. The severity of recent moves at their most extreme – a 7% drawdown over 15 days for ACWI, down 7% over 16 days for S&P – is more akin to what we usually see around bull corrections than bear markets.

Exhibit 2:

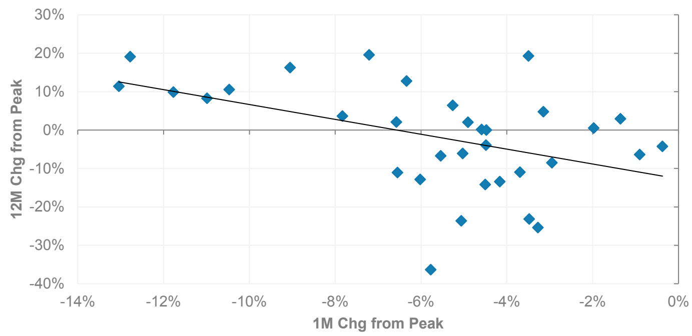
ACWI tends to see a 10-20% run-up 12 months before market tops – the current episode looks unusual



Source: Bloomberg, Morgan Stanley Research; Note: Shows summary of episodes where S&P sold off by 10% or more. Dark blue line is mean for bull corrections, each band represents decile starting at 10% to 90%. Grey line is mean for bear markets. Red line is current sell-off. Data since 1950, or whenever history begins.

Exhibit 3:

More extreme one-month moves from S&P peak tend to be associated with faster recovery



Source: Bloomberg, Morgan Stanley Research; Note: Shows summary performance of episodes where S&P sold off by 10% or more. Data since 1950, or whenever history begins.

- **It's less clear to us this time round whether it's a bull correction or the start of a bear market, but the severity of the latest sell-off leans towards the former:** When S&P sells off by 6% or more over one month, more than 80% of the time the index recovers within the next 12 months. However, the 'cheat sheet' of bull/bear characteristics and how this latest episode compares (**Exhibit 4**) is more equivocal about this sell-off.

- **The fact that we had** already **experienced a large drawdown this year doesn't necessarily mean this** has **to be 'the big one':** Almost all bear markets have been preceded by corrections, but not all corrections are followed by bear market. In fact, there have been examples of large, quick and severe drawdowns that are followed closely by other large, quick and severe drawdowns. This was the case in both the 1980s and in the late 1990s, where we saw several large corrections before 'the big one', pertinent given some of the similarities of this long cycle to the 1990s.

Exhibit 4:

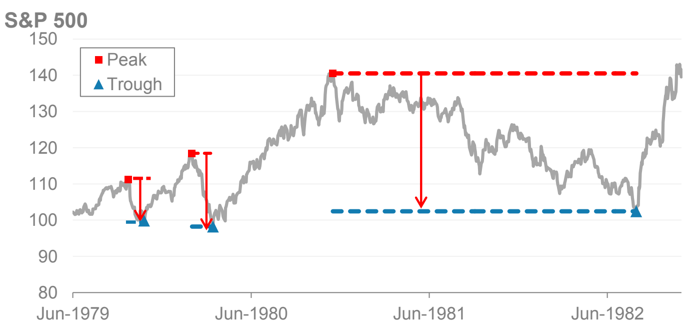
Bull correction/bear market 'cheat sheet' is a lot less clear-cut on current sell-off episode

		Characteristics of ... Bull Corrections	Characteristics of ... Bear Markets	Latest Episode	
EQUITIES					
	Run-up	Markets see a **slower and shallower rally** into a top (~10% over 12M)	Markets see a **faster and sharper rally** in run-up (~20% over 12M)	**S&P Trailing 12M Px Rtn To Latest Peak (20 Sep)**	17%
	Sell-Off	Markets see **sharper and quicker drawdown** over first months from equity peak (~7% over 1M)	Markets see **more moderate and slower drawdown** over first months from equity peak (~4% over 1M)	**S&P Px Rtn From Latest Peak (20 Sep)**	-6%
CREDIT					
	Run-up	IG and HY spreads **tighten** into an equity top (~30bp over 12M for IG, ~100bp over 12M for HY)	IG and HY spreads **widen** into an equity top (~30bp over 12M for IG, ~50bp over 12M for HY)	**US HY Trailing 12M Sprd Chg To Latest Peak (20 Sep)**	-36
	Sell-Off	IG and HY spreads **widen slowly** post equity top (~20bp over 1M for IG, ~40bp over 1M for HY)	IG and HY spreads **widen materially** post equity top (~200bp over 1M for IG, ~500bp over 1M for HY)	**US HY Sprd Chg From Latest Peak (20 Sep)**	27
BONDS					
	Run-up	UST yields **rise moderately** into an equity top (~20bp over 12M for UST 10Y)	UST yields **rise materially** into an equity top (~100bp over 12M for UST 10Y)	**US 10Y Trailing 12M Yld Chg in bps To Latest Peak (20 Sep)**	80
	Run-up	US curve **tends to go sideways** going into an equity peak	US curve **tends to flatten** going into an equity peak (by ~60bp over 6M for US 2s10s)	**US 2s10s 12M Chg in bps To Latest Peak (20 Sep)**	-57
	Sell-Off	UST 2Y yields **rise moderately** post equity top (~20bp over 1M for UST 10Y)	UST 2Y yields **fall materially** post equity top (~150bp over 1M for UST 10Y)	**US 2Y Trailing 12M Yld Chg in bps From Latest Peak (20 Sep)**	7
	Sell-Off	US curve **tends flatten slightly** post an equity peak (~5bp over 1M for US 2s10s)	US curve **tends to bull steepen** going post equity peak (by ~100bp over 1M for US 2s10s)	**US 2s10s Chg in bps From Latest Peak (20 Sep)**	4
COMMODITIES					
	Run-up	Markets see a **slower and shallower rally** into a top (~14% over 12M for cude)	Markets see a **faster and sharper rally** in run-up (~30% over 12M for crude)	**Crude Trailing 12M Chg To Latest Peak (20 Sep)**	40%
	Sell-Off	Markets see continue to see **sharp rally** post equity top (~15% over 1M for crude)	Markets **sells off immediately** post equity top, but claws back losses over 12M (~2% over 1M for crude)	**Crude Chg From Latest Peak (20 Sep)**	-2%

Source: Bloomberg, Morgan Stanley Research; Note: Reference peak is S&P top made on September 20, 2018. Yellow highlights denote what latest episode most resembles.

Exhibit 5:

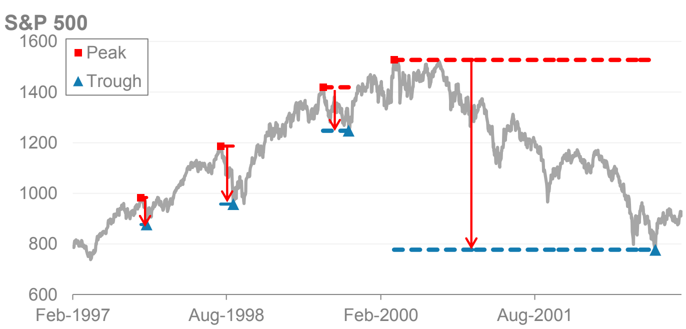
Bull corrections before bear market – 1980-82



Source: Bloomberg, Morgan Stanley Research

Exhibit 6:

Bull corrections before bear market – 1997-2002



Source: Bloomberg, Morgan Stanley Research

- **But looking at the checklist for the rolling bear market, we see that a lot of the usual signposts for end-of-cycle are in place:** Credit has drifted wider, and sectors and regional markets have rolled over since early this year. Bonds is the odd asset out, but it's up for debate whether this means that equities have a longer runway until yields roll over, or we'll see a break with the past with yields only rolling after stocks, a painful scenario for many asset allocators. Either way, we believe that **even if the current episode is not the start of the bear market, we're much closer to the end of the market cycle than we were during the February sell-off.**

Exhibit 7:

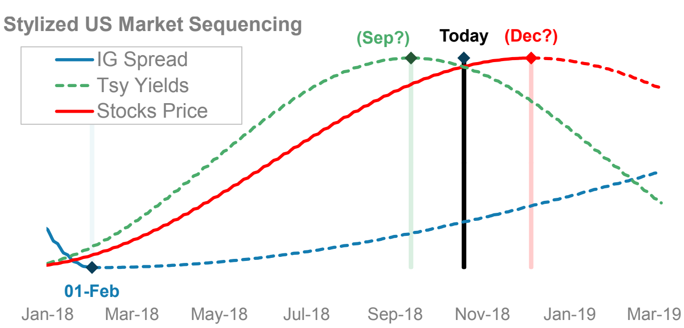
Rolling bear market checklist – typical sequencing around equity cyclical tops, and where we are now

Asset	Unit	P/T	Avg P/T Mths Around S&P	Already P/T-ed?	Est. P/T Date	Chg Since Peak/Trough
EUR HY	Sprd	Trough	-11	Y	Nov-17	147 bp
US IG	Sprd	Trough	-10	Y	Feb-18	26 bp
Cons. Staple	Px	Peak	-10	Y	Jan-18	-12 %
US HY	Sprd	Trough	-7	Y?	Oct-18	40 bp
EUR IG	Sprd	Trough	-7	Y	Feb-18	47 bp
EM USD	Sprd	Trough	-4	Y	Feb-18	72 bp
Financials	Px	Peak	-4	Y	Jan-18	-18 %
JGB 10Y	Yld	Peak	-4	??		
UST Real Yld 10Y	Yld	Peak	-3	??		
Cons. Disc.	Px	Peak	-3	Y	Jan-18	-10 %
UST 10Y	Yld	Peak	-3	??		
DBR 10Y	Yld	Peak	-3	??		
Materials	Px	Peak	-3	Y	Jan-18	-18 %
UKT 10Y	Yld	Peak	-2	??		
S&P 500	Px	Peak	0	??		
Tech.	Px	Peak	0	Y	Aug-18	-9 %
Telecom	Px	Peak	0	Y	Jan-18	-12 %
ACWI	Px	Peak	0	Y	Jan-18	-10 %
MSCI EM	Px	Peak	0	Y	Jan-18	-24 %
MSCI Europe	Px	Peak	0	Y	Jan-18	-10 %
Industrials	Px	Peak	0	Y	Jan-18	-13 %
TOPIX	Px	Peak	0	Y	Jan-18	-11 %
Utilities	Px	Peak	3	??		
Healthcare	Px	Peak	3	Y?	Oct-18	-4 %
Energy	Px	Peak	7	??		

Source: Bloomberg, Morgan Stanley Research; Note: Sector all based on ACWI. "?" shows where it's uncertain whether market has peaked/troughed. "Y?" means potentially market has peaked/troughed, but peak/trough to recent to determine.

Exhibit 8:

Average market late-cycle sequencing: The signal from credit suggests that we're closer to the end than we were during the January/February 2018 sell-off



Source: Morgan Stanley Research

- **How do we position for this?** While risk assets have underperformed, volatility across several asset classes has remained subduced. **We recommend buying vol across assets classes.** In particular, we like hedges in credit (buying CDX HY puts), buying JPY vol and going long US rates vol.

Defining bull corrections and bear markets

For the purpose of this exercise, we define a 'bull correction' as an episode where an equity market has seen a 10% or greater drawdown, but recovers to the prior peak within 12 months, a 'bear market' when stocks sell off 20% or more, with no recovery within 12 months, and a 'correction' as all the other big sell-offs which don't fall into either category. We show how the S&P drawdowns since 1950 are categorised in Exhibit 9 , and show what the same looks like for other major equity markets in Appendix: Equity sell-offs . Given the long history we have for the S&P 500, and our finding that global equities tend to peak within 1-2 days of S&P, our analysis below on how assets behave around equity peaks and troughs will be based on the US stock market peak/troughs.

Exhibit 9:

