

RWC Equity Income Team: Why is volatility so low?

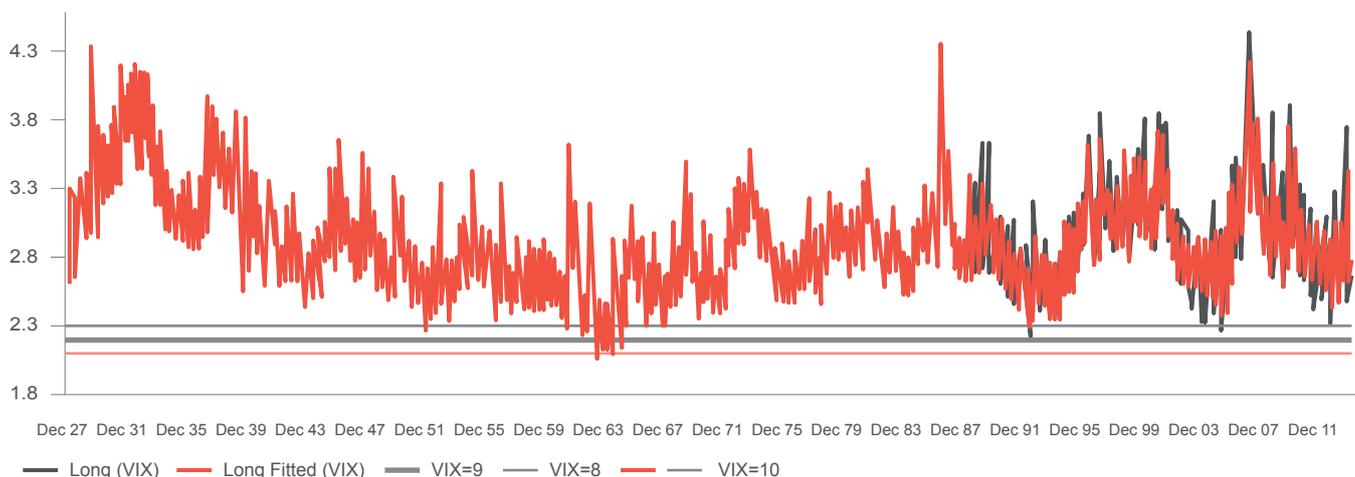
July 2017

Many investors including ourselves are wondering what is keeping equity market volatility so low. It is in our nature as investors and humans to constantly seek explanations for such market patterns and it may indeed be a fool's errand. It may just be a random occurrence in a very long data series with which we are only intimately acquainted for a few decades; the span of our careers. We therefore put forward the following points as possible reasons for subdued volatility carefully, rather than making outright authoritative claims.

Firstly, we recognise that volatility has been this low in previous decades. S&P 500 Index realised volatility touched these levels in the 1990s and before that in the

1960s (see our Q3 2016 Update here). Furthermore, Barclays have attempted to recreate the VIX Index for the decades prior to 1990 using short-term S&P 500 Index realised volatility as their guide. Their results suggest the VIX Index could have experienced levels below 10 for 300 days in the 1960s (Figure 1), or nearly 10% of the time as compared to less than 1% over the last five years. It may even have touched as low as 8 as compared to the low of 9.37 in June this year and 9.31 in December 1993. Another point Barclays noted was a low level of volatility clustering in the 1960s as has been the case with the S&P 500 in the last few years, volatility clustering declining from 2010 onwards and more sharply from 2014.

