ETF Behaviour in Bear Markets

What has history shown so far?

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Conclusion

ETF:Mutual Fund flows 100:1

Rebirth of the sell side?

Assets invested in ETF/Ps comprise around $3 trillion globally. Put simply the new funds flowing into ETFs vs. traditional mutual funds is at a 100:1 ratio and in terms of AUM is on par with total hedge fund assets which have been in existence for 3 times as long. Although ETF products have been around for a quarter of a century, they have only really started to become meaningful since Lehman Shock. However ETFs, despite increasing levels of sophistication, have brought about higher levels of market volatility. Studies have shown that a one standard deviation move of S&P500 ETF ownership carries 21% excess intraday volatility. Regulators are also realising that limit up/down rules are exacerbating risk pricing and are seeking to revise as early as October 2015. In less liquid markets excess volatility has proved to be 54% higher with ETFs than the actual underlying indices. As more bearish market activity has arrived since August 2015 we investigate how ETFs may impact the markets. Given the fact that a large part of recent ETF existence has been under more favourable conditions. We also look at the real excess volatility of leveraged funds, which in one case has average returns of +/- 10x versus its 3x product description. We also look at the ETF phenomenon increasing the irrelevance of sell-side ratings and targets but hypothesise a rebirth in the sell-side should a collapse in ETF confidence drive a return to active management.

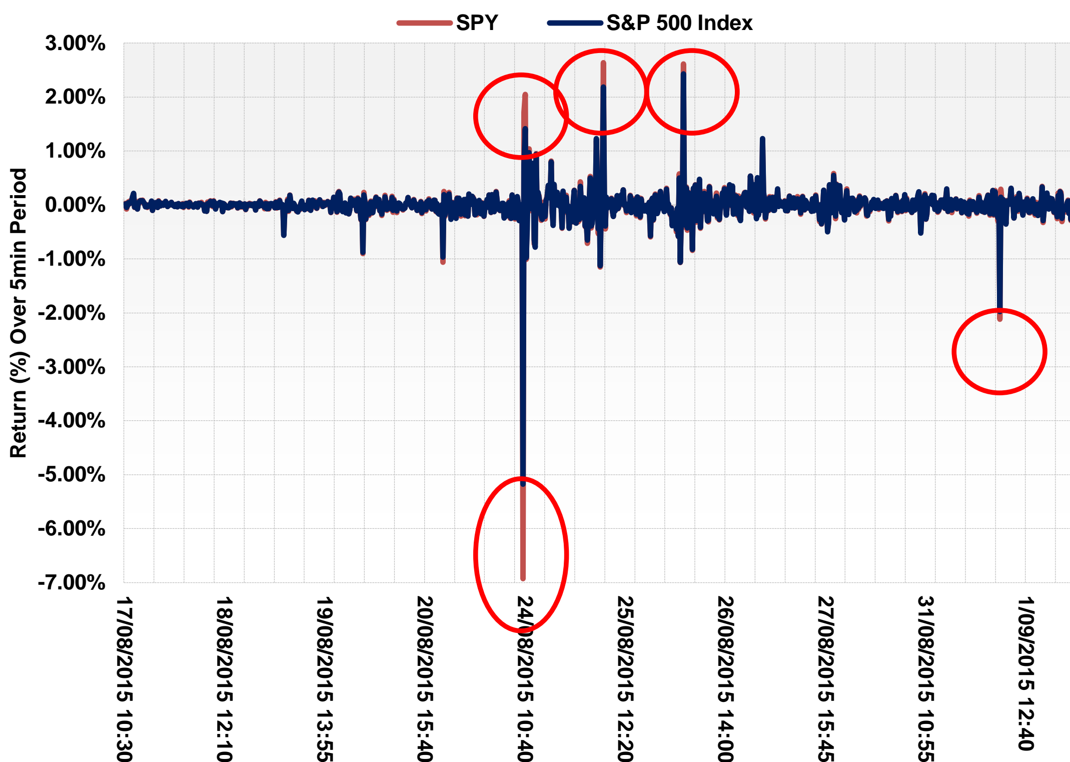
ETF Volatility in Bear Markets

ETFs in bear markets

How do ETFs behave in a sharp downturn? Studies show that a one standard deviation in ETF ownership on S&P500 raised daily stock intraday volatility 16% and 21%. Unsurprisingly a lot of this volatility is non-fundamental i.e. it is liquidity shocks forcing arbitrage of the ETF and the underlying basket of securities.

SPDR vs SPX

The following chart shows the SSgA SPDR S&P500 ETF (SPY US) excess returns based on 5 minute intervals during the recent sell off (since 17 Aug 2015). As the extent of the sell-off increases, excess return tends to amplify more to the downside. It is not surprising to see that type of phenomenon but the extent of the overshoot is worth bearing in mind. With this ETF comprising 30% of the unweighted S&P turnover in the period of May 22nd to June 24th 2015, SPDR showed 0.18% less volatility than the S&P500 index itself which is reflective of large liquidity. Still large market declines tend to exacerbate excess volatility even for SPY.

