

Constructing and Trading a Dow-Jones Low-Volatility Index The Baileys Strategy

Chrilly Donniger
Chief Scientist, Sibyl-Project
Sibyl-Working-Paper, Aug. 2012
<http://www.godotfinance.com/>

Nobody puts constraints on God. She doesn't like it.
Andrew Greeley, priest and author of "Irish-Cream".

Abstract:

This work is an extension of the S&P SP-500 Low-Volatility-Index to the Dow-Jones. The constructed index is easy to trade directly in the underlying stocks. One can construct in the same way also a High-Volatility Index. By switching in calm-markets phases to the High-Vol Index one gets the very attractive Baileys trading strategy. The method can be easily extended to other indexes like the DAX.

Introduction:

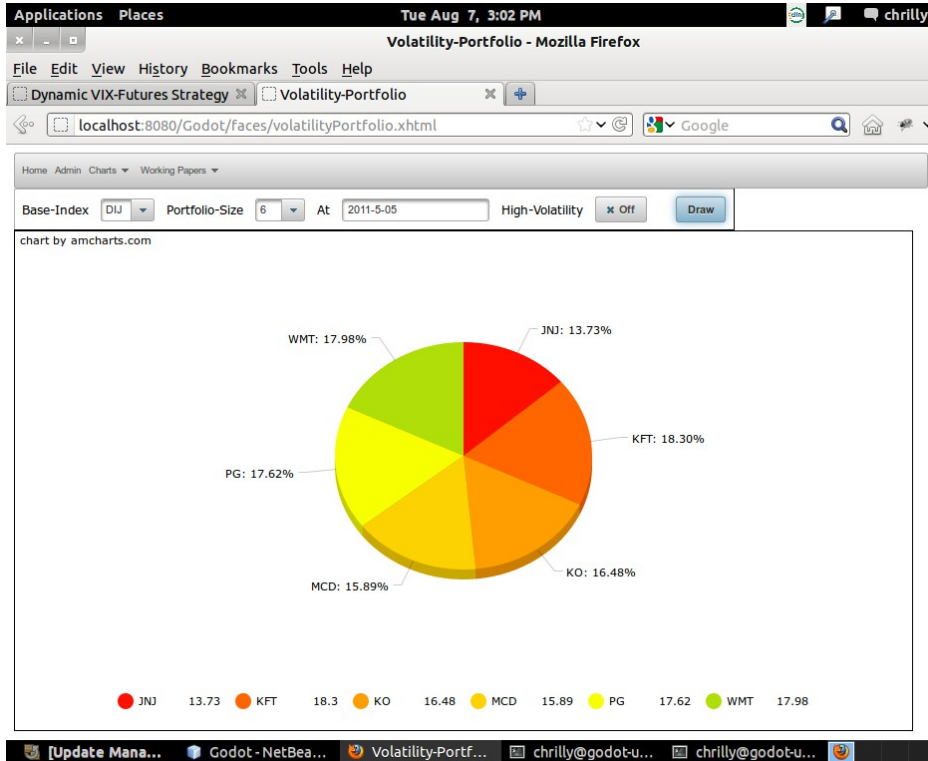
PowerShares introduced at 2012.05.05 the SPLV ETF. The SPLV tracks the S&P Low-Volatility Index ([1]). The ETF was an immediate success. At this writing Net Assets are over 2 Billion \$. There is a need for relative save investments. The Low-Volatility Index construction is rather simple. One sorts the S&P-500 stocks by the realized volatility (standard-deviation of the returns) of the last year. The lowest 100 form the Low-Volatility index. The index is recalculated semi-annually. For further details see also [2]. Interestingly there is no Low-Volatility index for the Dow-Jones. This may have legal reasons. The Dow is not S&P's business. Maybe there is also no need for such an index, because it can be easily constructed by each market participant. In case of the DAX there is the similar DivDAX. The DivDAX weights according the dividends. There are also Low-Beta indexes. The Low-Volatility approach is in my view the most general and elegant approach.