FIGURE 1: SIMULATED VALUE OF VIX INDICATES THAT IT WOULD HAVE TRADED BELOW 10 FOR c. 300 DAYS DURING THE 1960s



Source: Barclays Research, Bloomberg, December 1927 – April 2017

It is up to economists to try and draw economic similarities between the 1960s and now to understand if such similarities are driving current volatility lower. The similarities are not that obvious; the US was then experiencing twice the real GDP growth of today, interest rates were higher, national debt was falling and was approximately 40% of GDP, household savings rates were double and higher population growth than today was accompanied by a growing working age population. I.e. there were lots of economic tailwinds as compared to the economic environment today. However, equity returns were strong, particularly from mid-1962 until the end of 1968 (annualised at 14.1%), similar to today's five-year

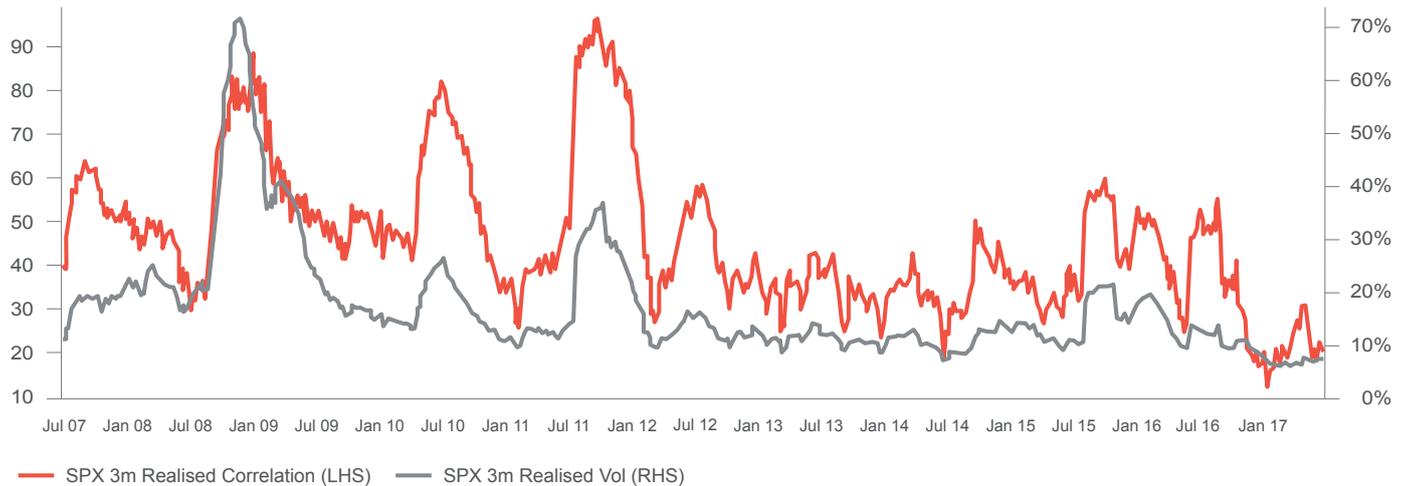
annualised S&P 500 returns of 14.7%. In simple terms, prolonged high equity returns are accompanied by and require lower volatility. It perhaps marks the period in an equity market cycle where valuations move from being fairly valued to being overvalued. A continuous grinding higher of equity prices without the high volatility levels of the earlier part of an equity cycle, the initial recovery from a bear market.

All we are able to draw from the above is that volatility has been this low in the past, can remain low for long periods of time and it is by nature accompanied by strong equity market returns.

We can examine volatility more closely for the last decade due to the availability of data, a more challenging exercise for earlier decades. From that recent data we see an obvious reason for low volatility is the fall in correlations among stocks and particularly among sectors. Figure 2 illustrates the impact of correlation on index volatility. For instance, during the Global Financial Crisis correlations were close to 90 (with 100 being

completely correlated) and volatility peaked. However, average stock volatility also matters and this is illustrated in the lower spike in index volatility when correlations peaked in the second half of 2011. It is clear that the fall in correlations in the last year, to all-decade lows, is having a downward impact on index volatility. This decline represents the massive sector rotations we have witnessed in the past 18 months.