S&P 500 – 10%+ drawdowns in history and current sell-off

Peak Date	Trough Date	Business Days	Peak	Trough	Drawdown	Run Up 1M	Run Up 12M	From Peak 1M	From Peak 3M	From Peak 6M	From Peak 12M	From Trough 1M	From Trough 3M	From Trough 6M	From Trough 12M	Type
05-Jan-53	14-Sep-53	181	27	23	-15%	4%	12%	-1%	-8%	-9%	-6%	4%	9%	17%	37%	Correction
23-Sep-55	11-Oct-55	13	46	41	-11%	7%	41%	-7%	0%	7%	2%	10%	8%	17%	13%	Bull Correction
02-Aug-56	22-Oct-57	319	50	39	-22%	5%	17%	-4%	-6%	-10%	-4%	4%	6%	10%	32%	Bear Market
03-Aug-59	25-Oct-60	322	61	52	-14%	2%	27%	-3%	-5%	-8%	-9%	7%	16%	25%	30%	Correction
12-Dec-61	26-Jun-62	141	73	52	-28%	2%	28%	-5%	-3%	-22%	-14%	9%	9%	20%	34%	Bear Market
22-Aug-62	23-Oct-62	45	60	53	-11%	5%	-12%	-3%	2%	10%	19%	14%	22%	30%	36%	Bull Correction
09-Feb-66	07-Oct-66	173	94	73	-22%	1%	9%	-6%	-7%	-12%	-7%	10%	12%	22%	33%	Bear Market
25-Sep-67	05-Mar-68	117	98	88	-10%	5%	25%	-3%	-2%	-9%	5%	7%	14%	13%	13%	Bull Correction
29-Nov-68	26-May-70	388	108	69	-36%	4%	15%	-4%	-9%	-5%	-13%	7%	17%	22%	44%	Bear Market
28-Apr-71	23-Nov-71	150	105	90	-14%	5%	28%	-5%	-7%	-10%	2%	12%	17%	22%	29%	Bull Correction
11-Jan-73	03-Oct-74	451	120	62	-48%	1%	17%	-3%	-6%	-12%	-23%	17%	13%	31%	35%	Bear Market
07-Nov-74	06-Dec-74	22	75	65	-14%	16%	-30%	-13%	4%	19%	19%	9%	30%	42%	34%	Bull Correction
15-Jul-75	16-Sep-75	46	96	82	-14%	6%	15%	-10%	-7%	0%	11%	9%	8%	23%	27%	Bull Correction
21-Sep-76	06-Mar-78	380	108	87	-19%	5%	27%	-7%	-3%	-6%	-11%	3%	15%	19%	13%	Correction
12-Sep-78	14-Nov-78	46	107	92	-14%	3%	11%	-2%	-10%	-7%	0%	4%	7%	6%	11%	Bull Correction
05-Oct-79	07-Nov-79	24	111	100	-10%	5%	7%	-9%	-4%	-8%	16%	8%	16%	7%	32%	Bull Correction
13-Feb-80	27-Mar-80	32	118	98	-17%	7%	20%	-11%	-10%	4%	8%	8%	18%	31%	39%	Bull Correction
28-Nov-80	12-Aug-82	445	141	102	-27%	10%	32%	-4%	-7%	-6%	-11%	19%	38%	44%	58%	Bear Market
10-Oct-83	24-Jul-84	207	173	148	-14%	3%	28%	-5%	-2%	-10%	-6%	13%	13%	19%	30%	Correction
25-Aug-87	04-Dec-87	74	337	224	-34%	9%	33%	-5%	-27%	-21%	-24%	16%	19%	19%	21%	Bear Market
09-Oct-89	30-Jan-90	82	360	323	-10%	3%	29%	-6%	-2%	-5%	-13%	3%	3%	10%	4%	Correction
16-Jul-90	11-Oct-90	64	369	295	-20%	2%	11%	-8%	-18%	-15%	4%	8%	6%	28%	29%	Bull Correction
07-Oct-97	27-Oct-97	15	983	877	-11%	6%	40%	-5%	-2%	13%	0%	9%	9%	24%	22%	Bull Correction
17-Jul-98	31-Aug-98	32	1187	957	-19%	7%	30%	-7%	-11%	5%	20%	6%	22%	29%	38%	Bull Correction
16-Jul-99	15-Oct-99	66	1419	1247	-12%	7%	20%	-5%	-12%	3%	6%	14%	17%	9%	10%	Bull Correction
24-Mar-00	09-Oct-02	664	1527	777	-49%	12%	19%	-3%	-6%	-5%	-25%	15%	17%	11%	33%	Bear Market
28-Nov-02	11-Mar-03	74	939	801	-15%	6%	-18%	-6%	-11%	1%	13%	9%	23%	28%	42%	Bull Correction
09-Oct-07	09-Mar-09	370	1565	677	-57%	8%	16%	-6%	-11%	-13%	-36%	22%	39%	50%	68%	Bear Market
23-Apr-10	02-Jul-10	51	1217	1023	-16%	4%	41%	-12%	-9%	-3%	10%	10%	12%	23%	31%	Bull Correction
29-Apr-11	03-Oct-11	112	1364	1099	-19%	3%	15%	-1%	-5%	-6%	3%	13%	14%	29%	31%	Bull Correction
21-May-15	11-Feb-16	191	2131	1829	-14%	2%	13%	0%	-4%	-2%	-4%	10%	13%	20%	26%	Correction
26-Jan-18	08-Feb-18	10	2873	2581	-10%	7%	25%	-4%	-7%	-2%	NA	8%	6%	11%	NA	NA
20-Sep-18	11-Oct-18	16	2931	2728	-7%	2%	17%	NA	NA	NA	NA	NA	NA	NA	NA	NA
SUMMARY STATS - ALL																
Average		166			-20%	5%	19%	-6%	-7%	-4%	-2%	10%	16%	23%	30%	
Median		97			-15%	5%	19%	-5%	-6%	-6%	0%	9%	15%	22%	31%	
Bull Corrections																
Average		55			-14%	6%	17%	-7%	-6%	0%	9%	9%	15%	23%	28%	
Median		46			-14%	6%	20%	-7%	-7%	1%	8%	9%	16%	24%	30%	
Bear Markets																
Average		336			-36%	6%	21%	-4%	-9%	-12%	-18%	13%	19%	26%	40%	
Median		370			-34%	5%	17%	-4%	-7%	-12%	-14%	15%	17%	22%	34%	

Source: Bloomberg, Morgan Stanley Research; Note: A 'bull correction' defined as an episode where an equity market has seen a 10% or greater drawdown, but recovers to the prior peak within 12 months, a 'bear market' when stocks sell off 20% or more, with no recovery within 12 months, and a 'correction' as all the other big sell-offs which don't fall into either category.

How does the run-up to the latest sell-off compare to prior bear markets and bull corrections?

Below we examine the types of returns assets tend to see going into an equities peak. We find that while the behaviour of Treasuries and oil are reminiscent of what typically happens in the run-up to bear markets, equity and credit markets are giving us different signals.

Equities

Global equities tend to rally more sharply into an equities bear market than into bull corrections, **which makes the current sell-off look unusual – there have been very few episodes where ACWI went sideways six months into a large 10%+ drawdown.** Also unusual going into this sell-off has been the regional performance – EM equities have tended to rally strongly into both bull corrections and bear markets, but MSCI EM has been in a bear market since January 26. Similarly, European equities tend to rally into a US equity top, and move sideways into a correction, but MSCI Europe last saw a peak on May 22.

Exhibit 10:

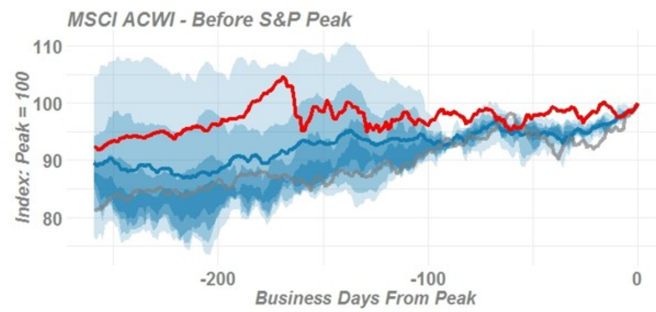
Stocks performance 1-12 months going into an equity market peak

	Run-up to S&P Peak							
	BULL CORRECTION				BEAR MARKETS			
% chg	12M	6M	3M	1M	12M	6M	3M	1M
MSCI ACWI	12%	7%	5%	5%	21%	14%	3%	8%
S&P 500	16%	14%	8%	5%	21%	15%	9%	7%
MSCI Europe	10%	8%	5%	4%	16%	11%	5%	2%
TOPIX	-1%	6%	3%	2%	27%	14%	3%	3%
MSCI EM	11%	5%	2%	5%	46%	26%	11%	8%
Energy	16%	11%	4%	4%	22%	11%	0%	8%
Materials	10%	8%	1%	3%	30%	10%	-1%	7%
Industrials	9%	9%	2%	4%	24%	12%	1%	8%
Cons. Disc.	14%	10%	5%	5%	17%	10%	-1%	7%
Cons. Staple	13%	4%	2%	2%	-4%	-6%	-6%	1%
Healthcare	14%	7%	2%	4%	-1%	2%	1%	5%
Financials	12%	7%	3%	5%	8%	5%	1%	10%
Tech.	22%	18%	11%	10%	48%	33%	12%	9%
Telecom	15%	9%	6%	6%	36%	25%	8%	7%
Utilities	4%	-1%	-1%	2%	12%	3%	4%	5%
Large Cap	13%	9%	4%	5%	23%	15%	4%	8%
Small Cap	13%	9%	5%	5%	29%	13%	6%	5%
Growth	13%	9%	5%	5%	28%	20%	6%	8%
Value	11%	8%	3%	5%	14%	7%	1%	7%

Source: Bloomberg, Morgan Stanley Research; Note: Shows summary performance of episodes where S&P sold off by 10% or more. Data since 1950, or whenever history begins.

Exhibit 11:

ACWI tends to see a 10-20% run-up 12 months before market tops – the current episode looks unusual



Source: Bloomberg, Morgan Stanley Research; Note: Shows summary of episodes where S&P sold off by 10% or more. Dark blue line is mean for bull corrections, each band represents decile starting at 10% to 90%. Grey line is mean for bear markets. Red line is current sell-off. Data since 1950, or whenever history begins.

Credit

Credit tends to tighten into an S&P bull correction, but for bear markets, spreads have tended to widen a year before equities peak. **US IG, EUR IG, EUR HY and EM $ credit seem to be following the bear market playbook closely,** with spreads in these markets having bled wider slowly over the last 12 months into the current sell-off. **What has been unusual is the behaviour of US HY** – spreads have actually tightened over the past year, more consistent with a bull correction than a bear market.

Exhibit 12:

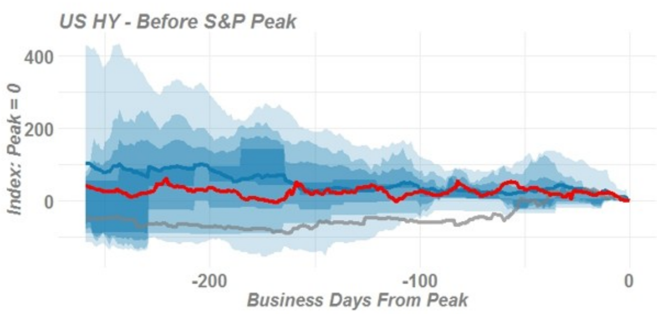
Credit performance 1-12 months going into an equity market peak

	Run-up to S&P Peak							
	BULL CORRECTION				BEAR MARKETS			
bp chg	12M	6M	3M	1M	12M	6M	3M	1M
US IG	-36	-10	-9	-9	31	22	25	-4
US HY	-102	-28	-24	-33	45	63	38	-31
US BBB	-42	-13	-6	0	27	24	23	-1
US BB	-64	-34	-22	-23	76	69	44	-20
EUR IG	-47	-5	-10	-10	15	19	19	-1
EUR HY	-467	-90	-79	-86	43	55	51	-32
EUR BBB	-104	-11	-21	-22	22	39	38	-1
EUR BB	-368	92	-33	-73	-14	28	47	-22
EM USD	-185	20	-60	-38	30	51	35	-46
CDX IG	-45	-8	0	-3	10	11	6	-24
CDX HY	-413	-118	-32	-24	99	120	14	-23
Main	-27	1	1	1	3	7	4	-21
Xover	-244	-91	-47	-26	13	66	17	-62

Source: Bloomberg, Morgan Stanley Research; Note: Shows summary performance of episodes where S&P sold off by 10% or more. Data since 1950, or whenever history begins.

Exhibit 13:

US HY tends to tighten 12 months into a bull correction peak, but widen into an equity bear market – the current episode resembles more the former



Source: Bloomberg, Morgan Stanley Research; Note: Shows summary of episodes where S&P sold off by 10% or more. Dark blue line is mean for bull corrections, each band represents decile starting at 10% to 90%. Grey line is mean for bear markets. Red line is current sell-off. Data since 1950, or whenever history begins.

Exhibit 14:

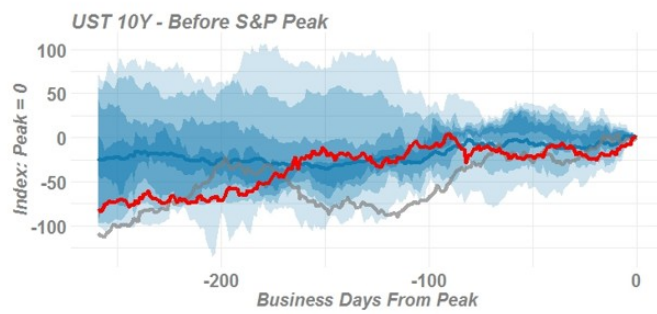
Rates performance 1-12 months going into a stock market peak

	Run-up to S&P Peak							
	BULL CORRECTION				BEAR MARKETS			
bp chg	12M	6M	3M	1M	12M	6M	3M	1M
UST 2Y	48	44	25	8	136	170	61	41
DBR 2Y	7	2	12	4	94	46	-7	7
UKT 2Y	-19	13	10	0	82	2	-34	-9
JGB 2Y	-15	-5	-2	4	23	15	-4	11
UST 10Y	18	28	13	13	111	76	18	11
DBR 10Y	6	14	4	-5	86	22	-13	0
UKT 10Y	-23	3	-12	-6	48	-23	-36	-13
JGB 10Y	-9	-6	-15	4	2	9	-6	8
UST-DBR 5Y	-16	-2	-9	-16	-56	-15	-21	1
UST-JGB 5Y	-19	6	9	-14	31	11	-13	-6
UST-DBR 10Y	-19	-6	-3	-2	-41	-4	-16	2
UST-JGB 10Y	-3	14	16	-11	42	8	-24	-6
US 2s10s	-10	-2	-6	0	-11	-61	-41	-30
US 10s30s	1	-4	-2	2	-16	-25	-6	-5

Source: Bloomberg, Morgan Stanley Research; Note: Shows summary performance of episodes where S&P sold off by 10% or more. Data since 1950, or whenever history begins.

Exhibit 15:

UST 10-year yields tend to widen significantly before equity tops, but move sideways before bull corrections – the current episode is closer to the former



Source: Bloomberg, Morgan Stanley Research; Note: Shows summary of episodes where S&P sold off by 10% or more. Dark blue line is mean for bull corrections, each band represents decile starting at 10% to 90%. Grey line is mean for bear markets. Red line is current sell-off. Data since 1950, or whenever history begins.

Bonds

Nominal bond yields tend to rise prior to bull corrections, likely a function of a healthy macro backdrop that drives both growth and inflation higher, but rates rise *even faster* going into end-of-cycle bear markets. **The current rates environment most resembles that around a bear market** – in the 12 months going into an equities cycle high, UST 10Y have on average widened by more than 100bp; over the last 12 months, yields have risen by 80bp. US 2s10s have also tended to flatten dramatically into a bear market equity peak, similar to what markets experienced over the past year. **What has been unusual is the UST-DBR differentials.** In prior bull corrections and bear markets, spreads tend to compress, probably reflective of DBRs 'catching up' with US reflation late in the cycle, but over the last 12 months, this differential has actually widened materially.

