
*A Sentiment-based Volatility-Portfolio Strategy for The Swiss Market Index
(SMI)*

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Abstract

Purpose: the present study investigates the possibility of pairing the implied volatility and the CS-CFA sentiment index – the Swiss equivalent of the ZEW index – to deliver an active strategy capable of containing the total risk and outperforming the Swiss Market Index (SMI).

Design / Methodology / Approach: the proposed strategy falls within the category of volatility-portfolios since it considers the implied volatility to rebalance the weight of the equity asset class to the purpose of containing risk. The portfolio rebalancing though here is triggered by a dichotomous signal generated by the CS-CFA sentiment index.

Findings: the obtained results indicate that the proposed strategy dominates the benchmark.

Practical Implications: the empirical evidence provided hereby advocates for the combined utilisation of ZEW-like sentiment indices and implied volatility in the formulation of volatility-portfolio strategies.

Originality and Value: with respect to the current academic literature on the subject of volatility-portfolios, the present paper widens the set of variables taken into account by encompassing a ZEW-like sentiment index. The specific equity market involved in the empirical test, the Swiss market, also represents a novelty within the context of said literature.

Keywords: Portfolio Management, Volatility, Sentiment, ZEW

JEL Codes: G11, G41

Paper Type: Research Paper

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I. Introduction

The implied volatility related to an exchange market index is the market's forecast of the likely movement in the price of said index within a 1-year horizon. The implied volatility, abbreviated with “IV”, is a variable involved in the Black & Scholes formula aimed at pricing call and put options. From an operational point of view, the IV is estimated based on the 1-month maturity options' prices once that all the remainder variables involved in the Black & Scholes formula have been estimated. As the IV estimate may slightly differ from an option to another, the IV is set equal to the average estimate over the homogeneous options' sample in question. By representing an average value, the IV avoids measurement errors induced by the bid-ask spread.

The IV considered in almost the whole academic literature on the subject is the VIX, the IV of the US market which is quoted on the Chicago Board of Options Exchange (CBOE). The VIX is also known as the “investor fear gauge” to the market speculators. To these regards, the IV is actually qualified as a sentiment index since the following thumb-rule sentiment characterisation can be derived from it (Durand et al. 2011):

- risk-averse investors pool (market uncertainty): IV reading of 20 or higher
- bullish investors pool: IV reading below 20

Besides the IV, within the sentiment analysis toolbox, the financial analysts' surveys certainly occupy a preeminent place. The most renowned analysts' survey in Europe is conducted monthly by the ZEW (Zentrum für Europäischen Wirtschaftsforschung), the Germany-based centre for the EU economy forecasting. This survey collects the expectations concerning the EU economy prospects made by 350 financial analysts over a 6-month time horizon. The ZEW averages said expectations to deliver a sentiment index, known as the “ZEW index”; such index is a number ranging from -100 to +100 which represents the unbalance – in percentage – between the analysts with a positive-outlook and those with a negative-outlook analysts. The higher the ZEW index, the higher the likelihood of good prospects for the EU economy.

The present paper investigates the usefulness of both the IV and the ZEW index to the purpose of delivering an active portfolio strategy capable of containing the total risk and outperforming the market in terms of return-risk trade-off. The second distinctive contribution of the present paper is its focus on the Swiss Market, whose benchmark index is the SMI (Swiss Market Index). On the grounds of said focus, the sentiment variables considered hereby are the VSMI – the SMI's IV – and the CS-CFA sentiment index, the ZEW-like index referred to the Swiss economy which stems from a market survey conducted by Credit Suisse and the Swiss Chartered Financial Analysts (CFA) association.

Chapter 3 provides a rigorous formulation of the active strategies hereby proposed, whereas chapter 4 characterises the empirical study intended to assess the performance of the strategies above mentioned. Finally, chapter 5 discloses the empirical study's findings, making possible to compare the active strategies in question and to assess their overperformance (if any) with respect to the benchmark, i.e.: with respect to a passive strategy consisting in holding a long position on the SMI.