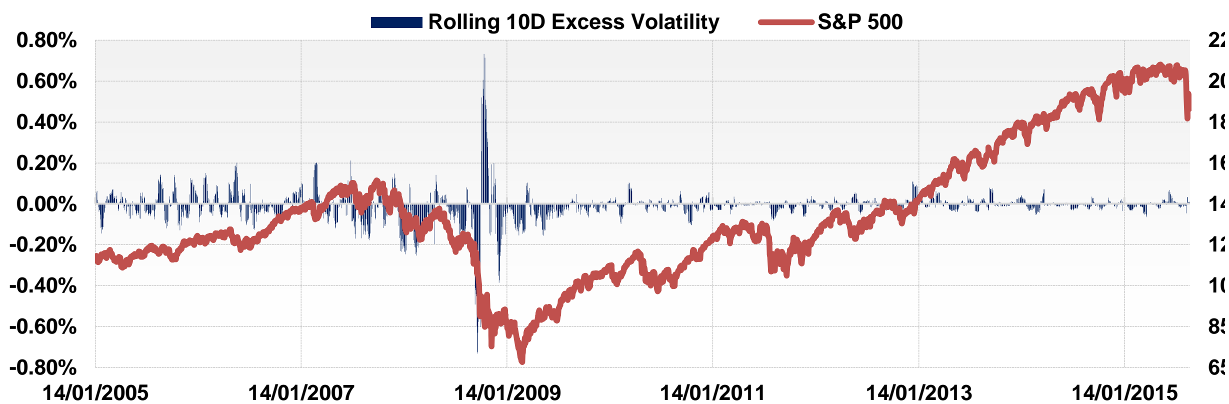


Source: Custom Products Research

ETFs really kicked off post Lehman Shock

With recent equity market turmoil and a relatively short history of ETFs as a dominant market product, there isn't enough long standing empirical data looking at how ETFs behave in bear markets. Post Lehman shock, ETFs began their dominant rise in what has largely been primary bull markets.

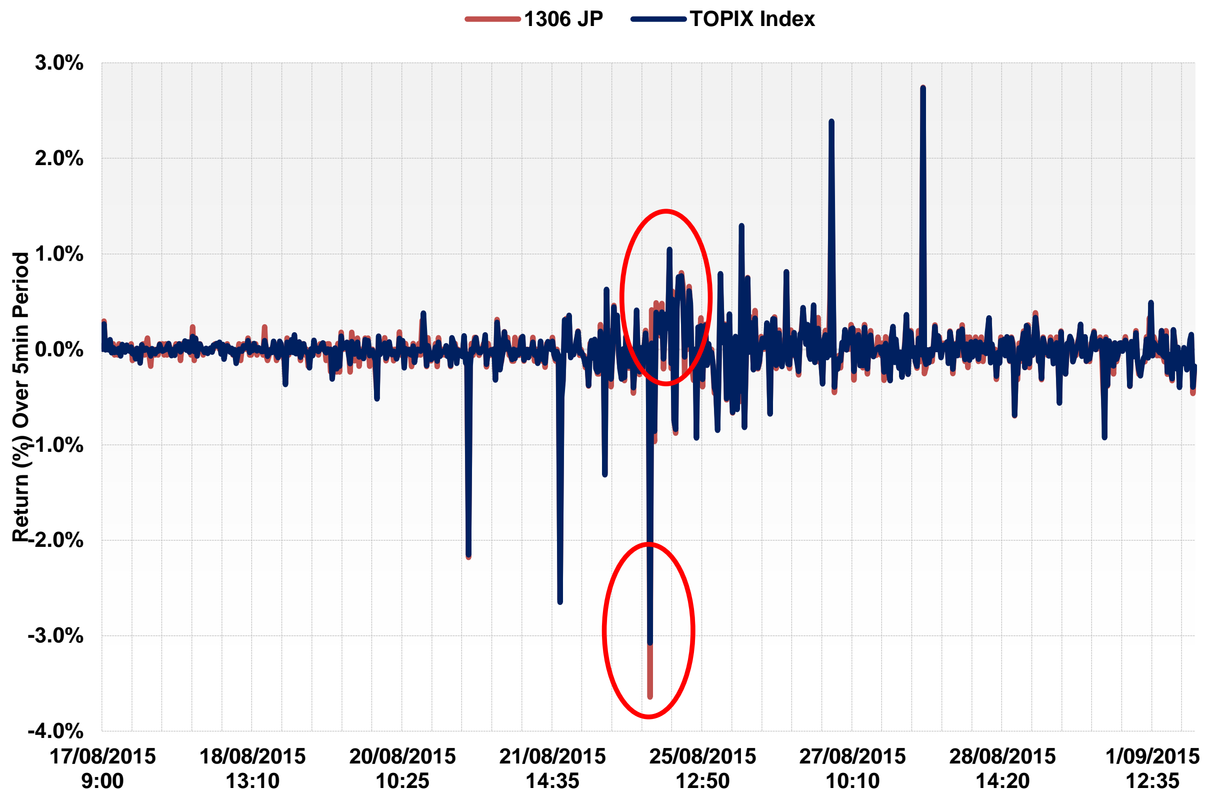
Looking at S&P500 performance over the longer term shows the relatively small excess volatility which in part is due to more sophisticated systems. Prior to GFC, ETF excess volatility clearly declined after 2010.



Source: Custom Products Research

Japanese ETF volatility

While the Japanese ETF market is a fraction of the US, we see a similar pattern of excess volatility on down swings. As a proxy for lower liquidity it is worth noting that between May 22 and June 24 2015, the 10 largest diversified emerging market based ETFs were around 43% more volatile than their underlying indices. This is after the emerging markets sold off on Fed Chairman Bernanke's remarks.



Source: Custom Products Research

Excess vol surges in sell-offs

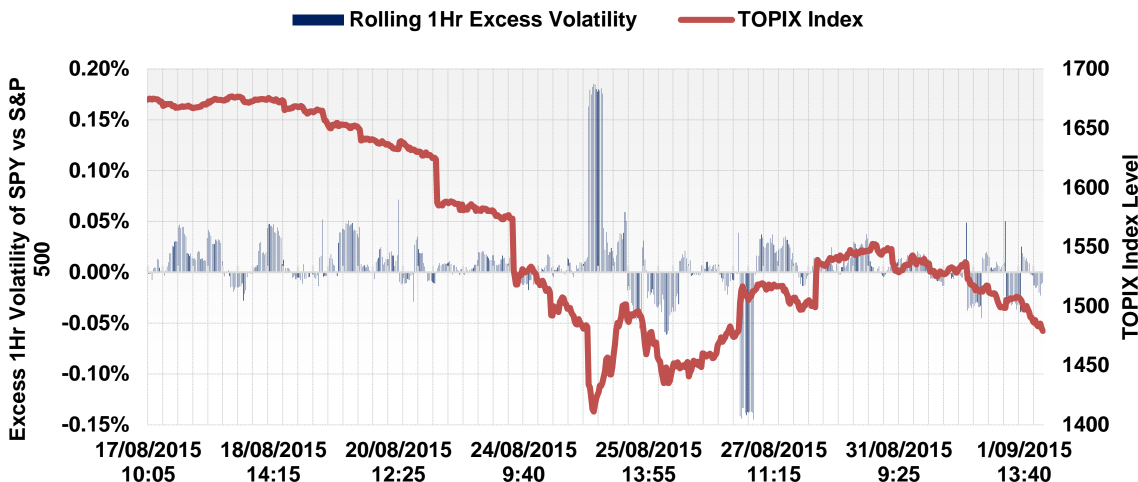
During the 55% market rout in the MSCI Emerging Markets Index in the five months to October 2008, the Vanguard FTSE Emerging Market ETF saw its excess volatility surge to c.54% from around c.35% a year earlier.