FX

FX performance around equity peaks tells us about the nature of the risk rally, with a difference between returns going into bull corrections and into bear markets. Prior to bear markets, we see risk-on dominating, with EMFX performing strongly 12 months into an equity top; JPY also strengthens materially late-cycle, while in the run-up to bull corrections the picture is more mixed. This perfectly describes the run-up to the latest sell-off – **volatility in EM means that EMFX performance looks nothing like prior big sell-offs.** Meanwhile, idiosyncratic stories in the UK and Europe also mean that **the GBP and EUR picture in the run-up to the latest sell-off looks unusual compared to prior bull corrections *and* bear markets.**

Exhibit 16:

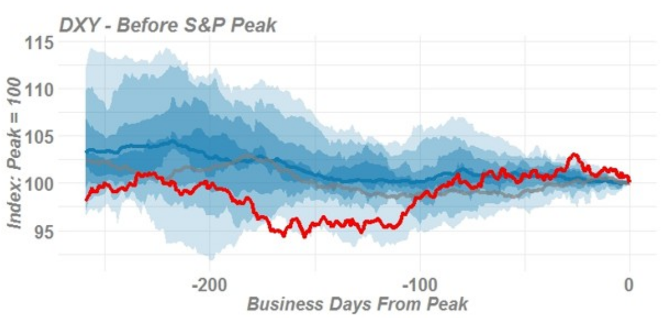
FX performance 1-12 months going into a stock market peak

	Run-up to S&P Peak							
	BULL CORRECTION				BEAR MARKETS			
% chg	12M	6M	3M	1M	12M	6M	3M	1M
DXY	-3%	0%	-1%	0%	-2%	1%	1%	0%
EUR TWI	2%	-1%	1%	1%	-2%	-2%	-1%	-1%
EUR/USD	4%	0%	1%	1%	0%	-2%	-2%	0%
GBP/USD	5%	1%	1%	0%	3%	0%	-1%	0%
JPY/USD	0%	-1%	-1%	-1%	8%	2%	0%	0%
AUD/USD	2%	0%	1%	1%	9%	3%	1%	3%
BRL/USD	-10%	-10%	-3%	2%	10%	11%	5%	6%
CAD/USD	1%	0%	0%	0%	4%	3%	1%	1%
CHF/USD	8%	3%	2%	1%	0%	-1%	-1%	0%
IDR/USD	-18%	-8%	-9%	3%	10%	7%	-3%	2%
INR/USD	-1%	-1%	0%	0%	3%	2%	0%	0%
KRW/USD	-3%	4%	2%	2%	7%	5%	1%	1%
MXN/USD	-3%	1%	1%	1%	-15%	-7%	-3%	0%
MYR/USD	-3%	-1%	-2%	-1%	3%	0%	-1%	0%
NOK/USD	5%	2%	2%	1%	5%	1%	0%	0%
RUB/USD	-23%	-1%	2%	1%	1%	-4%	-2%	2%
ZAR/USD	1%	-3%	0%	0%	11%	1%	-1%	1%

Source: Bloomberg, Morgan Stanley Research; Note: Shows summary performance of episodes where S&P sold off by 10% or more. Data since 1950, or whenever history begins.

Exhibit 17:

DXY tends to weaken into a bull correction S&P peak – the current episode looks unusual



Source: Bloomberg, Morgan Stanley Research; Note: Shows summary of episodes where S&P sold off by 10% or more. Dark blue line is mean for bull corrections, each band represents decile starting at 10% to 90%. Grey line is mean for bear markets. Red line is current sell-off. Data since 1950, or whenever history begins.

Commodities

Commodities have tended to see positive returns going into an equity market top, with stronger performance going into bear markets than bull corrections. **Crude is the only commodity in our analysis that seems to be following the bear market playbook** – the asset's seen a remarkable rally in the last 12 months, reminiscent of what one usually sees around equity cyclical tops. Meanwhile, **both precious and base metals look off compared to prior large sell-offs** – gold, silver and copper tend to rally into bull corrections and bear markets, but all these markets have been softer over the last six months.

Exhibit 18:

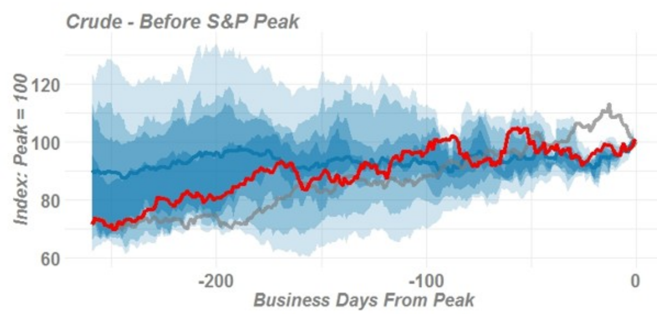
Commodities performance 1-12 months going into a stock market peak

	Run-up to S&P Peak							
	BULL CORRECTION				BEAR MARKETS			
% chg	12M	6M	3M	1M	12M	6M	3M	1M
Crude	14%	11%	8%	8%	34%	14%	5%	-3%
Gold	20%	11%	9%	4%	25%	7%	1%	0%
Silver	38%	22%	19%	6%	18%	8%	2%	1%
Copper	9%	7%	1%	6%	14%	2%	-2%	3%

Source: Bloomberg, Morgan Stanley Research; Note: Shows summary performance of episodes where S&P sold off by 10% or more. Data since 1950, or whenever history begins.

Exhibit 19:

Oil tends to peak before equity cycle tops – the current episode resembles bear markets more than bull corrections



Source: Bloomberg, Morgan Stanley Research; Note: Shows summary of episodes where S&P sold off by 10% or more. Dark blue line is mean for bull corrections, each band represents decile starting at 10% to 90%. Grey line is mean for bear markets. Red line is current sell-off. Data since 1950, or whenever history begins.

How does the latest sell-off from the peak compare to prior bear markets and bull corrections?

Below we examine what happens to asset returns after equities peak. We find that US 2s10s steepening since S&P peaked on September 20 is the one market move most consistent with the latest sell-off being a bear market – behaviour in most other assets is either more reminiscent of bull markets (e.g., relative resilience in credit), or highly unusual either way (e.g., real rates and FX). We'd also note that the severity of the latest sell-off in equities – down 7% over 15 days for ACWI, down 7% over 16 days for S&P at the most extreme – also seems more consistent with the short and sharp drawdowns we see for bull corrections rather than bear markets, which typically see a more drawn-out 'bleed'.

Equities

As we've noted before, **equities tend to sell-off more severely in the first months after equities peak in a bull correction than in a bear market.** When S&P sells off by 6% or more over one month, for example, more than 80% of the time the index recovers within the next 12 months (**Exhibit 22**). Larger drawdowns over a short period of time also tends to be associated more with bull corrections rather than bear markets for regional equity markets (**Exhibit 23**).

So how does the current sell-off compare? The jury is still out, but progress of the S&P sell-off looks relatively severe (down 7% over 16 days at the most extreme), more akin to the fast and furious draw-downs we tend to see for bull corrections. The challenge with seeking too much comfort from this is that some regional equity markets have peaked *long* before ACWI and S&P's recent top in September – MSCI EM has been in a bear market since January 26, and MSCI Europe last saw a peak on May 22, which potentially makes dynamics for latest sell-off different.

Exhibit 20:

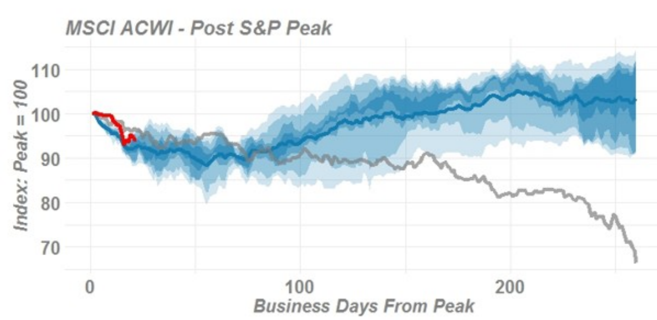
Stocks performance 1-12 months from stock market peaks

	From S&P Peak							
	BULL CORRECTION				BEAR MARKETS			
% chg	1M	3M	6M	12M	1M	3M	6M	12M
MSCI ACWI	-7%	-9%	-1%	4%	-4%	-7%	-11%	-34%
S&P 500	-7%	-8%	0%	9%	-4%	-11%	-10%	-22%
MSCI Europe	-5%	-6%	2%	6%	-3%	-8%	-10%	-19%
TOPIX	-4%	-5%	-4%	4%	-3%	-6%	-2%	-8%
MSCI EM	-9%	-13%	-6%	2%	-6%	-9%	-18%	-43%
Energy	-6%	-8%	-4%	4%	4%	7%	5%	-18%
Materials	-7%	-10%	-4%	0%	-1%	-7%	-9%	-31%
Industrials	-7%	-9%	-1%	4%	0%	-6%	-6%	-30%
Cons. Disc.	-7%	-8%	3%	8%	-3%	-13%	-16%	-35%
Cons. Staple	-4%	-4%	2%	2%	4%	5%	5%	-3%
Healthcare	-4%	-4%	5%	7%	2%	5%	2%	-10%
Financials	-9%	-11%	-3%	-3%	-5%	-10%	-8%	-29%
Tech.	-8%	-11%	9%	23%	-9%	-13%	-19%	-50%
Telecom	-6%	-5%	10%	11%	-6%	-9%	-23%	-45%
Utilities	-4%	-3%	3%	3%	3%	4%	1%	-16%
Large Cap	-7%	-8%	2%	6%	-4%	-8%	-11%	-35%
Small Cap	-7%	-10%	0%	7%	-7%	-11%	-13%	-34%
Growth	-7%	-7%	5%	9%	-5%	-9%	-13%	-40%
Value	-7%	-9%	-1%	3%	-2%	-5%	-8%	-26%

Source: Bloomberg, Morgan Stanley Research; Note: Shows summary performance of episodes where S&P sold off by 10% or more. Data since 1950, or whenever history begins.

Exhibit 21:

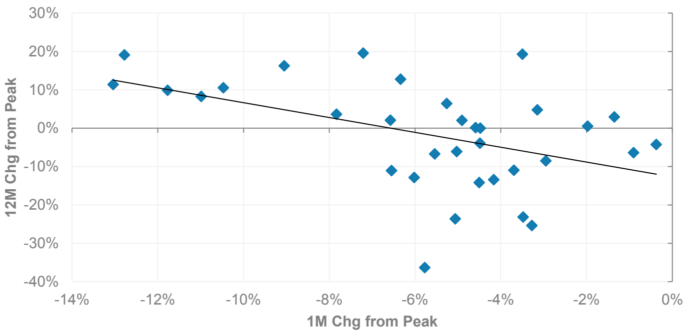
ACWI tends to recover six months after a bull correction, but sell-off continues in a bear market



Source: Bloomberg, Morgan Stanley Research; Note: Shows summary of episodes where S&P sold off by 10% or more. Dark blue line is mean for bull corrections, each band represents decile starting at 10% to 90%. Grey line is mean for bear markets. Red line is current sell-off. Data since 1950, or whenever history begins.

Exhibit 22:

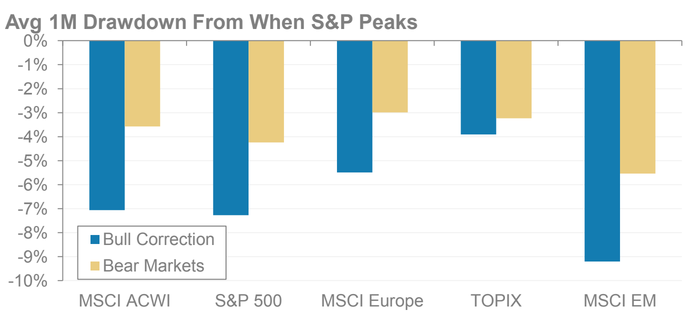
More extreme one-month moves from S&P peak tend to be associated with faster recovery



Source: Bloomberg, Morgan Stanley Research; Note: Shows summary performance of episodes where S&P sold off by 10% or more. Data since 1950, or whenever history begins.

Exhibit 23:

Stronger one-month drawdowns when S&P peaks associated with bull corrections; bear markets tend to be a slower 'bleed'



Source: Bloomberg, Morgan Stanley Research; Note: Shows summary performance of episodes where S&P sold off by 10% or more. Data since 1950, or whenever history begins.

Credit

Credit sees poor performance after equities peak, in both bull corrections and bear markets. While US IG, EUR IG, EUR HY and EM $ credit seems to be following the bear market playbook closely in terms of the run-up to the current sell-off, **credit performance from the equities peak has been more reminiscent of what happens after bull corrections.** As we've noted in Cross-Asset Brief: FAQs After a Large Decline, October 11, 2018, moves in credit over the last month have been relatively muted – this is true across US, Europe, IG, HY and EM.

Exhibit 24:

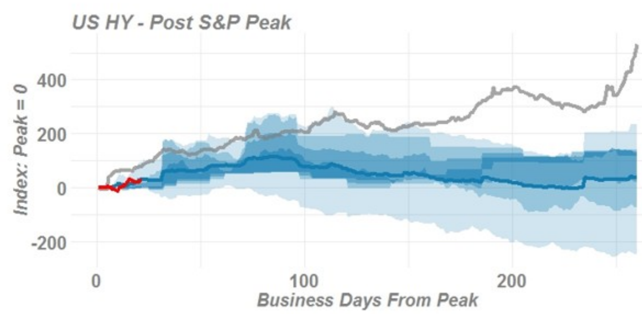
Credit performance 1-12 months from stock market peaks

	From S&P Peak							
	BULL CORRECTION				BEAR MARKETS			
bp chg	1M	3M	6M	12M	1M	3M	6M	12M
US IG	11	16	21	17	23	56	84	201
US HY	34	81	47	36	88	176	228	539
US BBB	3	13	22	9	27	71	103	201
US BB	38	60	32	26	72	146	100	336
EUR IG	15	18	26	18	5	38	66	156
EUR HY	42	8	-68	-105	30	175	301	810
EUR BBB	19	28	15	4	4	48	93	192
EUR BB	34	-24	-81	-119	37	98	92	484
EM USD	31	-9	-28	-80	33	78	118	415
CDX IG	20	13	17	5	24	44	65	123
CDX HY	121	83	110	61	84	97	97	97
Main	24	23	33	27	18	31	63	94
Xover	110	84	151	116	88	105	206	332

Source: Bloomberg, Morgan Stanley Research; Note: Shows summary performance of episodes where S&P sold off by 10% or more. Data since 1950, or whenever history begins.