FIGURE 2: S&P 500 INDEX CORRELATION AND VOLATILITY COMPARISON



Source: Bloomberg, July 2007 – July 2017

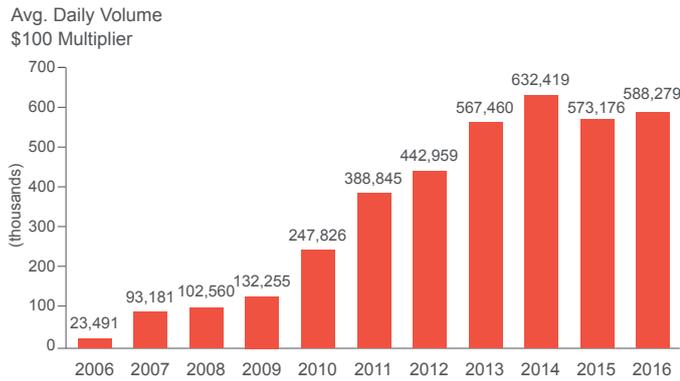
Less transparent and provable is the impact changing market structure and changing market participants is having on equity volatility. JP Morgan’s Quantitative Research Team estimates “that only c.10% of trading volumes originates from fundamental discretionary traders”.¹ The marginal buyer or seller drives the price of a good and in this case a share price or index level, and therefore this is a pretty strong statement from JP Morgan; participants not driven by the interpretation of fundamental factors are responsible for share price levels (albeit that passive investors are excluded from the definition of fundamental discretionary traders and to a degree that group might claim to invest in the equity market on a fundamental basis). However, let’s think

about the impact non-fundamental investors may have on equity market levels.

The first group of non-fundamental participants to consider are volatility sellers and the hedging activity that such volatility selling triggers. Volatility sellers come in various forms: pure volatility sellers selling volatility swaps and selling the VIX Index via futures or options, and less pure volatility sellers who write S&P 500 Index or single stock put and call options. With the search for yield all these strategies have become more popular, see the explosive growth in VIX options and futures in Figures 3 and 4.