SEC rules imminent

Of note the US Securities and Exchange Commission (SEC) has been investigating whether it should impose new rules to 'dampen' the volatility of ETFs especially given the flash crash of August 24, 2015. Amendments are expected in October 2015. Since 2013 ETFs have been included in the limit up/down rules.

RSP ETF was an example of difficulty in repricing

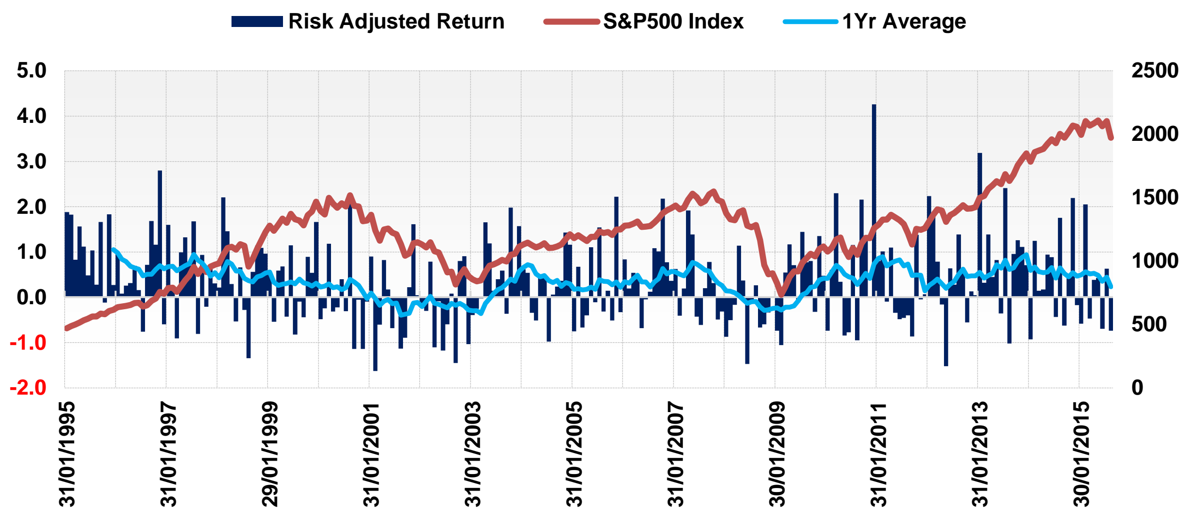
At present limit up/down rules create challenges. If an S&P ETF is trading however half of its constituent stocks are not open it is difficult to correctly price the ETF. The Guggenheim S&P500 (RSP) ETF provides a good example. It sunk under $50 during the flash crash despite fair value of over $70. An investor has to claim an erroneous trade to the exchange within 30 minutes. Perhaps the best option is to remove limit up/down regulation such that ETFs can reprice effectively.



Source: Custom Products Research

SEC talked down excess vol risks then talk them up

Interestingly the SEC talked down the risks of excess volatility in March 2015 despite a study on its own website in the same month, *'Do ETFs Increase Volatility?'* showing that it is of concern. Going back to January 2014 a report with the same title but different authors shows that a one standard deviation in ETF ownership on S&P500 raised daily intraday stock volatility 16% and 21%. The ETF market makers (i.e. the Authorised Participants (APs)) can create and redeem shares in the ETF to respond to large demand/supply imbalances. The study from the Fisher College of Business at Ohio State University said this phenomenon occurred 71% of the trading days during their observation period . SPY saw flows in and out of the fund 99.2% of the trading days in 2012.