Exhibit 25:

HY spreads continue to widen after equities peak in both bull corrections and bear markets



Source: Bloomberg, Morgan Stanley Research; Note: Shows summary of episodes where S&P sold off by 10% or more. Dark blue line is mean for bull corrections, each band represents decile starting at 10% to 90%. Grey line is mean for bear markets. Red line is current sell-off. Data since 1950, or whenever history begins.

Bonds

Bond yields tend to fall after equities peak, though faster in bear markets compared to bull corrections. **Global bond performance since the S&P peak doesn't point clearly to either a bull correction or bear market, although US 2s10s seem to be following the steepening path typical of bear markets until recent days. What has been atypical this sell-off is that US real yields have risen to an unusual degree post S&P peak** – in both bull corrections and bear markets, US 10Y real yields tend to fall by about 20-40bp over three months from the equity top.

Exhibit 26:

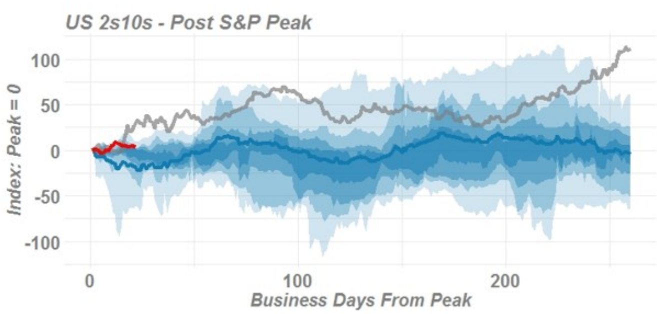
Rates performance 1-12 months from stock market peaks

	From S&P Peak							
	BULL CORRECTION				BEAR MARKETS			
bp chg	1M	3M	6M	12M	1M	3M	6M	12M
UST 2Y	32	-41	0	17	-32	-39	-79	-153
DBR 2Y	-13	-22	-34	-11	-5	15	1	-62
UKT 2Y	-13	-46	-53	-48	-13	-53	-77	-149
JGB 2Y	-3	-7	-2	-5	-10	-11	-11	-27
UST 10Y	12	-13	-7	11	10	12	3	6
DBR 10Y	-9	-17	-39	-34	-5	-8	-15	-60
UKT 10Y	-7	-28	-69	-69	0	-21	-18	-65
JGB 10Y	4	-9	-19	-18	-16	-21	-20	-51
UST-DBR 5Y	1	-13	1	-14	-17	-41	-55	-61
UST-JGB 5Y	-27	-53	-58	-43	-18	-49	-86	-145
UST-DBR 10Y	-6	-20	-12	-10	-16	-36	-56	-66
UST-JGB 10Y	-19	-28	-33	-26	-5	-22	-52	-75
US 2s10s	-22	15	-8	-5	34	40	48	109
US 10s30s	-3	7	7	-2	3	5	20	28

Source: Bloomberg, Morgan Stanley Research; Note: Shows summary performance of episodes where S&P sold off by 10% or more. Data since 1950, or whenever history begins.

Exhibit 27:

US 2s10s tends to see bull steepening in bear markets, flat in bull corrections



Source: Bloomberg, Morgan Stanley Research; Note: Shows summary of episodes where S&P sold off by 10% or more. Dark blue line is mean for bull corrections, each band represents decile starting at 10% to 90%. Grey line is mean for bear markets. Red line is current sell-off. Data since 1950, or whenever history begins.

Exhibit 28:

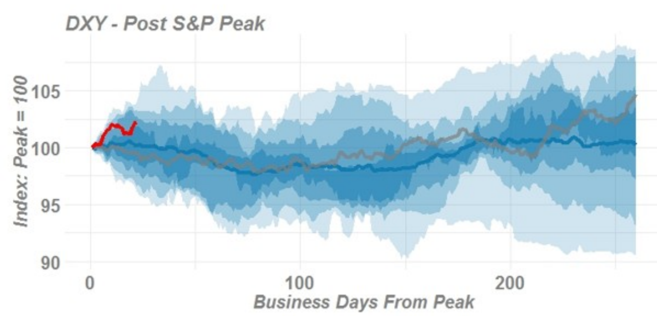
FX performance 1-12 months from stock market peaks

	From S&P Peak							
	BULL CORRECTION				BEAR MARKETS			
% chg	1M	3M	6M	12M	1M	3M	6M	12M
DXY	0%	-2%	-2%	0%	0%	-1%	-1%	4%
EUR TWI	0%	2%	3%	3%	-1%	0%	0%	0%
EUR/USD	0%	2%	1%	-2%	-1%	-1%	-3%	-9%
GBP/USD	0%	1%	2%	0%	1%	0%	-1%	-9%
JPY/USD	0%	4%	5%	7%	3%	6%	7%	2%
AUD/USD	-2%	-1%	1%	1%	1%	0%	1%	-2%
BRL/USD	-1%	-2%	0%	-4%	0%	-1%	0%	-21%
CAD/USD	-1%	-1%	0%	1%	1%	-1%	0%	-2%
CHF/USD	1%	4%	3%	2%	1%	4%	7%	0%
IDR/USD	0%	-2%	-1%	1%	-4%	-9%	-8%	-17%
INR/USD	-2%	-2%	-2%	-6%	0%	0%	-1%	-11%
KRW/USD	-3%	-8%	-4%	-3%	1%	0%	-1%	-11%
MXN/USD	-2%	-3%	-3%	-4%	-1%	-5%	-8%	-13%
MYR/USD	-1%	-1%	-1%	-1%	0%	3%	3%	1%
NOK/USD	0%	0%	1%	-2%	-1%	1%	3%	-5%
RUB/USD	-4%	-11%	-17%	-24%	1%	1%	4%	-3%
ZAR/USD	0%	3%	2%	1%	0%	-2%	-9%	-20%

Source: Bloomberg, Morgan Stanley Research; Note: Shows summary performance of episodes where S&P sold off by 10% or more. Data since 1950, or whenever history begins.

Exhibit 29:

DXY tends to strength slightly in bear markets, flat in bull corrections



Source: Bloomberg, Morgan Stanley Research; Note: Shows summary of episodes where S&P sold off by 10% or more. Dark blue line is mean for bull corrections, each band represents decile starting at 10% to 90%. Grey line is mean for bear markets. Red line is current sell-off. Data since 1950, or whenever history begins.

FX

Unlike other assets, FX doesn't seem to differentiate between bull corrections and bear markets – JPY and CHF strengthen against USD in both risk-off scenarios, underscoring their 'safe haven' status. EMFX also sells off in both equity bull corrections and bear markets, though more severely in the latter. **But the pattern of this sell-off has been unusual, likely a function of how real rates have behaved atypically since the S&P peak.** DXY has strengthened to an unusual degree since the equities top, even as USD tends to go sideways in both bull corrections and bear markets. Similarly, the likes of CHF and EUR have weakened to an unusual degree since the equities peak compared to prior large sell-offs.

Commodities

Crude and gold both do well after equity peaks, with a more mixed picture for copper. The latest sell-off has seen commodities follow the usual path post S&P tops, with little differentiation between bull corrections and bear markets. **The one market where this sell-off has been unusual is copper,** which has been relatively resilient since the S&P peak; the typical pattern sees copper weaken in the first three months post equities rolling over in both bear markets and bull corrections.

Exhibit 30:

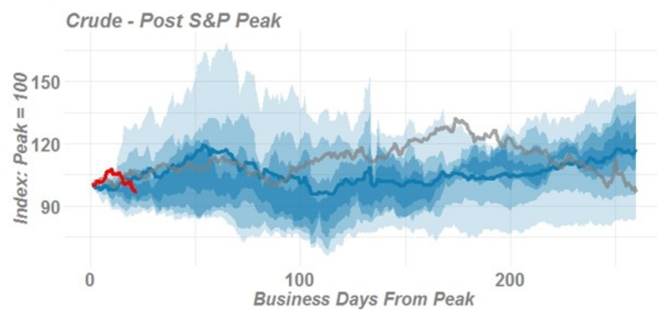
Commodities performance 1-12 months from stock market peaks

	From S&P Peak							
	BULL CORRECTION				BEAR MARKETS			
% chg	1M	3M	6M	12M	1M	3M	6M	12M
Crude	3%	15%	6%	17%	4%	12%	14%	-2%
Gold	1%	4%	6%	11%	2%	7%	15%	5%
Silver	-4%	1%	-5%	15%	0%	-4%	-1%	-6%
Copper	-3%	-4%	-5%	0%	-7%	-4%	11%	-16%

Source: Bloomberg, Morgan Stanley Research; Note: Shows summary performance of episodes where S&P sold off by 10% or more. Data since 1950, or whenever history begins.

Exhibit 31:

Crude tends to do well in the first three months for both bull corrections and bear markets



Source: Bloomberg, Morgan Stanley Research; Note: Shows summary of episodes where S&P sold off by 10% or more. Dark blue line is mean for bull corrections, each band represents decile starting at 10% to 90%. Grey line is mean for bear markets. Red line is current sell-off. Data since 1950, or whenever history begins.

Checklist for the rolling bear market

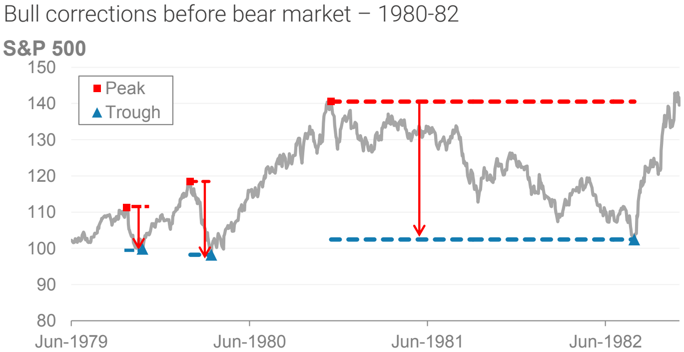
As we've noted in the past, **not all large drawdowns must be 'the big one'** – since 1950, S&P bull corrections (10%+ declines with quick recoveries) have happened almost twice as frequently as bear markets.

But tremors should also not be ignored, with bull corrections leading into a final rally to a cycle top – and the start of the next bear market – a common pattern in late-cycles. For ACWI, all four of the bear markets since 1987 have been preceded by 5%+ drawdowns within the prior 12 months. For the 16 S&P bear markets since 1927, 14 saw a 5%+ drawdown and correction before stocks topped out for the cycle. **Not all corrections are followed by bear markets – but almost all bear markets have been preceded by corrections.**

This is probably cold comfort for investors watching the latest sell-off, given that we *have* already seen market 'tremors' earlier this year. **The bright side – if one can call it that – is that there have been prior examples of large, quick and severe drawdowns that are followed closely by other large, quick and severe drawdowns.** The end destination remains unchanged – the bear market arrives just the same – but the journey there may involve a few more extreme ups and downs. This was the case in the early 1980s (**Exhibit 32**) and, perhaps more pertinent to today given debate about an extended cycle, the case in the late 1990s (**Exhibit 33**).

Exhibit 32:

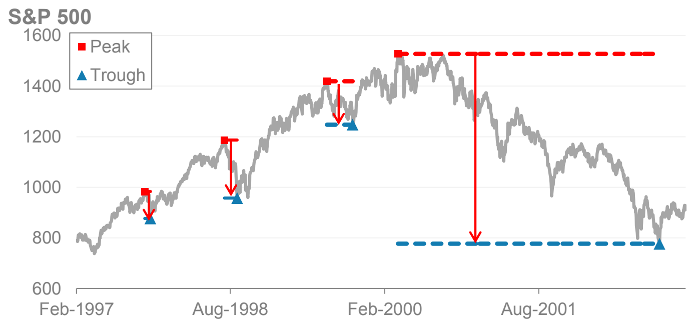
Bull corrections before bear market – 1980-82



Source: Bloomberg, Morgan Stanley Research

Exhibit 33:

Bull corrections before bear market – 1997-2002



Source: Bloomberg, Morgan Stanley Research

But the checklist for the rolling bear market suggests that, **even if the current sell-off turns out to be what is likely a bull correction, the end is probably closer than it was in the February episode.** In **Exhibit 34** , we show the average number of months various assets have tended to peak and trough before or after ACWI and S&P peaks. The caveat here is that for some of these series, data only go back 2-3 cycles, but it's a start. A few observations about the *typical* late-cycle sequencing:

- **Equities – regions tend to peak together:** MSCI Europe, TOPIX and MSCI EM have on average peaked within 1-2 days of an S&P 500 peak.
- **Credit – IG spreads tend to trough ~10 months before equities peak:** Credit tends to 'crack' before equities, and has been a reliable late-cycle signal.
- **Bonds – US real and nominal yields tend to peak ~3 months before bear markets:** US real and nominal yields tend to peak before equities make a cyclical top.

But no two cycles are the same, so more useful is to see whether these various markets have likely peaked or troughed this cycle and *when*, as a check to see how far along the rolling bear market we are. A few things stand out:

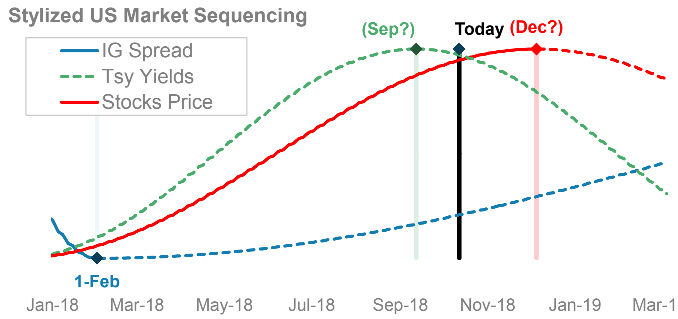
- **Equities – most regions ex US** did **peak together, back in January:** In retrospect, many equity markets topped out in late January, on the 23rd for TOPIX and MSCI Europe, and on the 26th for EM and ACWI. The US has outperformed since then, and such outperformance is rare, given that these markets tend to be highly correlated around tops.
- **Credit – IG spreads likely troughed in February, a clear bearish signal:** US IG credit has drifted slowly wider since early this year; given that IG spreads tend to trough ~10 months before equities

tops, we've argued that it builds a timeline for a potential equity market top close to the end of this year. US HY tends to trough ~7 months before S&P, and the asset's resilience has been one of the puzzles of this late-cycle; but there's a likelihood that US HY spreads saw a trough in early October as well, ticking one more item off in the rolling bear market checklist.

