A Consideration about the Volatility: The Counter-Strategic Trends

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Abstract. This paper investigates the relationship between yields and volatility. Despite much literature suggesting that there is the balanced rapport between risk and return but these theories do not always reflect the reality so that they cannot always be applied especially when it comes to consider the relationship between risk and return of individual securities. So, we will demonstrate that it is possible to dispel conceptions based on high risks with high profits, especially if we analyze elements of long-term.

In this work will be proposed two new assumptions underlying volatility that will highlight how it is possible to assert that a more limited volatility proves to be able to generate potentially higher returns in the long term.

Key words: Volatility; Yield risk; Volatility’ investment strategies
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1 Introduction

Volatility is a measure of the percentage change in prices over time. It is calculated by the standard deviation of the time series of prices of the portfolio, or by performing the square root of the variance, which is the average of the deviations of the price of a stock, the average of its prices at that time. It is a nice pun, the fact is that if volatility increases, the risk of the instrument is greater. As a reference, you have to consider that this is usually between 4% for bond indices and 20% for the equity indices. Volatility makes reference to the uncertainty and intuitively measures the value changes amplitude of a title. In other words, the higher the volatility, the higher the risk that the value of a stock changes. This means that the price of a stock can change both positively and negatively in a very short period of time. Investors assess these data as a risk measure of the securities and this often contributes to make assumptions of risk management, which then guide investment choices. Volatility is an important guide for the private investor. It is essential for the private investor’s expectations of the securities performance and even for an analysis of its ability to see the value of his/her money to fluctuate a lot (high volatility) or just a little (low volatility) in time. Volatility also affects the time horizon: in fact stocks with higher volatility generally require a longer holding period. Due to volatility, performances in the short period are less predictable. A title’s volatility depends on many factors including: the intrinsic characteristics of the title (shares are legally riskier than bonds); the investor base, i.e. the type of investor that operates on those securities; the rules that determine the supply and demand, that is the function of these instruments in the financial market; the duration in case of bonds. There is a direct correlation between the expected level of performance and the instrument volatility. This is the true law of gravity of finance, the higher the risk the higher the expected return. So when you are offered the portfolio, you both have the estimation of the expected return and the potential loss. Bear in mind that finance is a zero-sum game, and although sometimes can appear quite illogical, there is no "free launch" to the possibility of return -even if it is guaranteed-, because it always needs to be associated with a risk. Volatility has some intrinsic characteristics: cyclicality, persistence and mean-reversion property. The volatility is cyclic is one that tends to change in a cyclic manner, ie, after a growth phase where there is a maximum, follows a trend of contraction up to a minimum value and then resume the process from the beginning. Many practitioners believe that the volatility is much more predictable than the
price (due to this characteristic cyclic) and have developed strategies to exploit this principle. Regarding the persistent volatility it is simply the ability of the volatility to evolve a day after the other in the same direction, suggesting that the volatility of today likely will also be present tomorrow. This means that if the markets have a high level of volatility today, will most likely have a high level of volatility also tomorrow; on the contrary, if a market is not volatile today, tomorrow it will be difficult. Similarly, if the volatility is on the rise today, it will be easy to continue to increase while also tomorrow, if there is a contraction in volatility today, most likely volatility will continue to decline tomorrow. When you talk instead of volatility that tends to return toward the mean is when the financial instruments on the performance undergo regular hard acceleration, but these reactions constitute temporary intended to return. Similarly, securities or futures tend to be very volatile for a long time very reactive and phases of calm will be nothing but signals that herald a new resumption of daily. These features will be drawn from stocks, indexes, futures for long periods of time, until changed macroeconomic conditions will not lead to a substantial change in the personality of the title. All this leads simply to assert that the volatility has a tendency to return to its average value, or more than normal, after reaching extreme values either upward that down. Once a market has recorded an extremely high value of volatility, there is a good chance that the volatility returns to its average values. On the contrary, when a market reaches an extremely low volatility, there is good probability that the volatility returns to higher values, which returns to its average level.