2. Literature Review

IV-based Active Strategies

The IV gains its place in active portfolio strategies on the grounds of a compounding academic literature. When the predicted volatility increases, also the market risk premium increases as it is positively correlated to the variance of the market returns (Merton, 1980). The increase in market premium due to the

References

- Bauwens, L., Otranto, E. 2016 "Modeling the Dependence of Conditional Correlations on Market Volatility." *Journal of Business & Economic Statistics*, vol. 34, no. 2, 2016, pp. 254–68, <http://www.jstor.org/stable/44166578>. Accessed 12 May 2022.
- Colecchia, D., Prandi, S. 2021 "Volatility Strategy: An Operations Research Approach on The Swiss Equity Market", ISORF <http://www.isorf.org/publications/VOL-FACTOR.pdf>
- Copeland, M. M., Copeland, T. E. 2022 "Market Timing: Style and Size Rotation Using the VIX." *Financial Analysts Journal*, vol. 55, no. 2, 1999, pp. 73–81, *Financial Analysts Journal* Vol. 55, No. 2 (Mar. - Apr., 1999), pp. 73-81 <http://www.jstor.org/stable/4480156>
- De Long, J. B., Shleifer, A., Summers, L. H., Waldmann, R. J. 1990 "Noise Trader Risk in Financial Markets". *Journal of Political Economy* 98.4 (1990): 703–738. <https://www.jstor.org/stable/2937765>
- Durand, R. B., Lim, D., Zumwalt, J. K. 2011 "Fear and the Fama-French Factors". *Financial Management* 40.2 (2011): 409–426. <https://doi.org/10.1177/21582440211027846>
- Fama, E. F. 1970 "Efficient Capital Markets: A Review of Theory and Empirical Work." *The Journal of Finance*, vol. 25, no. 2, 1970, pp. 383–417, <https://doi.org/10.2307/2325486>
- Fama, E. F., French, K. R. 1992. The Cross-Section of Expected Stock Returns. *The Journal of Finance*, 47, 427-465. <https://doi.org/10.1111/j.1540-6261.1992.tb04398>
- Fleming, J., Ostdiek, B., Whaley, R. 1995. "Predicting Stock Market Volatility: A New Measure." *Journal of Futures Markets*, vol. 15, no. 3 (May):265-302. <https://www.jstor.org/stable/4479853>
- French, K., Schwert, G. W., Stambaugh, R. 1987. "Expected Stock Returns and Volatility." *Journal of Financial Economics*, vol. 19, no. 1 (September) [https://doi.org/10.1016/0304-405X\(87\)90026-2](https://doi.org/10.1016/0304-405X(87)90026-2)
- Homolka, L., Pavelková, D. 2018 "Predictive Power of the ZEW Sentiment Indicator: Case of the German Automotive Industry", *Acta Polytechnica Hungarica*. 2018, vol. 15, s. 161-178. <https://doi.org/10.12700/APH.15.4.2018.4.9>
- Hüfner, F. P., Schröder, M. 2002. "Forecasting German industrial Production: An Econometric Comparison of ifo and ZEW-Business Expectations". *Jahrbücher für Nationalökonomie und Statistik*, 222(3) <https://doi.org/10.1515/jbnst-2002-0303>
- Markowitz, H. 1952 "Portfolio Selection", *The Journal of Finance*, Vol. 7, No. 1. (Mar., 1952), pp. 77-91 <https://doi.org/10.2307/2975974>
- Merton, R. 1980. "On Estimating the Expected Return on the Market: An Exploratory Investigation." *Journal of Financial Economics*, vol. 8, no. 4 (December):323-361. [https://doi.org/10.1016/0304-405X\(80\)90007-0](https://doi.org/10.1016/0304-405X(80)90007-0)

- Moreira, A; Tyler, M. 2022 "Volatility-Managed Portfolios." *The Journal of Finance*, vol. 72, no. 4, 2017, pp. 1611–43,
<http://www.jstor.org/stable/26652549>. Accessed 12 May 2022
- Sharpe, W.F. 1964. "Capital asset prices: a theory of market equilibrium under conditions of risk", *Journal of Finance*, Vol.19, No. 3, pp 425–42.
<https://doi.org/10.1111/j.1540-6261.1964.tb02865.x>
- Tuckett, D. 2009. "Addressing the Psychology of Financial Markets". *Economics: The Open-Access, Open-Assessment E-Journal*, 3(2009-40).
<http://dx.doi.org/10.5018/economics-ejournal.ja.2009-40>