- **Bonds – the odd asset out:** Over the last few cycles, nominal and real yields have tended to lead equity markets by 3-4 months. However, in this cycle, there seems to be no sign of the yield rise stopping. Given the extraordinary policy environment since the crisis, maybe it's fair that rates is the one area that looks atypical compared to prior late cycles – it's up for debate whether this means that equities have a longer runway until yields roll over, or we'll see a break with the past with yields only rolling after stocks, a painful scenario for many asset allocators.

Exhibit 35:

Average market late-cycle sequencing: Signal from credit suggests that we're closer to the end than we were during the January/February 2018 sell-off



Source: Morgan Stanley Research

Exhibit 34:

Rolling bear market checklist – typical sequencing around equity cyclical tops, and where we are now

Asset	Unit	P/T	Avg P/T Mths Around S&P	Already P/T-ed?	Est. P/T Date	Chg Since Peak/Trough
EUR HY	Sprd	Trough	-11	Y	Nov-17	147 bp
US IG	Sprd	Trough	-10	Y	Feb-18	26 bp
Cons. Staple	Px	Peak	-10	Y	Jan-18	-12 %
US HY	Sprd	Trough	-7	Y?	Oct-18	40 bp
EUR IG	Sprd	Trough	-7	Y	Feb-18	47 bp
EM USD	Sprd	Trough	-4	Y	Feb-18	72 bp
Financials	Px	Peak	-4	Y	Jan-18	-18 %
JGB 10Y	Yld	Peak	-4	??		
UST Real Yld 10Y	Yld	Peak	-3	??		
Cons. Disc.	Px	Peak	-3	Y	Jan-18	-10 %
UST 10Y	Yld	Peak	-3	??		
DBR 10Y	Yld	Peak	-3	??		
Materials	Px	Peak	-3	Y	Jan-18	-18 %
UKT 10Y	Yld	Peak	-2	??		
S&P 500	Px	Peak	0	??		
Tech.	Px	Peak	0	Y	Aug-18	-9 %
Telecom	Px	Peak	0	Y	Jan-18	-12 %
ACWI	Px	Peak	0	Y	Jan-18	-10 %
MSCI EM	Px	Peak	0	Y	Jan-18	-24 %
MSCI Europe	Px	Peak	0	Y	Jan-18	-10 %
Industrials	Px	Peak	0	Y	Jan-18	-13 %
TOPIX	Px	Peak	0	Y	Jan-18	-11 %
Utilities	Px	Peak	3	??		
Healthcare	Px	Peak	3	Y?	Oct-18	-4 %
Energy	Px	Peak	7	??		

Source: Bloomberg, Morgan Stanley Research; Note: Sector all based on ACWI. "?" shows where it's uncertain whether market has peaked/troughed. "Y?" means potentially market has peaked/troughed, but peak/trough to recent to determine.

Appendix: Equity sell-offs

Exhibit 36:

ACWI – 10%+ drawdowns in history and current sell-off

Peak Date	Trough Date	Business Days	Drawdown	Run Up		From Peak				From Trough				Type
				1M	12M	1M	3M	6M	12M	1M	3M	6M	12M	
17-Apr-91	19-Aug-91	89	-11%	2%	10%	-4%	-6%	-2%	-5%	8%	9%	10%	3%	Correction
06-Jan-92	08-Apr-92	68	-13%	9%	22%	-3%	-10%	-7%	-9%	8%	6%	3%	16%	Correction
31-Jul-97	12-Nov-97	75	-11%	4%	29%	-8%	-9%	-4%	8%	3%	12%	20%	16%	Bull Correction
20-Jul-98	05-Oct-98	56	-21%	7%	16%	-9%	-12%	1%	12%	18%	28%	33%	37%	Bull Correction
27-Mar-00	09-Oct-02	663	-51%	8%	23%	-5%	-6%	-11%	-27%	14%	15%	10%	35%	Bear Market
28-Nov-02	12-Mar-03	75	-15%	7%	-15%	-5%	-10%	2%	18%	8%	25%	30%	50%	Bull Correction
09-May-06	13-Jun-06	26	-13%	5%	26%	-10%	-6%	2%	14%	4%	9%	19%	29%	Bull Correction
13-Jul-07	16-Aug-07	25	-11%	5%	32%	-8%	2%	-7%	-18%	6%	10%	0%	-8%	Correction
31-Oct-07	09-Mar-09	354	-60%	3%	22%	-5%	-14%	-10%	-47%	22%	43%	60%	74%	Bear Market
15-Apr-10	05-Jul-10	58	-16%	4%	44%	-10%	-10%	0%	8%	11%	14%	25%	30%	Bull Correction
02-May-11	04-Oct-11	112	-24%	4%	16%	-4%	-7%	-13%	-8%	13%	12%	23%	23%	Bear Market
28-Oct-11	25-Nov-11	21	-13%	12%	1%	-9%	0%	3%	3%	7%	19%	8%	18%	Bull Correction
19-Mar-12	04-Jun-12	56	-14%	3%	1%	-3%	-9%	0%	7%	9%	11%	14%	26%	Bull Correction
21-May-15	11-Feb-16	191	-20%	1%	6%	-1%	-8%	-7%	-12%	11%	12%	19%	24%	Bear Market
26-Jan-18	11-Oct-18	185	-11%	7%	26%	-5%	-7%	-5%	NA	NA	NA	NA	NA	NA
SUMMARY STATS - ALL														
Average		134	-21%	5%	17%	-6%	-8%	-4%	-4%	5%	9%	10%	25%	
Median		72	-14%	4%	19%	-5%	-8%	-3%	-1%	5%	6%	14%	29%	
Bull Corrections														
Average		52	-14%	6%	15%	-8%	-8%	1%	10%	9%	17%	21%	29%	
Median		56	-14%	5%	16%	-9%	-9%	1%	8%	8%	14%	20%	29%	
Bear Markets														
Average		330	-39%	4%	17%	-4%	-9%	-10%	-24%	15%	21%	28%	39%	
Median		273	-38%	3%	19%	-4%	-7%	-10%	-19%	13%	14%	21%	30%	

Source: Bloomberg, Morgan Stanley Research; Note: A 'bull correction' is defined as an episode where an equity market has seen a 10% or greater drawdown, but recovers to the prior peak within 12 months, a 'bear market' when stocks sell off 20% or more, with no recovery within 12 months, and a 'correction' as all the other big sell-offs which don't fall into either category.

Exhibit 37:

S&P 500 – 10%+ drawdowns in history and current sell-off

Peak Date	Trough Date	Business Days	Drawdown	Run Up 1M	Run Up 12M	From Peak 1M	From Peak 3M	From Peak 6M	From Peak 12M	From Trough 1M	From Trough 3M	From Trough 6M	From Trough 12M	Type
05-Jan-53	14-Sep-53	181	-15%	4%	12%	-1%	-8%	-9%	-6%	4%	9%	17%	37%	Correction
23-Sep-55	11-Oct-55	13	-11%	7%	41%	-7%	0%	7%	2%	10%	8%	17%	13%	Bull Correction
02-Aug-56	22-Oct-57	319	-22%	5%	17%	-4%	-6%	-10%	-4%	4%	6%	10%	32%	Bear Market
03-Aug-59	25-Oct-60	322	-14%	2%	27%	-3%	-5%	-8%	-9%	7%	16%	25%	30%	Correction
12-Dec-61	26-Jun-62	141	-28%	2%	28%	-5%	-3%	-22%	-14%	9%	9%	20%	34%	Bear Market
22-Aug-62	23-Oct-62	45	-11%	5%	-12%	-3%	2%	10%	19%	14%	22%	30%	36%	Bull Correction
09-Feb-66	07-Oct-66	173	-22%	1%	9%	-6%	-7%	-12%	-7%	10%	12%	22%	33%	Bear Market
25-Sep-67	05-Mar-68	117	-10%	5%	25%	-3%	-2%	-9%	5%	7%	14%	13%	13%	Bull Correction
29-Nov-68	26-May-70	388	-36%	4%	15%	-4%	-9%	-5%	-13%	7%	17%	22%	44%	Bear Market
28-Apr-71	23-Nov-71	150	-14%	5%	28%	-5%	-7%	-10%	2%	12%	17%	22%	29%	Bull Correction
11-Jan-73	03-Oct-74	451	-48%	1%	17%	-3%	-6%	-12%	-23%	17%	13%	31%	35%	Bear Market
07-Nov-74	06-Dec-74	22	-14%	16%	-30%	-13%	4%	19%	19%	9%	30%	42%	34%	Bull Correction
15-Jul-75	16-Sep-75	46	-14%	6%	15%	-10%	-7%	0%	11%	9%	8%	23%	27%	Bull Correction
21-Sep-76	06-Mar-78	380	-19%	5%	27%	-7%	-3%	-6%	-11%	3%	15%	19%	13%	Correction
12-Sep-78	14-Nov-78	46	-14%	3%	11%	-2%	-10%	-7%	0%	4%	7%	6%	11%	Bull Correction
05-Oct-79	07-Nov-79	24	-10%	5%	7%	-9%	-4%	-8%	16%	8%	16%	7%	32%	Bull Correction
13-Feb-80	27-Mar-80	32	-17%	7%	20%	-11%	-10%	4%	8%	8%	18%	31%	39%	Bull Correction
28-Nov-80	12-Aug-82	445	-27%	10%	32%	-4%	-7%	-6%	-11%	19%	38%	44%	58%	Bear Market
10-Oct-83	24-Jul-84	207	-14%	3%	28%	-5%	-2%	-10%	-6%	13%	13%	19%	30%	Correction
25-Aug-87	04-Dec-87	74	-34%	9%	33%	-5%	-27%	-21%	-24%	16%	19%	19%	21%	Bear Market
09-Oct-89	30-Jan-90	82	-10%	3%	29%	-6%	-2%	-5%	-13%	3%	3%	10%	4%	Correction
16-Jul-90	11-Oct-90	64	-20%	2%	11%	-8%	-18%	-15%	4%	8%	6%	28%	29%	Bull Correction
07-Oct-97	27-Oct-97	15	-11%	6%	40%	-5%	-2%	13%	0%	9%	9%	24%	22%	Bull Correction
17-Jul-98	31-Aug-98	32	-19%	7%	30%	-7%	-11%	5%	20%	6%	22%	29%	38%	Bull Correction
16-Jul-99	15-Oct-99	66	-12%	7%	20%	-5%	-12%	3%	6%	14%	17%	9%	10%	Bull Correction
24-Mar-00	09-Oct-02	664	-49%	12%	19%	-3%	-6%	-5%	-25%	15%	17%	11%	33%	Bear Market
28-Nov-02	11-Mar-03	74	-15%	6%	-18%	-6%	-11%	1%	13%	9%	23%	28%	42%	Bull Correction
09-Oct-07	09-Mar-09	370	-57%	8%	16%	-6%	-11%	-13%	-36%	22%	39%	50%	68%	Bear Market
23-Apr-10	02-Jul-10	51	-16%	4%	41%	-12%	-9%	-3%	10%	10%	12%	23%	31%	Bull Correction
29-Apr-11	03-Oct-11	112	-19%	3%	15%	-1%	-5%	-6%	3%	13%	14%	29%	31%	Bull Correction
21-May-15	11-Feb-16	191	-14%	2%	13%	0%	-4%	-2%	-4%	10%	13%	20%	26%	Correction
26-Jan-18	08-Feb-18	10	-10%	7%	25%	-4%	-7%	-2%	NA	8%	6%	11%	NA	NA
20-Sep-18	11-Oct-18	16	-7%	2%	17%	NA	NA	NA	NA	NA	NA	NA	NA	NA
SUMMARY STATS - ALL														
Average		166	-20%	5%	19%	-6%	-7%	-4%	-2%	10%	16%	23%	30%	
Median		97	-15%	5%	19%	-5%	-6%	-6%	0%	9%	15%	22%	31%	
Bull Corrections														
Average		55	-14%	6%	17%	-7%	-6%	0%	9%	9%	15%	23%	28%	
Median		46	-14%	6%	20%	-7%	-7%	1%	8%	9%	16%	24%	30%	
Bear Markets														
Average		336	-36%	6%	21%	-4%	-9%	-12%	-18%	13%	19%	26%	40%	
Median		370	-34%	5%	17%	-4%	-7%	-12%	-14%	15%	17%	22%	34%	

Source: Bloomberg, Morgan Stanley Research; Note: A 'bull correction' is defined as an episode where an equity market has seen a 10% or greater drawdown, but recovers to the prior peak within 12 months, a 'bear market' when stocks sell off 20% or more, with no recovery within 12 months, and a 'correction' as all the other big sell-offs which don't fall into either category.