Source: Custom Products Research

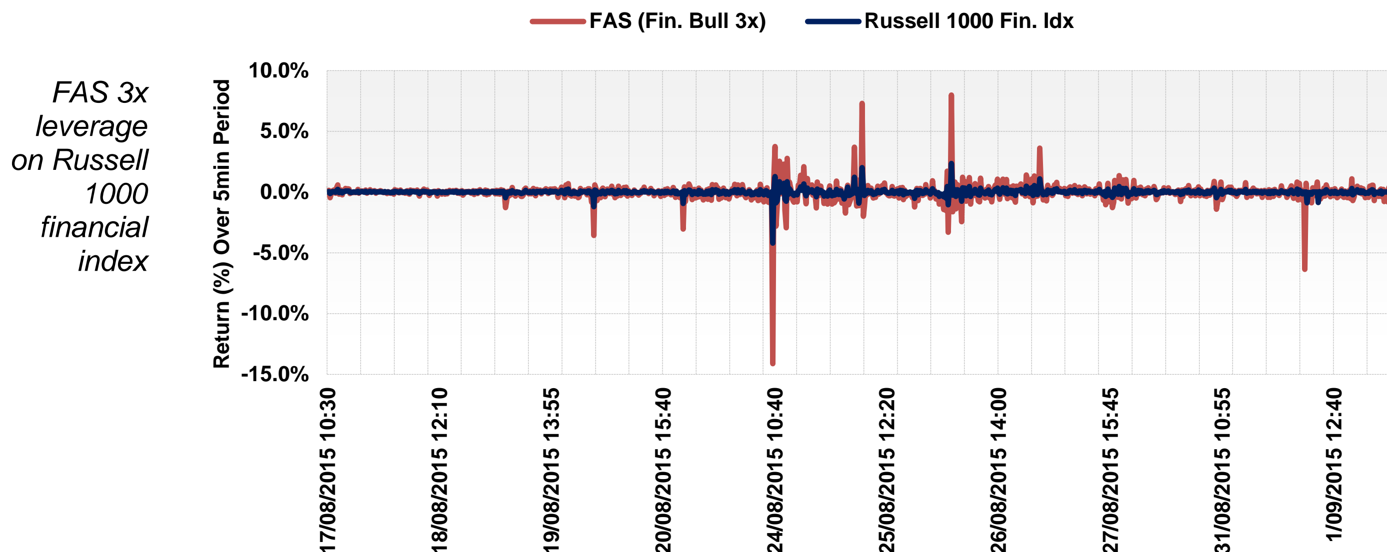
Amplified risk as markets grow

Not surprisingly the more volatile the market the larger the scope for arbitrage and with it wider divergences. Throw into that less liquid stocks with wider bid offer spreads and the potential for short selling compounds the excess volatility. Ben-David, Franzoni and Moussawi state, *"the price impact of ETF arbitrage reverts over a multiday horizon, consistent with the initial trigger of the price move being, at least in part, a liquidity shock…these results emphasize an unintended consequence of financial innovation."*

Blow up in leverage funds inevitable?

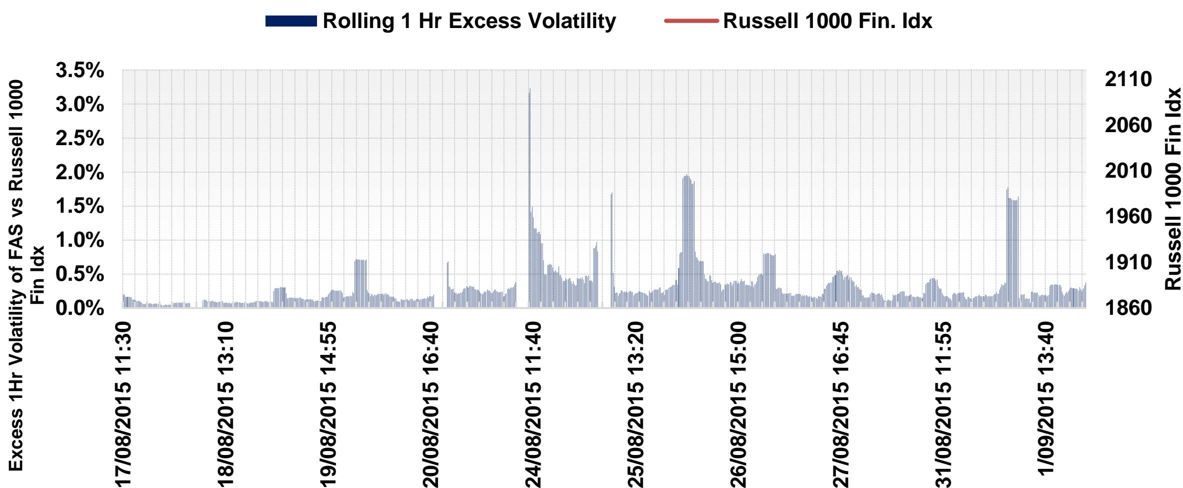
CEO Larry Fink of Blackrock, the world's largest ETF creator, has made it clear that leveraged ETFs (at present 1.2% of total ETF AUM) have the potential to *"blow up the whole industry one day."* The argument is that the underlying assets that provide the leverage (which tend to have less liquidity) could cause losses very quickly in volatile markets. To put this in perspective we look at the Direxion Daily Fin Bull 3x (FAS) 3x leverage of the Russell 1000 Financial Services Index. As illustrated in the following chart FAS in volatile markets tends to overshoot aggressively. We have not really seen any recent sharp sell offs such as those around GFC.

FAS 3x leverage on Russell 1000 financial index



Source: Custom Products Research

The following chart shows the level of excess volatility created by the ETF relative to the Russell 1000 Financial Services Index. It was consistently more volatile than the underlying index over the last 2 weeks.