2 Volatility’ investment strategies

According to modern financial theory, namely the CAPM (Capital Asset Pricing Model), investors get a return proportional to the degree of risk assumed. However, over a span of 40 years the empirical research on the returns of the stock market, which is in contrast with the theory on the relationship between risk and return, shows that titles with the lowest beta have performed better than those with higher beta. It is also noteworthy here that this “anomaly” reflects the difference between the expected return according to the CAPM model and that expressed by the empirical CAPM. The strategies for managing volatility exploit this inefficiency, disrupting the paradigm that is based on the management of a capitalization-weighted index of market. Conversely, the before – mentioned strategies tend to build a portfolio with the lowest volatility. At the base of this anomaly there is a connection with the investors’ preference for returns “by lottery”, as explained by Daniel Kahneman in his work for which he received the Nobel Prize. At the base of the process of building a portfolio with low volatility there is the use of sophisticated forecasting risk model that contributes to the creation of a portfolio with the risk as low as possible, taking into account securities with a low or negative correlation. Since Behavioral finance can help to optimize risk prediction, we can incorporate a model with alpha performance estimators to build the final portfolio with volatility management which consists of 50-80 titles that, on the whole, have a low volatility and fundamental interest. Strategies for managing volatility seem to be the perfect substitute especially for passive portfolios that offer an alpha equal to zero and express the volatility of the underlying market. Economic strategies for managing the volatility along an economic cycle typically have a volatility equal to 60, while only 70% of the index capitalization is the result of the volatility. Since the reduction of volatility can produce a more interesting Sharpe ratio, it is on this basis that these strategies should be evaluated. Strategies for managing volatility can produce higher returns in respect to more traditional approaches in part thanks to the effects of compounding. Offering a potential volatility far below than that of the market these strategies are ideal for the “return of capital”. These strategies should tend to produce a higher yield in stable or downward markets. Instead, in the equity markets in which the beta is
excessively paid (bubbles), strategies for managing volatility typically offer a total positive return, but lower than the capitalization - weighted index of the market. The orientation on reducing the overall risk in the portfolio, combined with an approach that does not take into account the index in terms of weighting by country, sector and title, distinguishes a management strategy of the volatility from the competition. The bulk of the offered management solutions of the volatility are closely linked to weighted indices based on capitalization or on volatility of the market. If, on one hand, invest in an index of low volatility means increasing the Sharpe ratio, on the other hand it is possible to get close to the capitalization - weighted index of market in order to fully exploit the anomaly of low volatility.

Management strategies are capable of reducing the volatility of stock market and producing higher yields over time. If we combine a tendency of human behavior characterized by greed (the so-called preference for gains from lottery), these strategies seem advantageous. In addition, trillions of dollars invested in passive strategies may strengthen this tendency, since the capitalization -weighted indices, by definition, invest excessively in securities that have historically produced a good performance and that have then a higher beta. The strategies for managing volatility should not be taken into consideration as tactic investment decisions only during periods of high volatility. Conversely, strategies for managing volatility should represent an investment core equity strategy and might be used to build passive portfolios with higher returns than those of the market, but with a much lower risk.

3 Financial crisis and volatility processes

The international financial crisis that began in August 2008 in the U.S. and that it has continued until today in all markets has created uncertainty in the financial markets. However, during this crisis, in spite of its peculiarities, quantitative finance’s tools, conversely to what is commonly thought, were able to explain what was happening. Part of the errors, in primis those made by institutional investors who have incurred in huge losses in their portfolio, consisted in an underestimation of the effects that an eventual outbreak of a crisis could have had on financial system, pushing the market volatility beyond the levels within which it normally is maintained. What took place was not entirely foreseeable, even though the mechanism that actually caused the damage, or rather the abnormal volatility of market prices, was predictable. This is not the best place for evaluate the appropriateness of accounting policies used by banks to assess their investment, however, we could reflect in a simple and effective way on what happens in the markets when both the trend and the volatility are changing contemporaneously. In order to do this, it is necessary to divide the scenarios that we may encounter on the financial markets in base on the level of volatility and price’ trends. In this way it is possible to outline four scenarios which, albeit in general terms, gather everything that is likely to happen on regulated markets.