Exhibit 38:

MSCI Europe – 10%+ drawdowns in history and current sell-off

Peak Date	Trough Date	Business Days	Drawdown	Run Up 1M	Run Up 12M	From Peak 1M	From Peak 3M	From Peak 6M	From Peak 12M	From Trough 1M	From Trough 3M	From Trough 6M	From Trough 12M	Type
05-Feb-76	27-Oct-76	190	-20%	2%	28%	-2%	-2%	-8%	-9%	5%	13%	16%	23%	Bear Market
08-Oct-79	28-Mar-80	125	-11%	5%	7%	-11%	-10%	-9%	3%	3%	10%	15%	20%	Bull Correction
24-Apr-81	28-Sep-81	112	-15%	5%	23%	-5%	-6%	-12%	-1%	3%	9%	13%	17%	Correction
03-May-84	23-Jul-84	58	-11%	4%	22%	-5%	-7%	2%	16%	9%	13%	24%	35%	Bull Correction
22-Apr-86	22-Jul-86	66	-10%	5%	56%	-3%	-10%	-5%	3%	10%	6%	11%	28%	Bull Correction
05-Oct-87	10-Nov-87	27	-35%	3%	22%	-30%	-31%	-26%	-19%	3%	7%	14%	29%	Bear Market
08-Sep-89	27-Oct-89	36	-11%	2%	40%	-3%	-3%	-4%	-14%	4%	8%	5%	-8%	Correction
18-Jul-90	16-Jan-91	131	-24%	3%	8%	-12%	-20%	-24%	-7%	14%	25%	24%	23%	Bear Market
02-Sep-91	23-Dec-91	81	-11%	2%	12%	-2%	-9%	-1%	-13%	9%	9%	10%	10%	Correction
11-May-92	25-Aug-92	77	-18%	8%	7%	-3%	-14%	-10%	1%	8%	11%	20%	38%	Bull Correction
02-Feb-94	09-Mar-95	287	-17%	4%	37%	-6%	-8%	-8%	-14%	4%	11%	16%	25%	Correction
03-Oct-97	28-Oct-97	18	-12%	6%	46%	-9%	-1%	22%	-8%	6%	15%	34%	22%	Correction
20-Jul-98	08-Oct-98	59	-31%	9%	41%	-8%	-23%	-8%	-1%	20%	37%	39%	39%	Bear Market
04-Sep-00	12-Mar-03	658	-58%	7%	26%	-7%	-10%	-16%	-27%	17%	28%	35%	50%	Bear Market
09-May-06	13-Jun-06	26	-12%	1%	31%	-11%	-6%	4%	13%	5%	10%	18%	28%	Bull Correction
01-Jun-07	09-Mar-09	462	-57%	3%	24%	-1%	-6%	-6%	-15%	16%	30%	47%	60%	Bear Market
15-Apr-10	05-Jul-10	58	-15%	4%	37%	-10%	-9%	-3%	0%	11%	10%	17%	18%	Bull Correction
16-Feb-11	22-Sep-11	157	-25%	3%	14%	-7%	-3%	-18%	-11%	12%	10%	21%	22%	Bear Market
27-Oct-11	24-Nov-11	21	-12%	9%	-7%	-8%	1%	0%	4%	9%	18%	6%	19%	Bull Correction
16-Mar-12	04-Jun-12	57	-15%	3%	-1%	-5%	-11%	0%	10%	9%	13%	18%	29%	Bull Correction
22-May-13	24-Jun-13	24	-12%	9%	32%	-10%	-4%	3%	7%	10%	13%	16%	23%	Bull Correction
10-Jun-14	16-Oct-14	93	-12%	3%	17%	-4%	-1%	-3%	4%	9%	9%	25%	11%	Bull Correction
10-Apr-15	11-Feb-16	220	-25%	5%	18%	-4%	-6%	-11%	-17%	13%	9%	17%	24%	Bear Market
20-Apr-16	27-Jun-16	49	-10%	3%	-12%	-4%	-1%	2%	10%	11%	11%	18%	28%	Bull Correction
23-Jan-18	12-Oct-18	189	-11%	3%	13%	-6%	-5%	-3%	NA	NA	NA	NA	NA	NA
SUMMARY STATS - ALL														
Average		129	-20%	5%	22%	-7%	-8%	-6%	-4%	5%	3%	7%	13%	
Median		72	-15%	4%	22%	-6%	-7%	-5%	-1%	4%	3%	8%	10%	
Bull Corrections														
Average		59	-13%	5%	17%	-7%	-7%	-2%	6%	9%	11%	17%	25%	
Median		58	-12%	4%	17%	-5%	-7%	0%	4%	9%	11%	18%	28%	
Bear Markets														
Average		238	-34%	4%	23%	-9%	-13%	-15%	-13%	13%	20%	27%	34%	
Median		174	-28%	3%	23%	-7%	-8%	-14%	-13%	13%	19%	22%	26%	

Source: Bloomberg, Morgan Stanley Research; Note: A 'bull correction' is defined as an episode where an equity market has seen a 10% or greater drawdown, but recovers to the prior peak within 12 months, a 'bear market' when stocks sell off 20% or more, with no recovery within 12 months, and a 'correction' as all the other big sell-offs which don't fall into either category.

Exhibit 39:

TOPIX – 10%+ drawdowns in history and current sell-off

Peak Date	Trough Date	Business Days	Drawdown	Run Up 1M	Run Up 12M	From Peak 1M	From Peak 3M	From Peak 6M	From Peak 12M	From Trough 1M	From Trough 3M	From Trough 6M	From Trough 12M	Type
04-Feb-53	15-Nov-54	464	-36%	26%	119%	-19%	-23%	-17%	-26%	6%	20%	14%	37%	Bear Market
21-Jan-57	27-Dec-57	245	-21%	6%	40%	-5%	-2%	-17%	-16%	8%	10%	21%	41%	Bear Market
30-Nov-59	21-Dec-59	16	-13%	4%	57%	-11%	-2%	-1%	19%	11%	15%	16%	33%	Bull Correction
03-May-60	02-Jun-60	23	-13%	6%	44%	-13%	-2%	9%	19%	12%	20%	25%	35%	Bull Correction
14-Jul-61	30-Oct-62	338	-34%	8%	30%	-6%	-22%	-19%	-20%	21%	26%	46%	23%	Bear Market
10-May-63	15-Jul-65	570	-34%	1%	22%	-3%	-15%	-20%	-22%	11%	16%	30%	32%	Bear Market
31-May-67	11-Dec-67	139	-16%	5%	8%	-1%	-10%	-14%	-5%	3%	5%	17%	31%	Correction
02-Oct-68	12-Nov-68	30	-11%	9%	36%	-7%	-9%	1%	11%	3%	11%	19%	28%	Bull Correction
08-Apr-70	09-Dec-70	176	-21%	2%	28%	-11%	-15%	-17%	-4%	3%	16%	29%	26%	Bear Market
13-Aug-71	24-Aug-71	8	-19%	3%	31%	-13%	-16%	2%	46%	7%	8%	30%	84%	Bull Correction
24-Jan-73	09-Oct-74	446	-40%	10%	102%	-6%	-19%	-9%	-25%	5%	7%	27%	21%	Bear Market
02-Jul-75	29-Sep-75	64	-13%	4%	1%	-5%	-13%	-3%	7%	10%	11%	17%	22%	Bull Correction
29-Sep-77	24-Nov-77	41	-10%	1%	9%	-4%	-7%	4%	11%	4%	9%	17%	26%	Bull Correction
17-Aug-81	17-Aug-82	262	-15%	2%	27%	-7%	-6%	-6%	-15%	4%	10%	15%	31%	Correction
02-Apr-84	24-Jul-84	82	-14%	14%	43%	-1%	-10%	-6%	14%	9%	14%	24%	39%	Bull Correction
20-Aug-86	22-Oct-86	46	-17%	14%	55%	-9%	-10%	10%	32%	8%	27%	64%	49%	Bull Correction
11-Jun-87	04-Jan-88	148	-25%	4%	71%	-11%	-9%	-17%	-2%	13%	27%	27%	39%	Bear Market
18-Dec-89	18-Aug-92	697	-62%	6%	27%	-6%	-19%	-17%	-38%	23%	11%	17%	53%	Bear Market
04-Sep-92	17-Nov-92	53	-14%	17%	-19%	-9%	-8%	-11%	20%	9%	6%	30%	27%	Bull Correction
03-Sep-93	29-Nov-93	62	-20%	2%	20%	-4%	-14%	-4%	-3%	6%	21%	24%	10%	Bear Market
13-Jun-94	13-Jun-95	262	-30%	4%	3%	-3%	-7%	-12%	-30%	11%	22%	28%	40%	Bear Market
26-Jun-96	15-Oct-98	602	-43%	4%	43%	-7%	-7%	-15%	-10%	13%	9%	37%	57%	Bear Market
07-Feb-00	18-Dec-02	748	-54%	9%	61%	-5%	-3%	-16%	-28%	5%	-3%	10%	21%	Bear Market
20-Oct-03	19-Nov-03	23	-14%	3%	24%	-14%	-3%	7%	0%	6%	10%	16%	17%	Correction
14-Apr-04	17-May-04	24	-13%	8%	54%	-10%	-5%	-8%	-3%	11%	3%	7%	7%	Correction
07-Apr-06	13-Jun-06	48	-18%	11%	48%	-2%	-12%	-8%	-4%	6%	9%	12%	20%	Correction
26-Feb-07	12-Mar-09	534	-61%	5%	10%	-6%	-5%	-13%	-25%	21%	34%	37%	33%	Bear Market
12-Jun-09	13-Jul-09	22	-10%	7%	-31%	-9%	0%	-7%	-9%	13%	5%	10%	1%	Correction
26-Aug-09	27-Nov-09	68	-17%	5%	-20%	-5%	-15%	-8%	-17%	13%	10%	8%	7%	Correction
15-Apr-10	04-Jun-12	558	-30%	6%	20%	-8%	-14%	-16%	-15%	12%	5%	12%	58%	Bear Market
22-May-13	13-Jun-13	17	-18%	11%	77%	-14%	-12%	-3%	-10%	15%	13%	19%	19%	Correction
08-Jan-14	14-Apr-14	69	-13%	4%	49%	-9%	-12%	-3%	4%	4%	12%	10%	40%	Bull Correction
25-Sep-14	17-Oct-14	17	-13%	5%	10%	-7%	6%	17%	6%	18%	16%	35%	28%	Bull Correction
10-Aug-15	12-Feb-16	135	-29%	7%	35%	-11%	-6%	-18%	-23%	15%	10%	11%	29%	Bear Market
22-Apr-16	24-Jun-16	46	-14%	3%	-13%	-6%	-6%	-3%	6%	9%	12%	28%	34%	Bull Correction
23-Jan-18	23-Mar-18	44	-13%	4%	27%	-9%	-7%	-9%	NA	6%	5%	8%	NA	NA
02-Oct-18	15-Oct-18	10	-8%	5%	8%	NA	NA	NA	NA	NA	NA	NA	NA	NA
SUMMARY STATS - ALL														
Average		198	-23%	7%	32%	-8%	-9%	-7%	-4%	10%	13%	22%	31%	
Median		69	-18%	5%	29%	-7%	-9%	-8%	-4%	9%	11%	19%	31%	
Bull Corrections														
Average		41	-14%	7%	25%	-8%	-7%	1%	16%	9%	13%	26%	37%	
Median		44	-13%	4%	33%	-8%	-9%	0%	13%	9%	12%	25%	34%	
Bear Markets														
Average		399	-36%	7%	42%	-7%	-12%	-15%	-19%	11%	15%	25%	35%	
Median		446	-34%	6%	30%	-6%	-14%	-17%	-22%	11%	16%	27%	33%	

Source: Bloomberg, Morgan Stanley Research; Note: A 'bull correction' is defined as an episode where an equity market has seen a 10% or greater drawdown, but recovers to the prior peak within 12 months, a 'bear market' when stocks sell off 20% or more, with no recovery within 12 months, and a 'correction' as all the other big sell-offs which don't fall into either category.

Exhibit 40:

MSCI EM – 10%+ drawdowns in history and current sell-off

				Run Up		From Peak				From Trough				
Peak Date	Trough Date	Business Days	Drawdown	1M	12M	1M	3M	6M	12M	1M	3M	6M	12M	Type
19-Feb-90	02-Apr-90	31	-19%	7%	72%	-13%	-5%	-5%	-5%	9%	22%	0%	23%	Correction
01-Aug-90	16-Jan-91	121	-32%	8%	50%	-14%	-26%	-23%	1%	27%	42%	42%	71%	Bull Correction
17-Apr-92	24-Aug-92	92	-19%	5%	43%	-3%	-9%	-18%	-4%	1%	6%	13%	36%	Correction
11-Feb-94	09-May-94	62	-19%	6%	75%	-9%	-18%	-4%	-21%	9%	18%	24%	2%	Correction
16-Sep-94	09-Mar-95	125	-33%	5%	44%	-2%	-12%	-29%	-19%	10%	21%	19%	22%	Bear Market
13-Jul-95	15-Nov-95	90	-14%	5%	0%	-3%	-7%	-3%	0%	6%	17%	19%	12%	Bull Correction
09-Jul-97	10-Sep-98	307	-59%	6%	14%	-4%	-12%	-32%	-40%	8%	27%	35%	72%	Bear Market
07-Jan-99	14-Jan-99	6	-11%	7%	-16%	-7%	10%	34%	53%	6%	27%	49%	80%	Bull Correction
05-Jul-99	18-Oct-99	76	-10%	14%	28%	-8%	-9%	15%	4%	10%	36%	13%	-7%	Bull Correction
10-Feb-00	21-Sep-01	422	-54%	7%	78%	-6%	-19%	-20%	-31%	9%	24%	43%	15%	Bear Market
18-Apr-02	10-Oct-02	126	-30%	4%	12%	-2%	-10%	-25%	-19%	13%	18%	11%	58%	Bear Market
15-Jan-03	11-Mar-03	40	-12%	4%	-3%	-9%	-4%	14%	51%	5%	21%	43%	80%	Bull Correction
12-Apr-04	17-May-04	26	-20%	6%	74%	-15%	-14%	-3%	11%	5%	7%	27%	36%	Bull Correction
28-Feb-05	18-Apr-05	36	-11%	10%	21%	-8%	-6%	2%	34%	3%	11%	18%	55%	Bull Correction
08-May-06	13-Jun-06	27	-25%	8%	60%	-18%	-14%	-6%	13%	10%	14%	32%	52%	Bull Correction
22-Feb-07	05-Mar-07	8	-11%	4%	20%	-2%	6%	10%	22%	12%	23%	29%	36%	Bull Correction
23-Jul-07	16-Aug-07	19	-18%	9%	59%	-13%	6%	-8%	-10%	15%	32%	19%	3%	Correction
29-Oct-07	27-Oct-08	261	-66%	11%	66%	-10%	-19%	-11%	-66%	13%	14%	39%	113%	Bear Market
06-Jan-09	02-Mar-09	40	-22%	22%	-50%	-12%	1%	24%	67%	22%	69%	77%	100%	Bull Correction
11-Jan-10	08-Feb-10	21	-13%	7%	86%	-11%	1%	-7%	11%	11%	8%	14%	26%	Bull Correction
15-Apr-10	25-May-10	29	-18%	6%	62%	-10%	-9%	8%	13%	11%	14%	27%	31%	Bull Correction
02-May-11	04-Oct-11	112	-31%	3%	20%	-3%	-5%	-18%	-15%	17%	13%	27%	21%	Bear Market
28-Oct-11	25-Nov-11	21	-13%	13%	-9%	-10%	1%	1%	-2%	5%	22%	3%	14%	Correction
02-Mar-12	04-Jun-12	67	-18%	5%	-5%	-2%	-17%	-12%	-2%	8%	8%	14%	13%	Correction
03-Jan-13	24-Jun-13	123	-18%	7%	16%	-1%	-6%	-15%	-8%	9%	15%	12%	18%	Correction
22-Oct-13	05-Feb-14	77	-12%	3%	5%	-4%	-7%	-3%	-6%	5%	10%	15%	7%	Correction
03-Sep-14	21-Jan-16	362	-37%	3%	17%	-9%	-10%	-11%	-28%	9%	24%	27%	30%	Bear Market
26-Jan-18	11-Oct-18	185	-25%	11%	39%	-5%	-9%	-14%	NA	NA	NA	NA	NA	NA
SUMMARY STATS - ALL														
Average		104	-24%	7%	31%	-8%	-8%	-6%	0%	10%	21%	26%	38%	
Median		72	-19%	6%	24%	-8%	-9%	-7%	-2%	9%	18%	24%	30%	
Bull Corrections														
Average		43	-17%	8%	28%	-10%	-6%	5%	23%	11%	24%	32%	48%	
Median		33	-14%	7%	24%	-10%	-7%	5%	13%	10%	19%	28%	44%	
Bear Markets														
Average		245	-44%	6%	36%	-5%	-12%	-21%	-31%	11%	20%	29%	47%	
Median		261	-37%	5%	20%	-4%	-12%	-20%	-28%	10%	21%	27%	30%	

Source: Bloomberg, Morgan Stanley Research; Note: A 'bull correction' is defined as an episode where an equity market has seen a 10% or greater drawdown, but recovers to the prior peak within 12 months, a 'bear market' when stocks sell off 20% or more, with no recovery within 12 months, and a 'correction' as all the other big sell-offs which don't fall into either category.