¹ Marko Kolanovic, JP Morgan June 2017

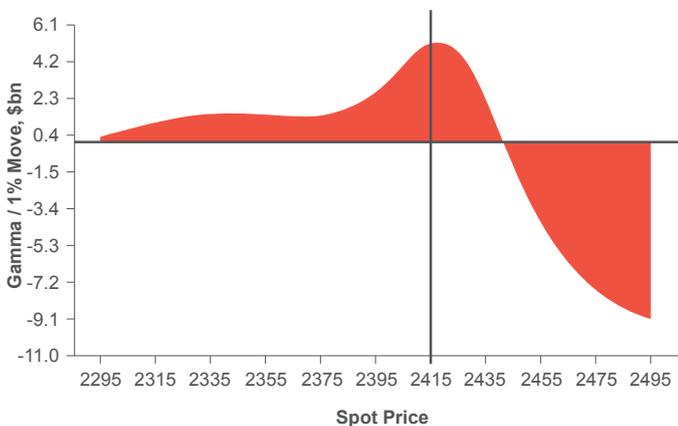
FIGURE 3: VIX OPTIONS DAILY VOLUME



Source: CBOE, 2008 – 2016

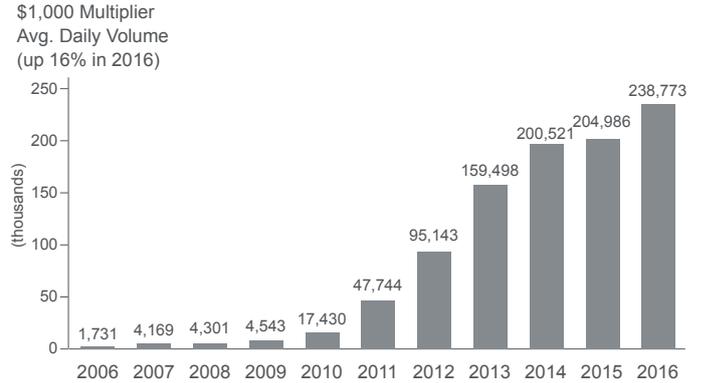
With so many investors selling these options there is little two-way trading i.e. there are far more sellers than buyers. This leaves the option dealers with the task of managing the supply/demand imbalance through hedging their net long option positions. One quick technical note to help understand the impact on the market: if we sell options we are short gamma, if we buy options we are long gamma. Gamma means that if you own an option and the underlying stock or index moves then you make money. The more movement (in effect volatility) the better and that is how dealers make money (when not acting in an agency capacity). For a call option that means when the market rises the option owner sells more of the underlying and buys it back when the market falls. If investors owned options they typically do not hedge, but dealers on the other hand dynamically hedge their positions and therefore, the net outcome is a mean reverting process when the market is dominated with such a supply/demand imbalance. When the market rises the dealers sell the market and when the market falls the dealers buy the market, a down day followed by an up day or a down morning followed by an afternoon recovery, dampening

FIGURE 5: ESTIMATED S&P 500 DEALER GAMMA PROFILE BY SPOT JUNE 2017



Source: Morgan Stanley, QDS, 1st June 2017

FIGURE 4: VIX FUTURES DAILY VOLUME

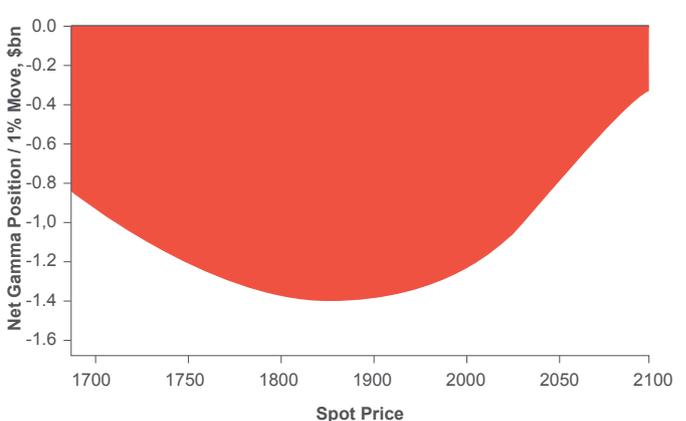


Source: CBOE, 2006 – 2016

volatility. The impact is more pronounced in intraday trading; year-to-date of the 64 days when the S&P 500 was down from the previous close to mid-session the index subsequently rallied higher on 43 days, or 67% of the time.

However, gamma is not a stationary position for dealers. It is continuously changing. Exchange expiry means positions roll off and new positions reshape the gamma profile, market movements also change the positioning. Morgan Stanley produce snap shots of gamma positioning which show how it changes with the index level and over time. Figures 5 & 6 compare the S&P 500 across index levels in June 2017 and August 2015 (when the index suffered a 10% drop). In the June 2017 example one can see how the required hedging for dealers may change as their gamma exposure moves from positive to negative; at one index level they may be long options (long gamma) and at other index levels short options (short gamma). The August 2015 profile (Figure 6) illustrates that with the market decline the dealers' short gamma position increased. It was close to flat in the weeks prior to the decline when the index hovered around 2,100.

FIGURE 6: ESTIMATED S&P 500 DEALER GAMMA PROFILE BY SPOT AUGUST 2015



Source: Morgan Stanley, QDS, 24th August 2015

The point here is that broker hedging of a long options position has a dulling impact on volatility but this may not always be the situation, as per August 2015. If, for some reason, the index moves away from index levels where investors have sold options to index levels where investors have bought options, then broker hedging will switch direction and amplify the move (up or down) rather than mitigate it.