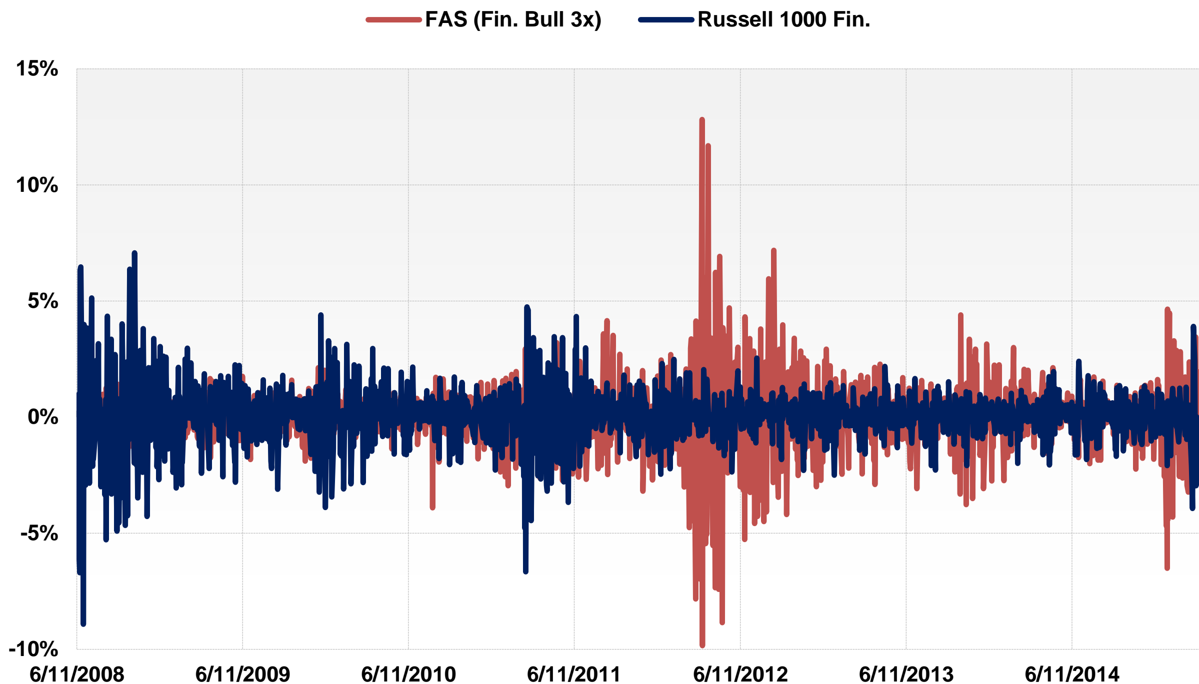


Source: Custom Products Research

3x has averaged 10x.

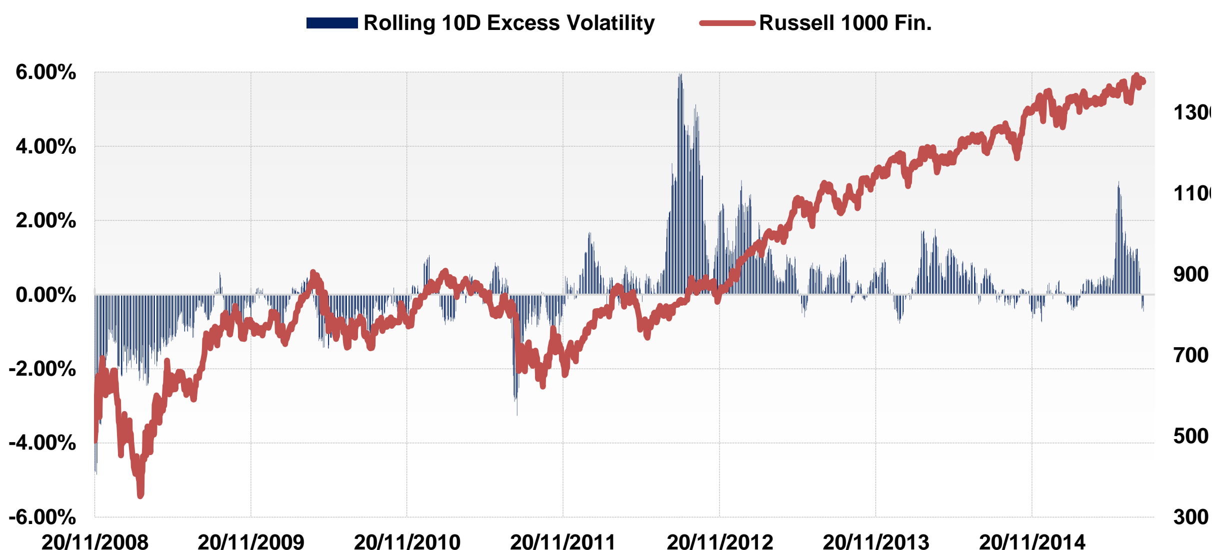
Nasty downturn could amplify

The point Mr Fink is driving at is more obvious with the following chart, which shows in volatile markets, the average daily return is closer to10x (in both directions) than the 3x it is seeking to offer. This is post any market meltdown. On a daily basis the minimum and maximum has ended up being -1,756x to 1,483x of the index return, albeit those extremes driven by the law of small numbers of the return of the underlying index. This suggests that in a nasty downturn the leveraged ETF performance could be well outside the expectations of the holders.



Source: Custom Products Research

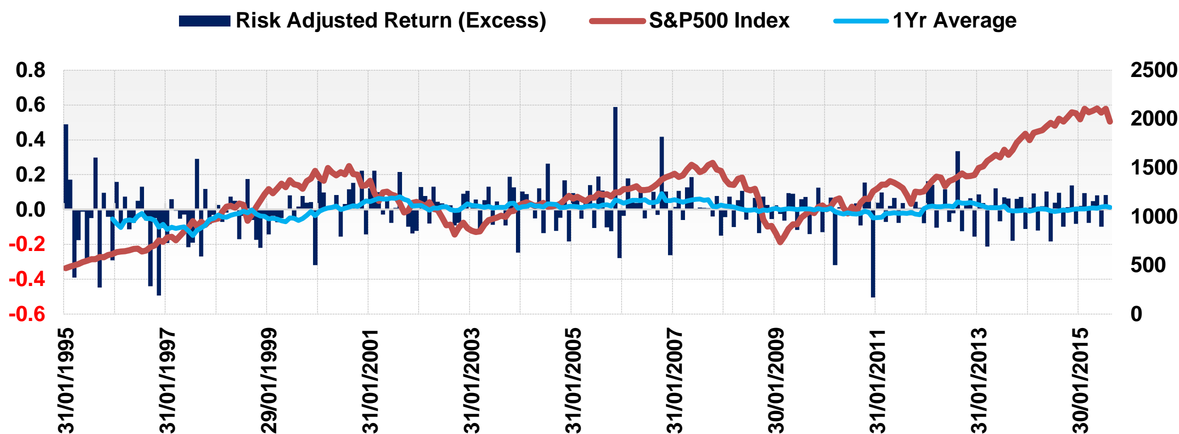
Rolling 10-day excess volatility is shown here next to the underlying index.



Source: Custom Products Research

Sharpe Ratios

Looking at the gap of risk adjusted returns (Sharpe ratios) of the index ETF and the Japanese indexes we see negligible differences. This is no doubt due to the lower level of liquidity relative the US.