Valuation methodology and risks

Trade	Current Price	Rationale	Risk
Long CDX HY Dec-18 50D Puts	0.95%	We remain bearish on US HY credit given late-cycle risks, poor fundamentals (leverage remains high) and rich valuations. CDX HY spreads appear to have troughed in February but remain very low, while CDX HY implied vol remains at multi-year lows.	Strong earnings growth that keeps HY credit supported poses the main risk to this trade.
Buy USDJPY 6m ATMF Straddle (Strike 110.8)	4.3%	Vol curves out to 6 months are not as steep as they were in 2014 when implies vols were low. A break-out of USDJPY from the 6-month range and a normalization of vols to JPY vols to 3-year highs can generate material upside for this trade.	The key risk is a subdued macro trajectory that keeps volatility contained.
Long US 10y20y ATMF Straddle (Strike 3.32)	16.6%	Rates volatility is close to all-time lows as structured product issuance dominated by Taiwan (Formosa bonds - USD denominated callable bonds which depress the rates volatility) played an important role in keeping implied vols suppressed. Lower target yields combined with higher interest rates reduce the need to invest in callable bonds in favour of bullet bonds by Taiwanese insurers. The increased FX hedging cost as a result of the rise in the fed funds rate should also dampen appetite.	We think the main risk to the trade is a sell-off in rates that increases vega on dealers' books, pushing implied vol to new lows.

Macro event calendar – next two weeks

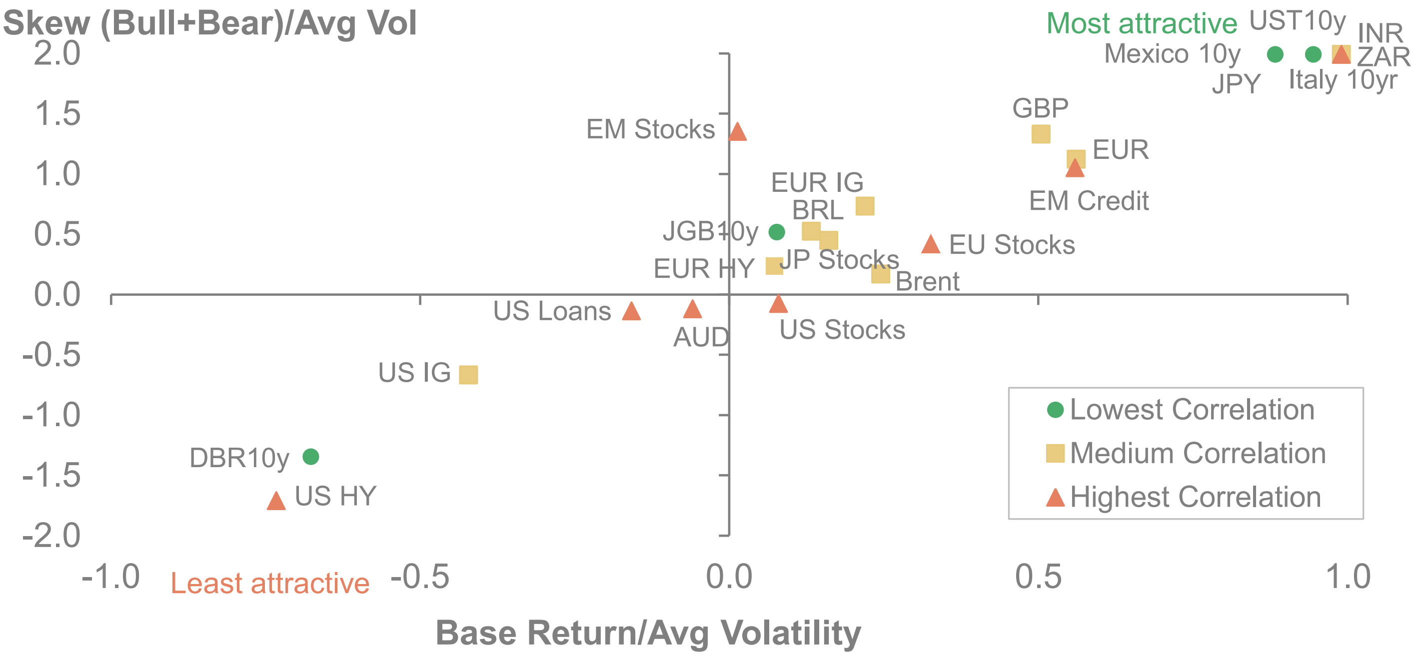
Exhibit 41:

Key global events over the next two weeks, with Morgan Stanley forecasts where applicable

Date	Time (Ldn)	Region	Event	Ref. Period	MS forecast	Market	Previous
23-Oct	15:00	EUR	Consumer Confidence	Oct A		-3	-2.9
23-Oct	16:20	GBP	BoE's Carney spks (Machine Learning)				
24-Oct	00:30	JPY	PMI Manufacturing	Oct P			52.5
24-Oct	06:00	JPY	Leading Index CI	Aug F			104.4
24-Oct	08:30	EUR	German PMI Manufacturing	Oct P		53.4	53.7
24-Oct	09:00	EUR	PMI Manufacturing	Oct P		53	53.2
24-Oct	09:00	EUR	PMI Services	Oct P		54.5	54.7
24-Oct	09:00	EUR	M3 (YoY)	Sep		3.5%	3.5%
24-Oct	18:00	USD	Fed's Bostic (voter) spks (Energy Summit)				
24-Oct	18:10	USD	Fed's Mester (voter) spks				
25-Oct	12:45	EUR	ECB Rates Decision		0.00%	0%	0%
25-Oct	12:45	EUR	ECB Deposit Facility Rate		-0.40%	-0.4%	-0.4%
25-Oct	13:30	EUR	ECB Press Conference				
25-Oct	13:30	USD	Durable Goods Orders	Sep P		-1%	4.4%
26-Oct	02:00	USD	Fed's Mester (voter) spks (Money Marketeers)				
26-Oct	13:30	USD	GDP (QoQ)	3Q A	3.5%	3.3%	4.2%
26-Oct	13:30	USD	PCE Core (QoQ)	3Q A			2.1%
26-Oct	15:00	USD	Univ. of Michigan Confidence	Oct F		99	99
29-Oct	12:30	USD	Personal Income	Sep		0.3%	0.3%
29-Oct	12:30	USD	Personal Spending	Sep		0.4%	0.3%
29-Oct	12:30	USD	PCE Core (YoY)	Sep			2%
29-Oct	23:30	JPY	Unemployment Rate	Sep			2.4%
30-Oct	10:00	EUR	Eurozone GDP (QoQ)	3Q A			0.4%
30-Oct	10:00	EUR	Consumer Confidence	Oct F		-3	-2.9
30-Oct	14:00	USD	Consumer Confidence Index	Oct		135	138.4
30-Oct	23:50	JPY	Industrial Production (MoM)	Sep P			0.2%
31-Oct	N/A	JPY	BoJ Rates Decision		-0.10%		-0.1%
31-Oct	01:00	CNY	Non-manufacturing PMI	Oct			54.9
31-Oct	01:00	CNY	Manufacturing PMI	Oct			50.8
31-Oct	06:30	JPY	BoJ Press Conference				
31-Oct	10:00	EUR	CPI Core (YoY)	Oct A			0.9%
31-Oct	12:15	USD	ADP Employment Change	Oct	-0.4%		230k
31-Oct	12:30	USD	Employment Cost Index (QoQ)	3Q		0.8%	0.6%
1-Nov	00:30	JPY	PMI Manufacturing	Oct F			52.5
1-Nov	01:45	CNY	Caixin PMI Manufacturing	Oct			50
1-Nov	09:30	GBP	PMI Manufacturing	Oct			53.8
1-Nov	12:00	GBP	BoE Rates Decision		0.75%		0.75%
1-Nov	14:00	USD	ISM Manufacturing	Oct		59	59.8
2-Nov	08:55	EUR	German PMI Manufacturing	Oct F	-0.40%	53.4	53.7
2-Nov	09:00	EUR	PMI Manufacturing	Oct F		53	53.2
2-Nov	12:30	USD	Trade Balance	Sep			-53.2B
2-Nov	12:30	USD	Change in Nonfarm Payrolls	Oct		200k	134k
2-Nov	12:30	USD	Unemployment Rate	Oct		3.7%	3.7%
2-Nov	12:30	USD	Average Hourly Earnings (YoY)	Oct			2.8%
2-Nov	14:00	USD	Factory Orders	Sep			2.3%
2-Nov	14:00	USD	Durable Goods Orders	Sep F		-1%	4.4%

Source: Morgan Stanley Research forecasts, Bloomberg. Note: P = Preliminary, F = Final.

Asset class forecasts and risk/reward



Global Asset Classes - Expected 12-Month Return vs. Risk

Source: Morgan Stanley Research. Note: 'Expected returns' based on MS Strategy 12m forecasts and current market prices. Correlation is six-month relative to global equities (MSCI ACWI). Credit returns are excess returns.

Exhibit 42:

Morgan Stanley key market forecasts

	As of Oct 18, 2018	Q2 2019 Forecast		
		Bear	Base	Bull
Equities				
S&P 500	2,769	2,400	2,750	3,000
MSCI Europe	1,497	1,150	1,540	1,860
Topix	1,705	1,340	1,720	2,140
MSCI EM	971	830	945	1,350
FX				
USD/JPY	112	92	100	105
EUR/USD	1.15	1.18	1.24	1.30
GBP/USD	1.30	1.32	1.39	1.50
AUD/USD	0.71	0.67	0.71	0.75
USD/INR	73.6	64.4	68.5	73.6
USD/ZAR	14.5	11.4	12.8	14.8
USD/BRL	3.70	3.20	3.75	4.30
Rates (% percent)				
UST 10yr	3.18	3.30	2.50	2.00
DBR 10yr	0.42	1.55	0.95	0.45
UKT 10yr	1.54	2.40	1.85	1.15
JGB 10yr	0.15	0.20	0.18	0.03
Credit (bps)				
US IG	113	195	150	87
US HY	368	856	575	324
EUR IG	61	80	65	40
EUR HY	355	490	390	265
Italy 10yr	327	400	200	150
EM Sovs	375	450	380	320
US CMBS AAA	67	125	90	70
Commodities				
Brent	79	72.5	85.0	90.0

Source: Markit, MSCI, Bloomberg, The Yield Book, Morgan Stanley Research forecasts

Exhibit 43:

12m return and risk forecasts

	12m Return			Volatility		Return/Risk
Asset	Bear Case	Base Case	Bull Case	Option Implied	LT Average	Base case Return/Vol
Equities						
S&P 500	-11%	1.2%	10%	13%	18%	0.08
MSCI Europe	-19%	6.7%	28%	15%	26%	0.33
Topix	-19%	3.0%	28%	16%	21%	0.16
MSCI EM	-12%	0.3%	42%	19%	26%	0.01
FX						
JPY/USD	4%	9.0%	19%	8.3%	10.8%	0.95
EUR/USD	0%	5.0%	10%	7.7%	10.0%	0.56
GBP/USD	-1%	4.9%	13%	9.6%	9.7%	0.50
AUD/USD	-6%	-0.6%	5%	9.5%	11.8%	-0.06
INR/USD	5%	12.2%	19%	8.5%	6.1%	1.67
ZAR/USD	2%	17.5%	31%	18.5%	15.1%	1.04
BRL/USD	-10%	2.2%	19%	15.9%	17.6%	0.13
Rates						
UST 10yr	1.8%	8.3%	12.9%	5.7%	6.3%	1.38
DBR 10yr	-7.2%	-3.1%	1.1%	4.4%	4.7%	-0.68
UKT 10yr	-4.7%	-0.5%	5.2%	6.0%	5.5%	-0.09
JGB 10yr	0.0%	0.2%	1.5%	2.0%	3.8%	0.08
Credit (Excess Return)						
US IG	-4.9%	-1.2%	2.9%	3.5%	2.4%	-0.42
US HY	-14.7%	-4.6%	3.9%	4.8%	7.9%	-0.73
EUR IG	-0.5%	0.3%	1.6%	1.3%	1.4%	0.22
EUR HY	-3.2%	0.8%	5.6%	5.4%	15.5%	0.07
Italy 10yr	-2.1%	13.4%	17.8%	7.0%	6.7%	1.96
EM Sovs	-1.0%	3.5%	7.5%	4.1%	8.2%	0.56
US CMBS AAA	-4.3%	-1.3%	0.4%	2.0%	6.5%	-0.31
Commodities						
Brent	-9%	7.2%	14%	24%	34%	0.25