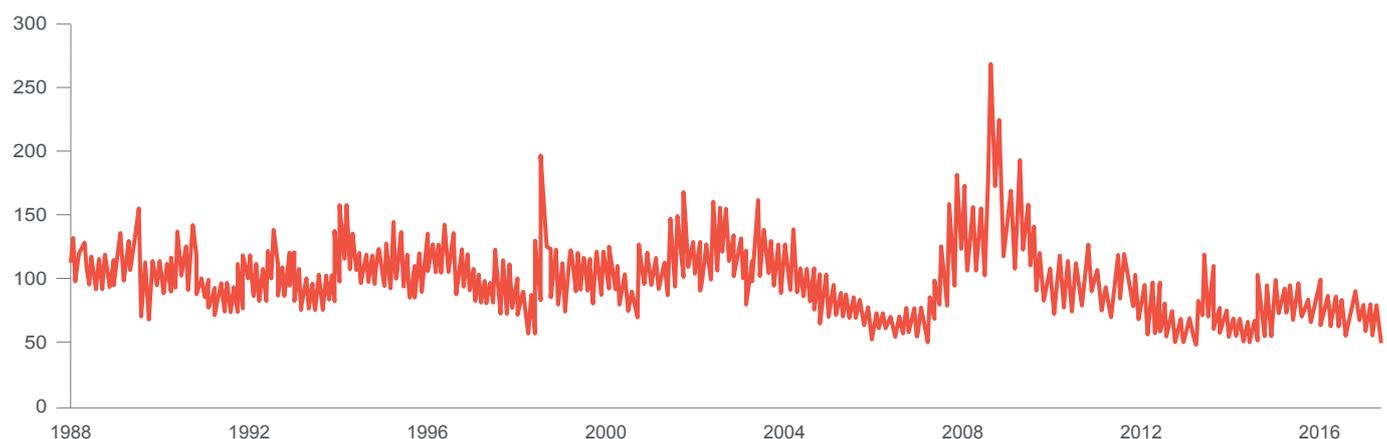
Other non-fundamental investors that anecdotally are having an impact on the market include target volatility strategies (managed or controlled volatility) and risk parity strategies. The former is an improvement on Constant Proportion Portfolio Insurance (CPPI) in that the trading prompted by the algorithm is not so abrupt. With CPPI, like delta hedging, a fall in the equity market quickly triggers a reduction in exposure to equities. Some reports have argued that the strategy magnified the 1987 crash.² Target volatility or volatility controlled strategies (either equity focused or multi-asset) seek to increase or reduce exposure in line with volatility but as the measure of volatility is not dependent on short-term moves alone but rather a blend of short- and long-term measures, there is a slower leveraging and deleveraging as compared to CPPI. The exposure is defined by the current estimate of volatility and the target volatility.

A target volatility of 10% will result in exposure of 125% when estimated volatility is at 8%, and 83% when

estimated volatility is at 12% (with mandate variations on volatility target, volatility estimate and leverage cap). Solvency II and a desire to avoid the cost of crash protection through put options has driven many large insurance companies down this route (as happened historically when insurance companies employed CPPI).

The second non-fundamental strategy mentioned above, a risk parity strategy, allocates to asset classes based on levels of volatility. In the multi-asset sense the strategy has lower long-term expected returns than a traditional portfolio allocation (for example 60:40 equities to bonds) due to a lower weight in equities. The strategy may borrow funds to leverage up the lower returns so as to match traditional return expectations, while maintaining the same risk, defined as volatility. Today, with both bond (see Figure 7) and equity volatility at historic lows one can appreciate that the leverage levels are high relative to their own history. Such investors rightly point out that low volatility does not necessarily lead to higher volatility, in fact volatility auto correlates with lower volatility following lower volatility and vice versa. The concern here is that an increase in volatility will bring about a deleveraging, not that it will cause higher volatility or that the strategies are good or bad. Alliance Bernstein estimated in 2015 that \$400 billion was allocated to risk parity funds and adding leverage brought total assets to \$1.4 trillion.³