The first scenario is called “market with trend and low volatility”. This can be seen as a positive situation, as it brings limited gains but low risks. Unfortunately, this scenario is not frequently encountered in the markets because, in general, either nothing happens, or something happens that often drives the price in an extremely violent way. However, when the variation is more contained, but well-defined, a waiting phase is needed in order to gain attractive profits. It is noteworthy here that the marked decrease of the risk is such that it more than offset the effort in terms of waiting: this is certainly the ideal situation for the investor. Speculation, instead, may find it difficult to play its role, especially in presence of a slightly growth. In such cases the input signals in the market are never clear and always leave many doubts, creating a state of uncertainty.

The second scenario is the so-called “non-trend market and low volatility”. This situation, as far as it may seems a paradoxical ones, represent a kind of balance for the financial markets because of the fact that there is no reason why
the price should vary significantly. Just like in any other free market, even the financial markets tend to follow the law of supply and demand. The supply and the demand must reach an equilibrium point, while in the case of disequilibrium it will trigger a mechanism of disequilibrium, which is based on the changes in prices. It is clear that in a speculative market is difficult to imagine that the price can maintain a position of equilibrium without showing significant changes for a long time. However, it is possible to observe a slight prices ‘movement for limited periods of time.

The third scenario, “market with trend and high volatility”, represents an ideal situation as the market shows a growing trend for a long time even if a very high growth is rarely sustainable. The price cannot carry on showing an upward trend, otherwise it would reach levels that are too different from the original ones to be justified. Nevertheless, on financial markets such a situations often occur because the stock market do not always give rise to movements that express rationality. Conversely, it could be noted certain configurations showing a sort of sensitivity of the operators subjected to moral hazard.

The last scenario could be defined as “non-trend market and high volatility”. Apparently this is the worst case scenario, since there is not a well defined tendency, but there are substantial fluctuations. From the investors’ point of view this situation is not acceptable, because of the strong variations of the financial assets’ prices, which are transferred inevitably on the portfolio. While, from the speculators’ perspective, the lack of a trend if combined with high volatility can be extremely useful. In fact, if the amplitude of the fluctuations is sufficient, thus it is possible to operate fast speculations that could become quite profitable. As soon as this happens, it is necessary that the so-called trading range occurs with an amplitude of oscillation capable of being exploited by speculative operations.

In order to understand factually how the operators could recognize the aforementioned scenarios, we will use the FTSE MIB index in the period between October 2008 and August 2010, primarily because it lends itself to highlight these four scenarios.

The considered time series have been divided into stages numbered according to the abovementioned scenarios. As it can be clearly seen from the graph, at the beginning of 2008 the market was characterized by phases of sharp tension and uneasiness on the part of investors, in fact it went up and down widely showing a marginal volatility highlighting a phase of 2 – type.

Then, it abruptly dropped and, consequently, the volatility leapt to over 60% on an annual basis, reaching its highest point in December 2008. It is worth noting that this level, which is three times the normal frame rate, should have been a clear sign of danger and presaged a "secular" crisis, at least from the point of view of technical analysis. This drawdown was, as stated by the theory, a succession of bearish trends, side steps or absence of trends, so the sequence was clearly of 3-4-3-4 types, or rather trend - lateral – trend - lateral, all of them characterized by high volatility.

Now it is perfectly clear that no trend or trends, phases of high volatility (volatility or abnormal) are by far the most risky and difficult for those who are professionally involved in investing in financial markets. In the early months of 2009, there has been a singular fact: the downward trend has become even more gritty and violent, but the volatility has decreased, therefore the sequence of steps was 3-4-1 instead of 3-4 -3. Some may ask why the worst of the downturn, from February to March 2009, has seen a fall in volatility. This is simply because the market reversed its direction more rarely and less violently. Indeed, the volatility measures,
amongst others, also the curvature of the market, or the ability to express strong trend and the contrast between them. In this case there was no contrast: dominated the bear phase. The proof of this lies in the subsequent recovery in spring, when the index scored a sensational performance, but the volatility, while still high, was not growing, because the rally was very “clean”.

4 A consideration on the volatility: the counter-strategic trends

One of the first concepts taught in finance is the balanced relationship between risk and return, according to which with the increase of the risk increases the possibility to earn higher returns. As the cornerstone of market mechanisms, this concept is the basis of a number of reference theories, such as the CAPM (Capital Asset Pricing Model) and the Efficient Markets Theory. However, these theories do not always reflect the reality so that they cannot always be applied especially when it comes to consider the relationship between risk and return of individual securities. In other words we endorse this theoretical assumption:

“if you invest in shares, it is necessary to take into account that a lower risk, with less volatility, seems to offer a higher potential yield in a long term”.