Source: Note: Brent returns are vs.the forward.
Source: Bloomberg, Morgan Stanley Research forecasts

Morgan Stanley long-run returns forecasts

Exhibit 44:

Morgan Stanley 10-year expected return forecasts across asset classes

	10Y Nominal Expected Rtns		10Y Real Expected Rtns		Risk Premium	
	Current	Z-score	Current	Z-score	Current	Z-score
EQUITIES						
S&P 500	5.9		3.7		2.2	
MSCI Europe	7.2		5.8		6.1	
MSCI UK	9.4		6.1		7.6	
MSCI Japan	6.3		5.8		5.1	
MSCI EM	10.7		8.4		6.8	

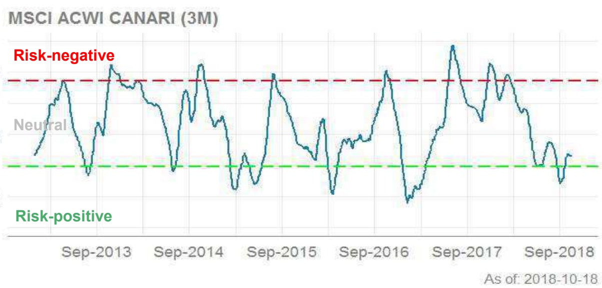
	Current	Z-score	Current	Z-score	Current	Z-score
GOV'T BONDS						
UST 5Y	3.6		1.5		1.5	
UST 10Y	3.6		1.4		1.4	
DBR 5Y	0.5		-0.9		-0.9	
DBR 10Y	1.1		-0.3		-0.3	
UKT 5Y	1.6		-1.5		-1.5	
UKT 10Y	1.8		-1.4		-1.4	
JGB 5Y	0.6		0.1		0.1	
JGB 10Y	1.1		0.6		0.6	
FIXED INCOME & CREDIT						
USD Agg	3.5		1.4		-0.1	
USD IG	4.0		1.9		0.4	
USD HY	4.1		1.9		0.5	
USD BBB	4.2		2.1		0.6	
USD BB	4.4		2.3		0.8	
EUR Agg	1.8		0.4		1.0	
EUR IG	0.9		-0.5		0.3	
EUR HY	1.9		0.6		1.4	
EUR BBB	1.2		-0.2		0.6	
EUR BB	1.9		0.5		1.4	
EM $ CREDIT						
Global	5.9		3.8		2.3	
Asia	4.7		2.5		1.0	

Source: Bloomberg, Morgan Stanley Research forecasts

Morgan Stanley CANARIs

Exhibit 45:

ACWI CANARI 3M



Source: Morgan Stanley Research

Exhibit 46:

ACWI CANARI 12M

Source: Morgan Stanley Research

Exhibit 47:

Morgan Stanley CANARIs

	CANARI				Avg Fwd Performance Given Bucket				% Better Than Avg Given Bucket			
	1M	3M	6M	12M	1M	3M	6M	12M	1M	3M	6M	12M
EQUITIES												
MSCI ACWI					1%		3%		61%		59%	
S&P 500					1%	1%	2%		60%	53%	52%	
MSCI Europe							2%				55%	
TOPIX												
MSCI EM												
BONDS												
UST												
DBR												
JGB								-17				50%
CREDIT												
US IG						1	0			52%	61%	
US HY							-15				67%	
EU IG						-5	4			69%	62%	
EM $							-44				65%	
US Securitized							-4				59%	
FX												
DXY						-1%				38%		
EUR						1%	2%	6%		57%	60%	77%
GBP						1%				58%		
JPY*					0%	3%			50%	23%		
AUD					0%	2%	3%		54%	65%	63%	
COMMODITIES												
Gold												
Copper												
Crude												

As of: 2018-10-19

Note: For equity, we show price performance; bonds, yield change in bps, credit, spread change in bps

Source: Morgan Stanley Research; Note: Boxes with black border indicate that CANARI has triggered risk-positive or risk-negative. Red boxes indicate that CANARI is associated with worse-than-average forward returns; green is associated with better-than-average returns. "Next XM Performance" show realized performance from stated date. For USDBRL, average spot change is * as data break means averages over that horizon look extreme. 'Vs Avg' indicates Next XM Performance minus average performance up to stated date. Greyed out numbers indicate where the CANARI signal produced the 'wrong' signal, and realized performance was worse than average.

Exhibit 48:

History of recommendations

Buy CDX HY December-18 50D puts

Instrument	Maturity	Trade	Entry Date	Entry Level	Exit Date	Exit Level	Target/ Objective	Stop/Re-assess	Size of Trade or Unit/Notional	CUSIP/ISIN/ BLOOMBERG	Gross P&L BP	Gross P&L US$K
CDX HY	6m	Buy CDX HY June-18 ~~Mar-18~~ Put Spread	09-Oct-17	0.014	11-Feb-18					IBOXHYSE Index		
CDX HY	31-Dec-17	Decompression Using ATM Payers (Buy Dec 107.5 vs Sell 5x Dec 57.5)	08-Dec-17	1c	31-Dec-17					IBOXHYSE Index		
CDX IG	31-Dec-17	Decompression Using ATM Payers (Buy Dec 107.5 vs Sell 5x Dec 57.5)	08-Dec-17	0.00	31-Dec-17					IBOXUMAE Index		
CDX HY	17-Jan-18	Short CDX HY Outright or vs. OTM Puts (Jan 106)	08-Dec-17	320bp on index/25c on option	17-Jan-18	0.00				IBOXHYSE Index		
CDX HY	17-Jan-18	Short CDX HY Outright or vs. OTM Puts (Jan 106)	08-Dec-17	320bp	17-Jan-18	0.00				IBOXHYSE Index		
S&P 500 Index	NA	long one unit of S&P 500 (at 2570) versus short two units of HY CDX (at US$108.2/314bp)	03-Nov-17	2570.00	16-Mar-18				1 Unit	SPX Index		
CDX HY	NA	Long one unit of S&P 500 (at 2570) versus short two units of HY CDX (at US$108.2/314bp)	03-Nov-17	108.20	16-Mar-18				2 Units	IBOXHYSE Index		
Put option on S&P 500	16-Mar-18	Buying 50-delta puts in CDX HY to March costs 1.2% of notional, whereas 50-delta puts on the S&P 500 are roughly 2.7% of notional. On a beta-adjusted basis, this trade would pay investors an upfront of 0.3% of the equity options notional.	03-Nov-17	0.03	16-Mar-18				1:2 ratio with HY	SPX Index		
Put option on CDX HY	16-Mar-18	Buying 50-delta puts in CDX HY to March costs 1.2% of notional, whereas 50-delta puts on the S&P 500 are roughly 2.7% of notional. On a beta-adjusted basis, this trade would pay investors an upfront of 0.3% of the equity options notional.	03-Nov-17	0.01	16-Mar-18				2:1 ratio with S&P	IBOXHYSE Index		

Buy USD/JPY 6m ATMF Straddle

Instrument	Maturity	Trade	Entry Date	Entry Level	Exit Date	Exit Level	Target/ Objective	Stop/Re-assess	Size of Trade or Unit/Notional	CUSIP/ISIN/ BLOOMBERG	Gross P&L BP	Gross P&L US$K
USD/JPY	1y	Buy USD/JPY 1yr 40D puts	04-Jun-18	2.40%	15-Oct-18					USDJPY Cunrcy		

Source: Morgan Stanley Research

Definition of terms

Buy/Long: The analyst expects the total or excess return (depending on the nature of the recommendation) of the instrument or issuer that is the subject of the investment recommendation to be positive over the relevant time period.

Sell/Short: The analyst expects the total or excess return (depending on the nature of the recommendation) of the instrument or issuer that is the subject of the investment recommendation to be negative over the relevant time period.

Selling protection or Buying Risk: The analyst expects that the price of protection against the event occurring will decrease over the relevant time period.

Buying protection or Selling Risk: The analyst expects the price of protection against the event occurring will increase over the relevant time period.

Pay: The analyst expects that over the specified time period the variable rate underlying the swap agreement that is the subject of the investment recommendation will increase.

Receive: The analyst expects that over the specified time period the variable rate underlying the swap agreement that is the subject of the investment recommendation will decrease.

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When more than one issuer or instrument is included in a recommendation, analyst expects one part of the trade to outperform the other trade or combination of other trades included in the recommendation on a relative basis.

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Appendix: Strategy Risk Factors

Buying calls or call spreads: Investors who buy call options risk loss of the entire premium paid if the underlying security finishes below the strike price at expiration. Investors who buy call spreads (buy a call and sell a further OTM call) also have a maximum loss of the entire up-front premium paid. The maximum gain from buying call spreads is the difference between the strike prices, less the upfront premium paid.

Buying puts or put spreads: Investors who buy put options risk loss of the entire premium paid if the underlying security finishes above the strike price at expiration. Investors who buy put spreads (buy a put and sell a further OTM put) also have a maximum loss of the upfront premium paid. The maximum gain from buying put spreads is the difference between the strike prices, less the upfront premium paid.

Selling calls: Investors who sell covered calls (own the underlying security and sell a call) risk limiting their upside to the strike price plus the upfront premium received and may have their security called away if the security price exceeds the strike price of the short call. Additionally, the investor has full downside exposure that is only partially offset by the upfront premium taken in. Investors short naked calls (i.e. sold calls but don't hold underlying security) risk unlimited losses of security price less strike price. Investors who sell naked call spreads (i.e. sell a call and buy a farther out-of-the-money call with no underlying security position) have a maximum loss of the difference between the long call strike and the short call strike, less the upfront premium taken in, if the underlying security finishes above the long call strike at expiration. The maximum gain is the upfront premium taken in, if the security finishes below the short call strike at expiration.

Selling puts: Put sellers commit to buying the underlying security at the strike price in the event the security falls below the strike price. The maximum loss is the full strike price less the premium received for selling the put. Put sellers who are also long a lower dollar-strike put face a maximum loss of the difference between the long and short put strikes less the options premium received.

Buying strangles: The maximum loss is the entire premium paid (put + call), if the security finishes between the put strike and the call strike at expiration.

Selling strangles or straddles: Investors who are long a security and short a strangle or straddle risk capping their upside in the security to the strike price of the call that is sold plus the upfront premium received. Additionally, if the security trades below the strike price of the short put, the investor risks losing the difference between the strike price and the security price (less the value of the premium received) on the short put and will also experience losses in the security position if he owns shares. The maximum potential loss is the full value of the strike price (less the value of the premium received) plus losses on the long security position. Investors who are short naked strangles or straddles have unlimited potential loss since if the security trades above the call strike price, the investor risks losing the difference between the strike price and the security price (less the value of the premium received) on the short call. Additionally, they are obligated to buy the security at the put strike price (less upfront premium received) if the security finishes below the put strike price at expiration. Strangle/straddle sellers risk assignment on short put positions that become in the money. Additionally, they risk having stock called away from short call positions that become in the money.

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The risk of exercise in a spread position is the same as that in a short position. Certain investors may be able to anticipate exercise and execute a "rollover" transaction. However, should exercise occur, it would clearly mark the end of the spread position and thereby change the risk/reward ratio. Due to early assignments of the short side of the spread, what appears to be a limited risk spread may have more risk than initially perceived. An investor with a spread position in index options that is assigned an exercise is at risk for any adverse movement in the current level between the time the settlement value is determined on the date when the exercise notice is filed with OCC and the time when such investor sells or exercises the long leg of the spread. Other multiple-option strategies involving cash settled options, including combinations and straddles, present similar risk.

Important information: Examples within are indicative only, please call your local Morgan Stanley Sales representative for current levels.

By selling an option, the seller receives a premium from the option purchaser, and the purchase receives the right to exercise the option at the strike price. If the option purchaser elects to exercise the option, the option seller is obligated to deliver/purchase the underlying shares to/from the option buyer at the strike price. If the option seller does not own the underlying security while maintaining the short option position (naked), the option seller is exposed to unlimited market risk.

Spreading may entail substantial commissions, because it involves at least twice the number of contracts as a long or short position and because spreads are almost invariably closed out prior to expiration. Potential investors should carefully review tax treatment applicable to spread transactions prior to entering into any transactions.

Multi-legged strategies are only effective if all components of a suggested trade are implemented.

Investors in long option strategies are at risk of losing all of their option premiums. Investors in short option strategies are at risk of unlimited losses.

There are special risks associated with uncovered option writing which expose the investor to potentially significant loss. Therefore, this type of strategy may not be suitable for all customers approved for options transactions. The potential loss of uncovered call writing is unlimited. The writer of an uncovered call is in an extremely risky position, and may incur large losses if the value of the underlying instrument increases above the exercise price.

As with writing uncovered calls, the risk of writing uncovered put options is substantial. The writer of an uncovered put option bears a risk of loss if the value of the underlying instrument declines below the exercise price. Such loss could be substantial if there is a significant decline in the value of the underlying instrument.

Uncovered option writing is thus suitable only for the knowledgeable investor who understands the risks, has the financial capacity and willingness to incur potentially substantial losses, and has sufficient liquid assets to meet applicable margin requirements. In this regard, if the value of the underlying instrument moves against an uncovered writer’s options position, the investor’s broker may request significant additional margin payments. If an investor does not make such margin payments, the broker may liquidate stock or options positions in the investor’s account, with little or no prior notice in accordance with the investor’s margin agreement.

For combination writing, where the investor writes both a put and a call on the same underlying instrument, the potential risk is unlimited.

If a secondary market in options were to become unavailable, investors could not engage in closing transactions, and an option writer would remain obligated until expiration or assignment.

The writer of an American-style option is subject to being assigned an exercise at any time after he has written the option until the option expires. By contrast, the writer of a European-style option is subject to exercise assignment only during the exercise period.

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(as of September 30, 2018)

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	Coverage Universe		Investment Banking Clients (IBC)			Other Material Investment Services Clients (MISC)	
Stock Rating Category	Count	% of Total	Count	% of Total IBC	% of Rating Category	Count	% of Total Other MISC
Overweight/Buy	1178	37%	308	42%	26%	562	40%
Equal-weight/Hold	1378	44%	343	46%	25%	625	44%
Not-Rated/Hold	49	2%	5	1%	10%	7	0%
Underweight/Sell	554	18%	83	11%	15%	224	16%
Total	3,159		739			1418	

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