Methodology:

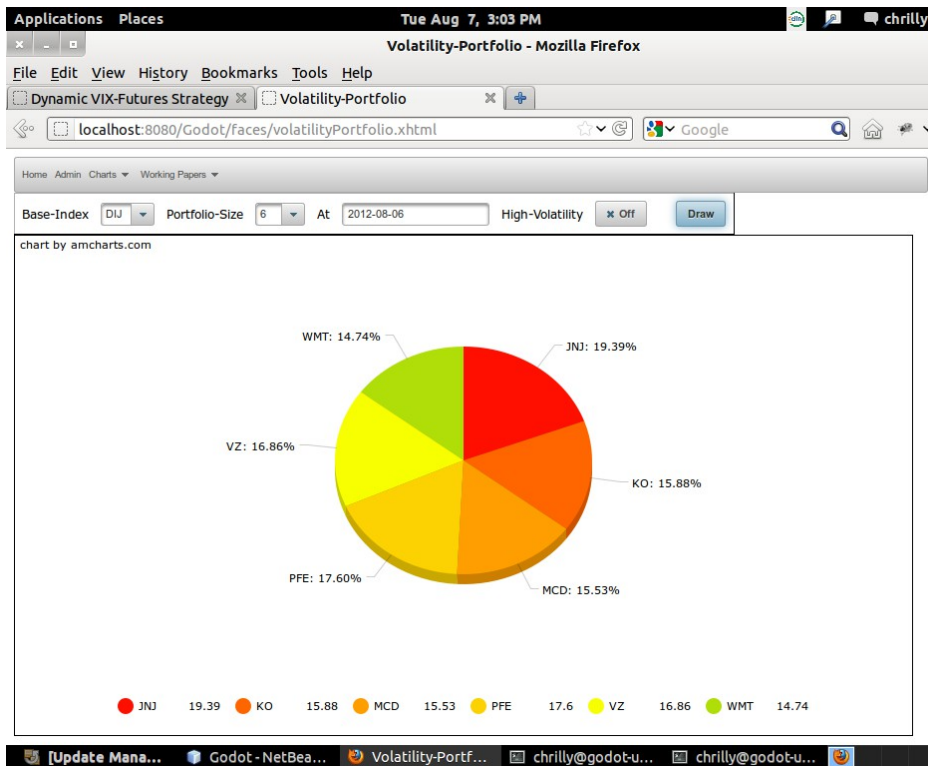
In contrast to the S&P Low-Vol-Index volatility is measured according the Risk-Metrics Methodology [3] as the exponentially weighted volatility (standard-deviation of the returns). Alpha is set to the usual value of 0.97. This is comparable to a 3-month window. The Risk-Metrics methodology constructs in this way covariance matrices. Here only the (root of the) variance is used.

The S&P uses the lower volatility quantile. This gives also for the Dow the best results and is in agreement with numerous other studies. Hence one selects 6-stocks with the lowest volatility and sets the portfolio weights to the inverse of the volatility.

The best recalculation period is 1 month (21 trading days). But the period has only a minor influence on the performance. One gets essentially the same results with a weekly, monthly, quarterly or semi-annually period. The portfolio stays rather constant.