We will demonstrate the previous theoretical assumption by analyzing a financial short-term horizon. We take as a reference the year 2010 and as can be seen in Figure 2 trading trends this year have generally shown a close correlation between volatility and positive returns, broadly reflecting the provisions of the Modern Portfolio Theory of Markowitz or the Theory of Efficient Markets. The same Figure 2 is an example of bullish market with a favorable risk-reward ratio.

In this period, it is clear that the increase in risk has typically been profitable for the investor when the index edged up on average by 10.6%. However, the volatility may also affect in the opposite direction, as happened in 2002 when the market declined of more than 20%, leading to a situation in which a higher risk was tantamount to greater losses (dataset on Factset, 2002).

It can thus be concluded that, since over a period of one year may occur opposite events, the volatility can define the degree of participation in the market: a higher risk tends to amplify the market return and, as a consequence, the investor needs to correctly identify the market direction for a period of 12 months.

We can now derive the second assumption:

“if we consider a longer period of time, it can be shown that a lower volatility can lead to higher returns”.

A possible explanation derives from the fact that, when markets are not unidirectional, avoiding downside can have substantial effects at the level of compounding. In fact, if we analyze the time series from December 2005 to 31 December 2010, it is observed (Fig. 3) that the MSCI World Index posted an average annual return of 1.06%, by exploiting both the increases and the declines in this market cycle.
As can be seen from Figure 3, a lower volatility has generated higher returns. This phenomenon is justified by the fact that investors were not rewarded for taking a higher risk, instead they were rewarded for having opted for a lower risk. This relationship is also valid for a period up to 25 years. In fact, against a market characterized by an average annual return of 7.65%, emerges a high risk return ratio that would be sufficient to compensate investors for the perception/assumption of risk (dataset on Factset, 1987-2012). Economists and financial experts justify this situation by saying that this type of relationship exists because of the global financial crisis and the consequent losses on financial stocks, which have dragged down returns in the long term. However, as we can see, even before the financial crisis, securities with higher volatility have already produced lower yields in the long term.

It is therefore evident that there are clear benefits to invest in securities which have historically shown a low volatility. An additional demonstration about the relationship between low volatility and better performance in a portfolio is the case of investing in securities of emerging countries. In recent years, financial traders have built their portfolios with bonds issued by countries such as Indonesia, Malaysia, and Chile etc, which thanks to GDP growth guaranteed high investment returns. However, analyzing the data (Figure 5) it is evident how these markets are characterized by volatility. In particular, it is clear that a higher growth tends to involve greater volatility apparently without substantial differences between developed markets and developing markets.

Therefore, the above data refute essentially the idea that the returns on shares of emerging markets are only synonymous of growth. Without doubt the structural growth is a positive factor, provided that is not paid the price of risk. Thus, it is possible to assert that a more limited volatility proves to be able to generate potentially higher returns in the long term. These series of demonstrations based on economic data relating to returns and volatility provide, in our opinion, a convincing evidence that generally there is no direct relationship between increased risk and that of efficiency in the long run. Hence, this finding differs from numerous reference financial theories and the explanation...
lies in the fact that investors are attracted by the potential scenarios characterized by high volatility and substantial gains, despite the low probability of maintaining the positions of gain for a long time. Secondly, the financial tools tend to feed too much trust in their ability to predict the future and to make proper assessments. Thirdly, there are structural factors in the financial community, which can steer professional investors toward more volatile instruments, turn them away from those with low volatility.

5 Conclusion

In this paper we have shown that considering long-term investors, a high risk is not always synonym of high yields. Accordingly, all investors should carefully review their volatility exposure and the expected return; so it is preferable to focus on stocks with low volatility for long-term investments.

We do not exclude that risky stocks with high volatility give high yields also but this situation can only occur if there is a very experienced manager. Therefore we recommend a less risky alternative to achieve high returns in the long term: to invest in low volatility stocks through a careful examination of emerging markets especially. This choice is reinforced by the fact that if we invest in low volatility stocks in the long term, we'll get over to the yield also the fact that we have preserved the original capital.

References