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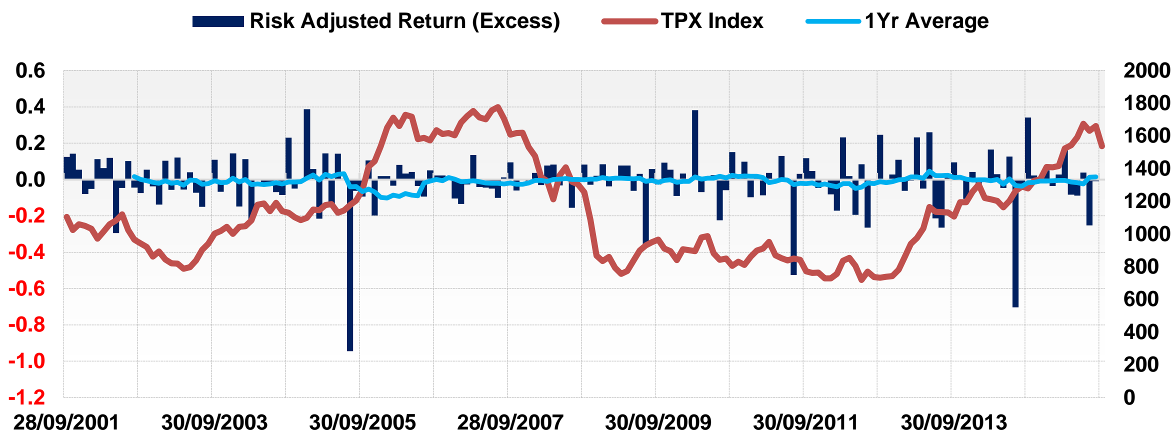


Source: Custom Products Research

The backdrop - ETF market evolution

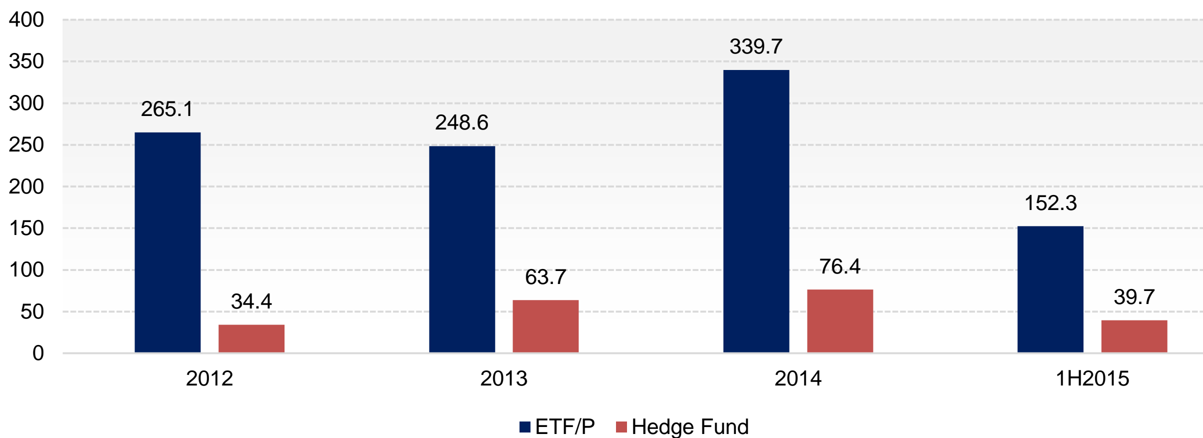
ETF growth

US market 1600 ETFs @$1.8tn

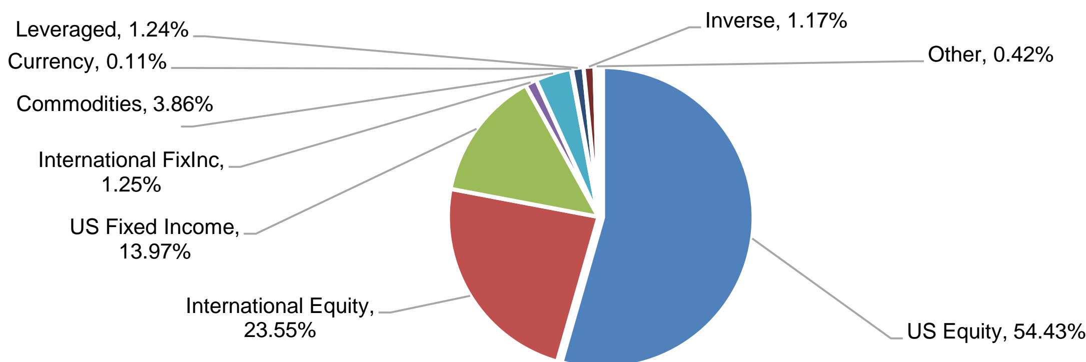
Love it or leave it Exchange Traded Funds/Products (ETF/Ps) are with us. In their 25 years of existence ETF/Ps have become a cheap, effective and efficient way to gain exposure to a variety of thematics. Charles Schwab recently reported in August 2015 that it had US$32.8bn in ETF/P inflow and $253mn in mutual fund inflow year on year. So that is over 100:1. Morningstar data also points to passive funds pulled in $484bn vs. $97bn for active managed money. In the US alone there are some 1,600 ETFs listed with around $1.8 trillion AUM.

Global ETFs around $3tn

Value Walk magazine suggested in July 2015, ETF/P assets listed globally totalled some $3 trillion. This surpasses hedge funds which, have been existence for nearly 3 times as long. It is no surprise following Lehman Shock that ETF/Ps are growing thanks to the simplicity and low cost and relatively transparent nature.