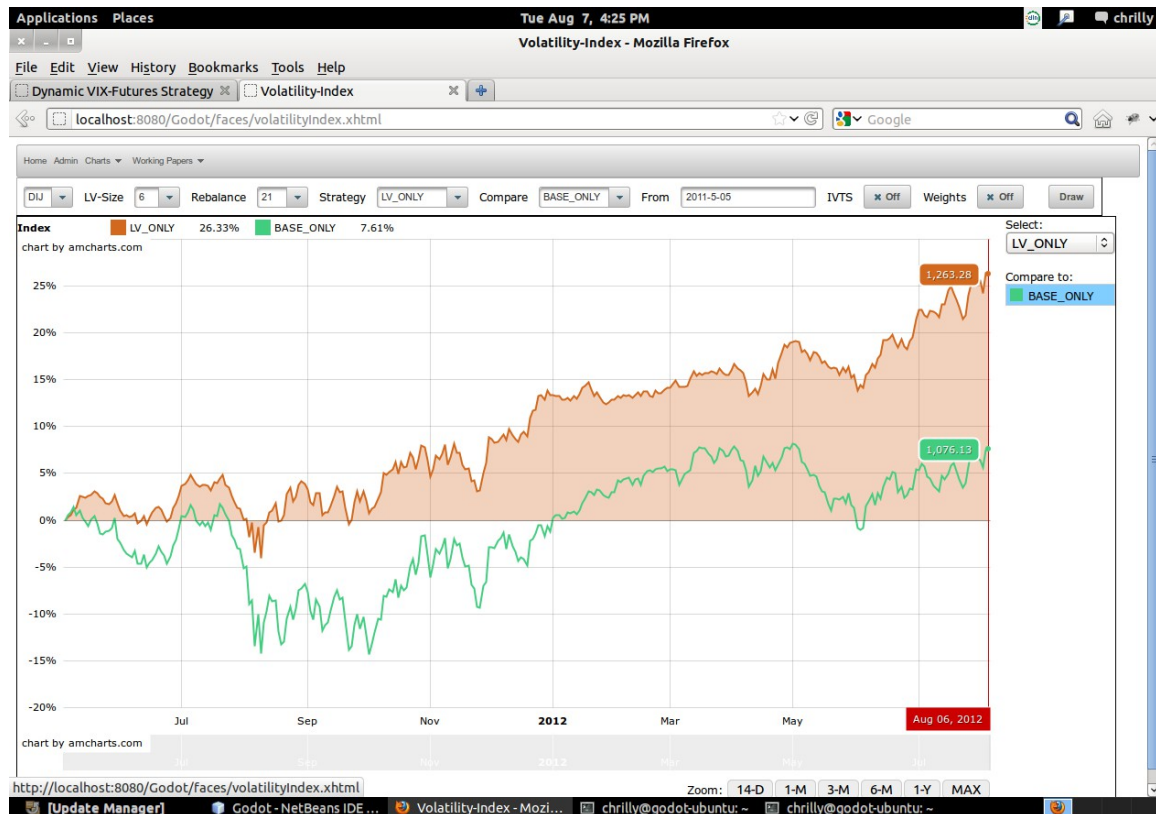


Graphic-1: Low-Vol-Dow Portfolio at 2011.05.05



Graphic-2: Low-Vol-Dow Portfolio at 2012.08.06

Graphic-1 and 2 show the Portfolio at 2011.05.05 (the introduction of the SPLV) and at 2012.08.06. The portfolios have WMT (Wal-Mart), JNJ (Johnson&Johnson), KO (Coca-Cola) and MCD (McDonalds) in common. These four assets are the typical members of the Low-Vol Dow.



Graphic-3: Performance LV-Dow (brown) to DIA (green) 2011.05.05 to 2012.08.06

The LV-Dow clearly outperforms the DIA. It wins over the 15-month from 2011.05.05 to 2012.08.06 26.2%. The Dow 7.6%. It has relative low losses in the August-2011 crash and outperforms the Dow also in the last 4 months of the considered period. But during the extreme rally in Feb/March 2012 the Dow surpassed the LV-Dow.