FIGURE 7: MERRILL LYNCH OPTION VOLATILITY ESTIMATE MOVE INDEX



Source: Merrill Lynch, January 1988 – July 2017

² Presidential Task Force on Market Mechanisms 1988. Also see Securities and Exchange Commission report The October 1987 Market Break

³ US asset manager warns over 'risk parity' FT August 23, 2015

In essence, a number of forces have driven down volatility: a natural decline when equity markets are rising and the economic backdrop is benign, accommodative monetary policy with a central bank market put, a reach for yield creating a supply/demand imbalance among dealers and increasingly popular technical strategies increasing equity exposure as volatility declined. Add in corporate share buybacks and retail ETF flows and very little is driven by fundamentally-orientated money managers as per the JP Morgan assertion of 10%. Some of these forces reduce volatility, others lift the market higher. It is beyond our ability to really measure the impact on the market, the data is not available to us. While the \$1.4 trillion within risk parity is a large number, it is spread across assets and regions, and is dwarfed by the size of the US equity market alone at \$25.5 trillion.⁴ However, if Alliance Bernstein's numbers reflect accurately a leverage of 3.5 and if equities were 20% of the exposure that equates to \$280 billion of equity exposure, and at an MSCI World split of 59% then \$166 billion allocated to US equities. If leverage was reduced by half a point (3.5 to 3.0) then this would prompt an outflow of \$24 billion in US equities. Daily average S&P 500 company dollar volume is \$38 billion. On this level, depending on the urgency of the trading, the outflows would have an impact. These are back of the envelope calculations to put the numbers into context, leverage may be somewhat less, as might equity exposure, but the numbers give an idea of the magnitude. If this was accompanied by changed hedging behaviour of dealers as volatility sellers ceased selling or tried to unwind their existing positions, plus perhaps the desire by other investors to buy protection, we have a further downward pressure. We don't have an estimate for volatility controlled mandates but this is likely to be large due to the popularity among insurance companies; JP Morgan estimated in 2015 that between \$100 - \$200 billion of assets were invested by variable annuity issuers alone in volatility controlled mandates.⁵ Therefore, there is the potential for large, connected equity selling among non-fundamental investors and we have not touched on other non-fundamental strategies such as CTA funds (sellers if the momentum is downward).

However, we must be careful to avoid the focusing illusion, the more we think about these issues the more importance we ascribe to them. For example, while portfolio insurance bore much of the blame for the October 1987 crash, Robert Shiller writing in 1988⁶ was less convinced that CPPI was the leading culprit in exacerbating the decline. He suggests more of a behavioural aspect, the market chat prior to the crash was centred on the continuing bull run from 1982 with the question "when will it end?" attached. Therefore, the framing of the mindset of investors was that a definitive reversal might come. His view is that a crash was very much on people's minds prior to the event and when prices started to decline in the week prior to the crash people wondered if "this was it?" prompting investor selling. Investor selling may have happened, with or without the development and popularity of the CPPI strategy. The question then becomes one of do people believe the current market valuations are justifiable, are they worried about a correction and will they sell rapidly if the market started to decline. Many institutional investors are worried about this market in terms of stretched valuations, as are we. Maybe a quote from MarketWatch sums up the mindset of individual investors: "We don't have to believe in this market, but we definitely shouldn't fight it" ([link](#)). It doesn't appear that individual investors fear a crash but many think stocks are fully valued.