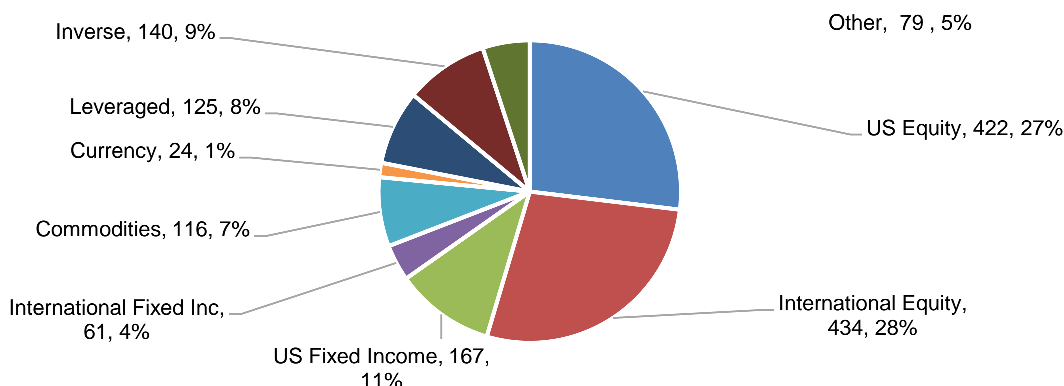
Source: Value Walk, ETFGI, Hedge Fund Research HFR



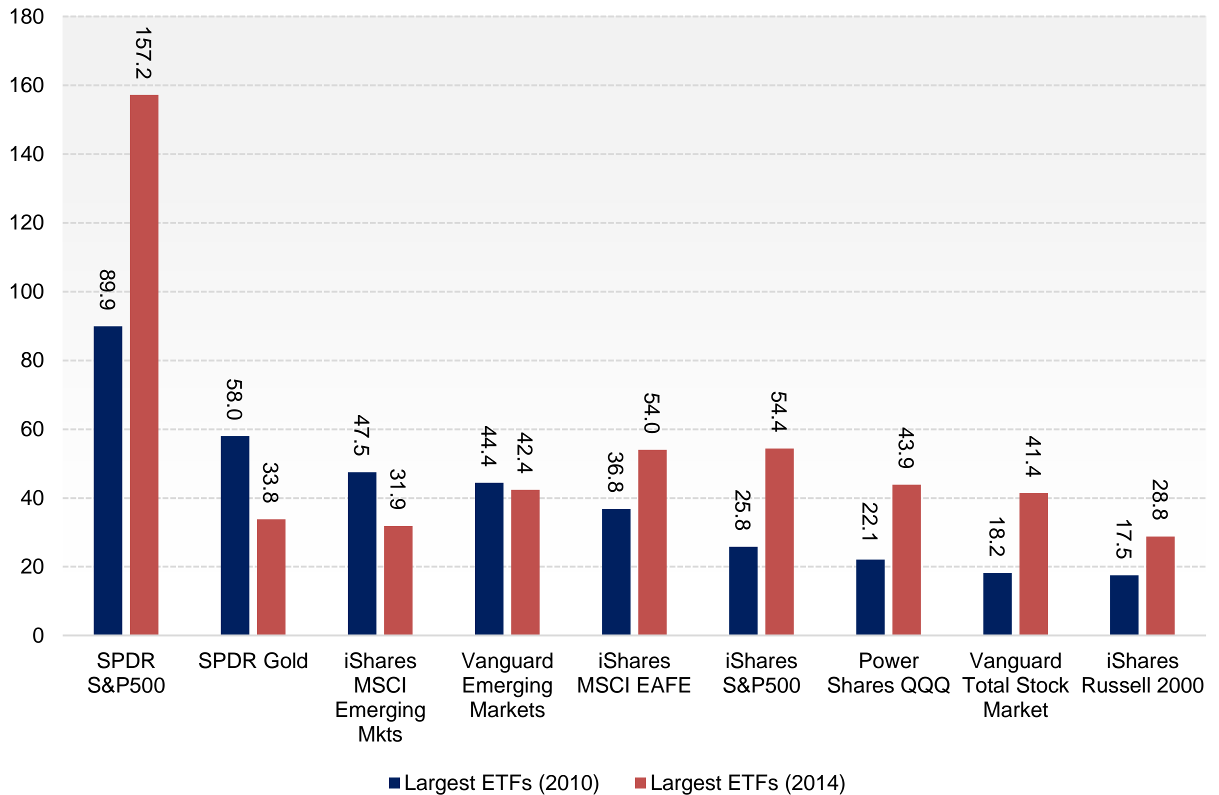
Source: ETF.com

Equities 75% of all ETFs by AUM

Global equities comprise over ¾ of ETFs worldwide as a % of AUM and a little over half in terms of products. Fixed income around 1/6th and inverse products a fraction under 10%.



Source: ETF.com



Source: CFA Institute Research Foundation

The Statistics of Share Price Target hikes

Alice in Equityland

Target prices are becoming so irrelevant that paraphrasing Alice in Wonderland sum it up:

"Everything would be nonsense. Nothing would be what it is, because everything would be what it isn't. And contrary wise, what is, it wouldn't be. And what it wouldn't be it would. You see?"

Premiums in defensive stocks

In our August 25th report of *'Why The Fancy Multiples?'* we noted that defensive sectors were trading at heady premiums in the week before the sharp (Aug, 17th 2015) versus the week before Lehman Shock. For instance, the Topix Pharmaceutical Index was trading at a 76% PER (1 year forward) premium, Retail Trade a 52% premium, Food a 21% premium and Land Transport a 15% premium.