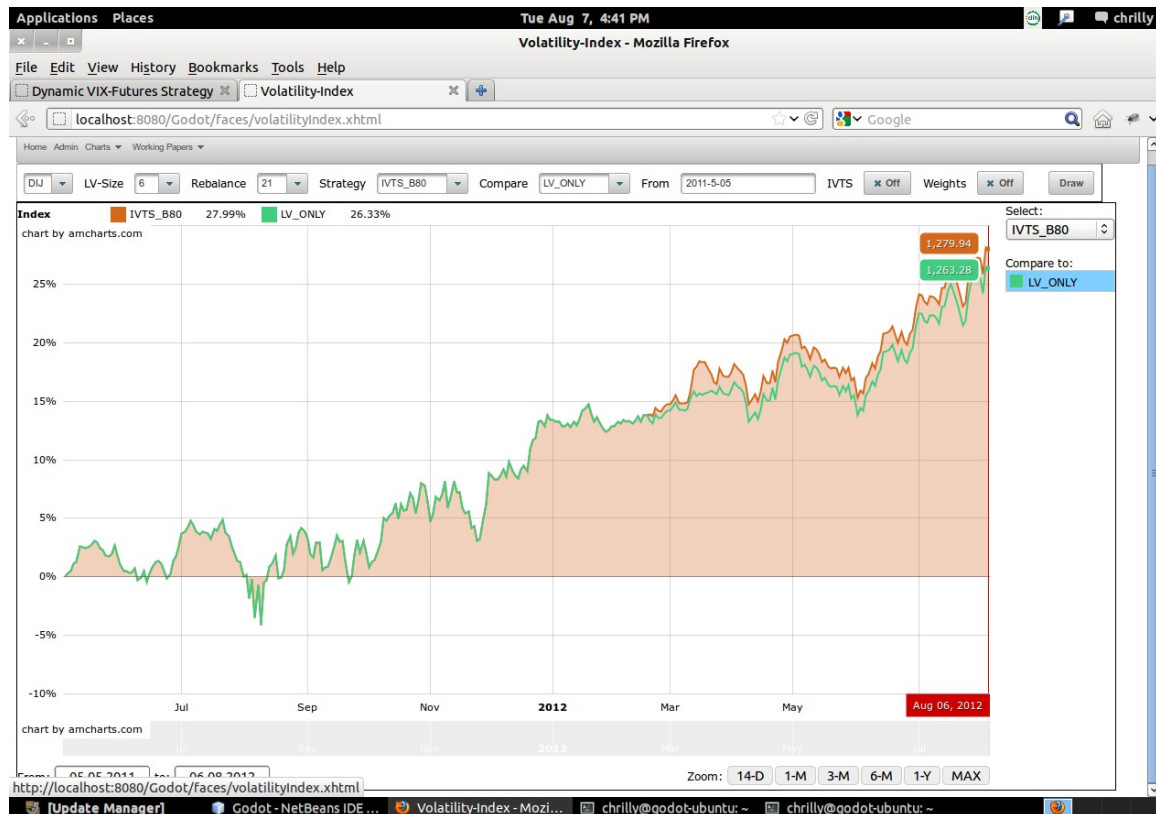
In [2] I have developed the Irish-Cream strategy. The strategy uses the implied volatility term structure (IVTS) as a measure for the market-regime. The IVTS is defined as

$$IVTS(t) = VIX(t) / VXV(t) .$$

VXV is the implied volatility of S&P-options with 3 month maturity. Besides the different maturity the calculation is the same than for the VIX. If the IVTS is high, the market is in a bearish-regime. If the IVTS is low (0.80) the bulls reign.

The SP-Irish-Cream hedges the SPLV with the inverse S&P-500 ETF SH if $IVTS > 0.89$. It changes to the SPY if $IVTS < 0.80$.

For the LV-Dow hedging with the DOG (inverse DIA) does not pay. The LV-Dow does not loose enough in a crash to compensate the costs of hedging. But the second idea, changing to the more aggressive DIA during a rally works also in this case well.



Graphic-4: LV-Dow with DIA boosting (brown) and LV-Dow (green).