⁴ Wilshire 5000, source FRED

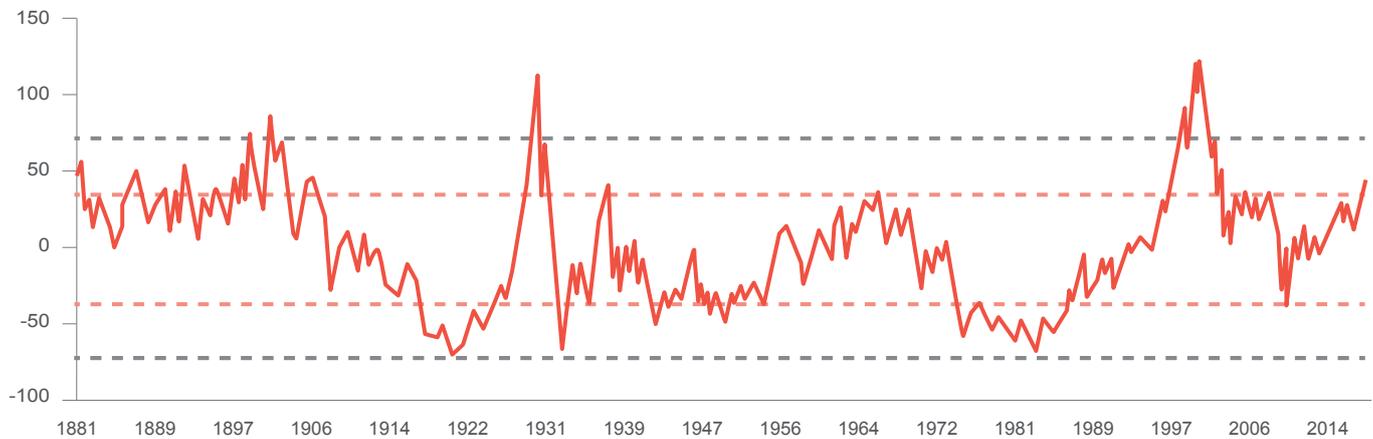
⁵ Market and Volatility Commentary August 2015

⁶ NBER Macroeconomics Annual 1988 Portfolio Insurance and Other Investor Fashions as Factors in the 1987 Stock Market Crash

The question we ask ourselves is whether the self-reinforcing forces that have, to some degree, created this environment might one day reverse. Could some exogenous event throw the current behaviour off the rails and set in motion the opposite, self-reinforcing trend. Many political events have failed to do so, including the Brexit referendum result and the election of Trump, illustrating the resilience of the trend. We do not predict a 1987 type crash, the base rate for that type of occurrence is tiny and there is considerable disagreement about what caused it. But what will happen when volatility does eventually reappear? And we need not concern ourselves with the proximate cause of increased volatility, even after the event that

will not be certain. Knowing the potential for structural weakness in the market is enough. The reason we are so uncomfortable with this apparent underlying structural weakness is that it is accompanied by stock valuations being very stretched, particularly on US stocks with the ShillerCAPE ratio breaking through 30 times, and on a detrended basis (to account for changing index composition and increasing margins over time) it is indicating extreme levels of overvaluation (Figure 8). For us the answer is not one of predicting if or when a really adverse event might happen, but to understand the risks and to keep our eye firmly on stock valuations. In addition, when such an environment offers up very cheap equity protection we are willing buyers.

FIGURE 8: SHILLER CYCLICALLY ADJUSTED PRICE EARNINGS (CAPE) RATIO DETRENDED



Source: RWC and Bloomberg, 1881-2017



John Teahan

John has been managing funds with Ian Lance and Nick Purves for over 10 years. Ian, Nick and John joined RWC Partners in 2010 to establish the Equity Income team and now manage over £3.6 billion for their clients. The team's approach fully integrates conviction led, value-based stock selection with a distinctive and technical approach to stabilising assets, with the aim of delivering investment solutions that both grow investors' assets and protect the purchasing power of capital and income.

Before joining RWC John was portfolio manager at Schroders where he co-managed the Schroder Income Maximiser with Nick Purves and Ian Lance. In addition he co-managed the Schroder Global Dividend Maximiser, Schroder European Dividend Maximiser and Schroder UK Income Defensive funds, all three of which employed a covered call strategy.

During his time at Schroders John also specialised in trading and managing derivative securities for a range of structured funds. Previously he worked as a performance and risk analyst for Bank of Ireland Asset Management UK. John is a CFA Charterholder.

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