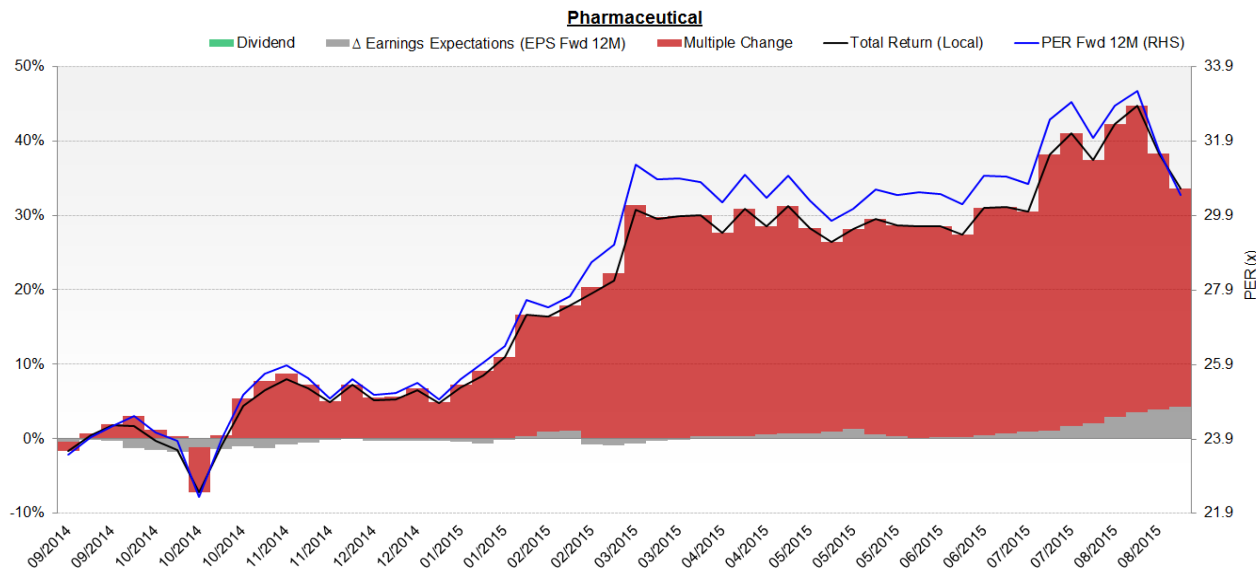
50-150% premiums

When we explored deeper on a per stock basis, the Pharmaceutical sector had Eisai, ONO Pharmaceutical, Takeda and Kyowa Hakko at 100-400% premiums over the same period. Food was lightly less exaggerated with Itoen, Rock Field, Kikkoman, Kirin and Dydo Drinco at 50-150% premiums.

Chasing stock prices

We conducted a study of target price changes among the sell side versus their EPS revisions. There is a definite pattern of 'stock-price' chasing with multiple expansion the largest

component. Interestingly, the defensive sectors have been the biggest offenders. Starting with Pharmaceuticals.

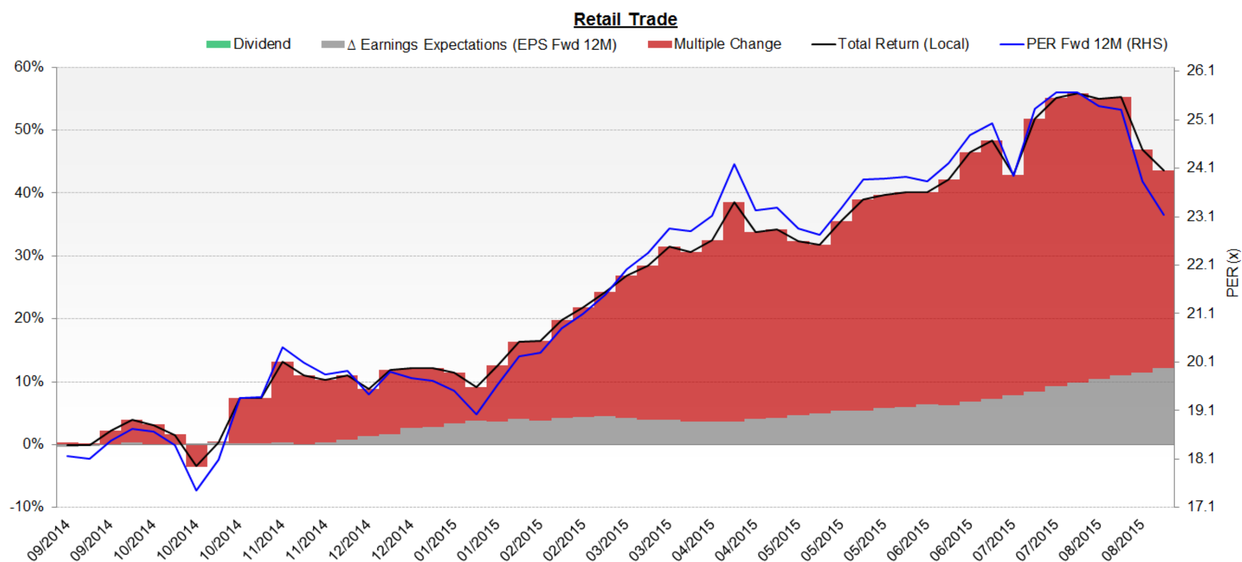


Source: Custom Products Research

Dividend changes featureless

In essence, changes in earnings expectations has been negligible. Dividend changes have been featureless.

Switching to the Topix Retail Trade Sector and it is much the same story. Multiple expansion has been the main factor behind target price hikes.



Source: Custom Products Research

Perhaps ETFs to blame

ETFs which are predominantly passive by nature will continue to exacerbate this problem as valuations are clearly not a factor. This is pushing defensive stocks to large premiums relative to history with little change in the underlying growth rates. The advent of Smart Beta ETFs will hope to address this gap somewhat but as a tiny proportion of overall ETFs at present the scope for sell-side price target forecasting becomes less relevant. It isn't a question of

hiking multiples to justify these price moves as it isn't based on any fundamental reasons. It is the activity of ETFs which is distorting traditional 'fair' value. Of course value is a relative argument but these previous two charts highlight the clear misunderstanding of what is going on between the lines.

In Summary

It is clear ETFs are bringing in a lot of volatility to markets. There is no question as to their popularity thanks to the ease of investment, simplicity of product offering and lower costs. However we think there is a real need to pay attention to the potential impacts on the downside should liquidation become widespread due to 'bear market' dynamics. This paper is not seeking to suggest that a bear market is necessarily imminent, rather the potential of excess volatility (especially among levered ETFs) causing distortions to the broader market should one occur. Should an ETF melt down due to a sharp market downturn, it could well cause a shaking of confidence once again in such financial products which could in turn drive up transaction costs through higher regulation and maybe cause a rebirth in actively managed funds which, could turn out to reignite the sell-side, albeit in a different guise.

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