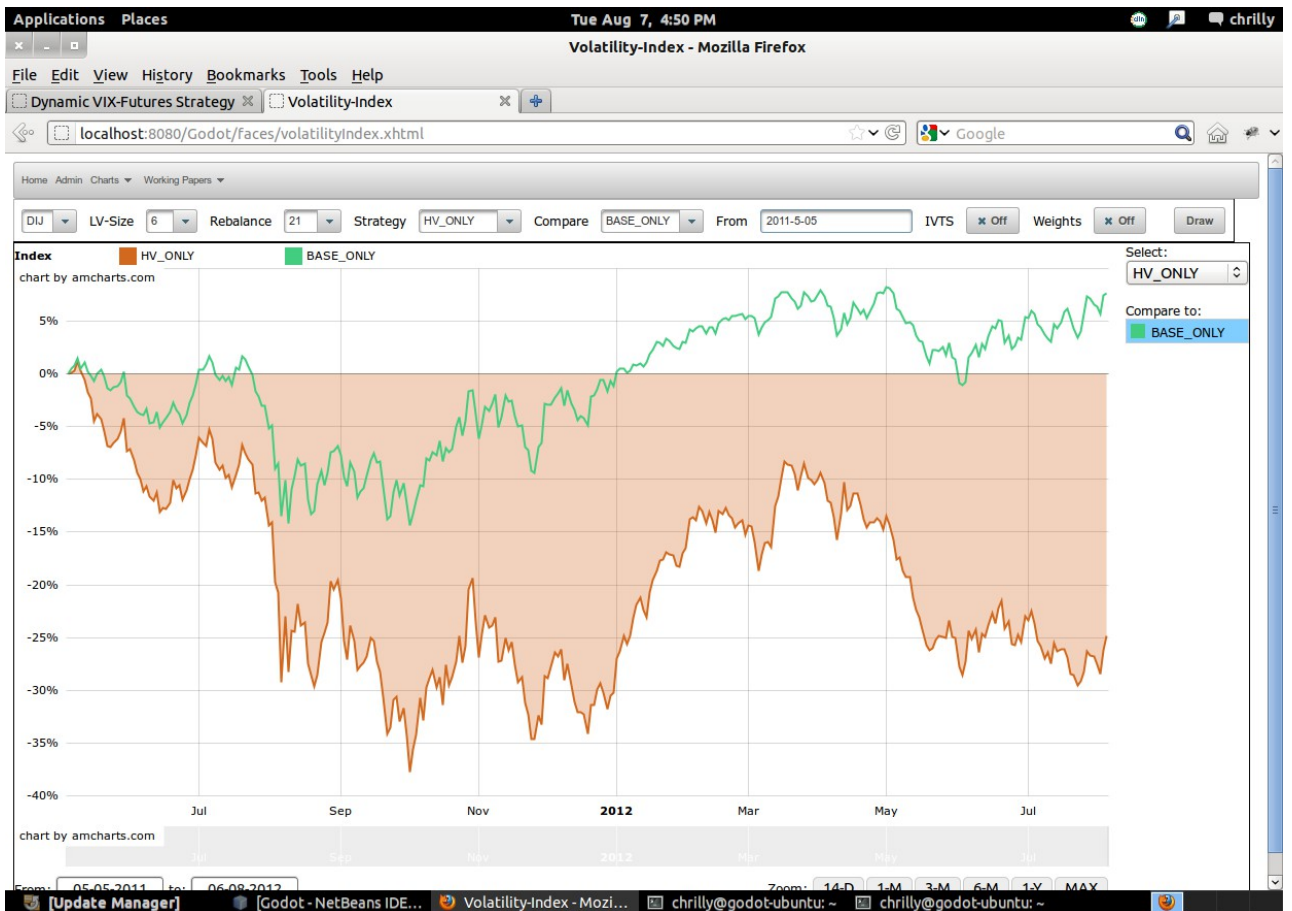
Changing to the DIA if the IVTS is below < 0.80 improves the result to 27.9%. The DIA booster is only ignited a few weeks in Feb./March 2012.

A more aggressive approach is to build according the same methodology a high-volatility index. The 6 Dow-stocks with the highest volatility are selected. The weight is for the HV-Dow proportional to the volatility. The overall performance of the HV-Dow is rather poor (graphic-5). But the HV-Dow moves in the rally of 2012 up like a rocket. Replacing the Dow by the HV-Dow as the booster improves the result considerable to 36.3% (see Graphic-6).

Conclusion:

The LV-Dow is easy to implement. The portfolio is rather stable. Four out of the 6 stocks are practically all the time LV-Dow members. There are almost no rebalances necessary. The stocks in the portfolio are also highly correlated and do not jump around. Therefore the price-drift is also low. It is almost a buy&hold strategy. If one wants to have more fun, boosting with the High-Vol Dow is an interesting alternative. If one prefers less risk

and fun, one can boost with the DIA. It is of course an open question if boosting works all the time so fine like in Feb/March 2012. If the IVTS is below 0.8 the market is in a strong rally. So the boost should not be very risky and it is probably worth a try. Boosting with the Dow is a Baileys. In case of the HV-Dow boost some real whiskey added.



Graphic-5: Performance of HV-Dow (brown) to DIA (green).



Graphic-6: Performance of HV-boosted LV-Dow (brown) to LV-Dow (green).

References:

- [1] S&P: S&P Low Volatility Index Methodology, May 2012
- [2] Ch. Donninger: Trading with Low-Volatility ETF's: The Irish-Cream-Strategy. Sibyl-Working-Paper, Aug. 2012.
- [3] J.Mina, J. Yi Xiao: Return to the Risk-Metrics, the Evolution of a Standard.