



## Prof. Paul Schneider

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## Does It Pay to Be an Optimist?

SFI Professor Paul Schneider tackles this question in his research paper *Does it Pay to Be an Optimist?*. Optimism may help when securing jobs or promotions, but how does it fare on the trading floor? Schneider connects subjective views such as optimism and pessimism with prices and trading strategies in the options market. He finds pessimists to be far and away the most successful agents, with optimists being their unfortunate counterparties. Perhaps surprisingly, the pessimist's success is based upon his or her role as insurance vendor.

To reach his conclusions, Schneider develops a framework in which he takes quoted bid–ask spreads in the liquid S&P 500 options market as input and investigates how different subjective views imply risk preferences, and consequently trading strategies. In his model, the options market is populated by optimists, pessimists, and pragmatists. The optimist believes in the exceptional upside potential of the market, while the pessimist believes disaster is highly likely; the pragmatist believes that the market does not quote a certain region of option strikes by accident and hence considers it the most informative.

### The surprising impact of optimism on the swap and insurance markets

Schneider then develops an equilibrium model of a market in which the three agent types trade option portfolios with each other. He identifies the trading rules each type of agent would choose under no arbitrage and market clearing. The presence of different views in the marketplace is essential for there to be any trading at all. With positions in both S&P 500 forwards and variance swaps replicated from option portfolios, individual agents will choose the trading strategies they believe to be optimal depending on their subjective preferences—whether optimistic, pessimistic, or pragmatic. Schneider's model thus yields a snapshot of the *real* S&P 500 options market, along with portfolio positions that optimists, pragmatists, and pessimists would choose.

Following the evolution of profits of these model-implied portfolios over time from 1990 to 2016, Schneider finds that the three types of agents use a surprisingly small variety of strategies. With few exceptions, pessimists short both the S&P 500 itself and variance swaps, with the optimists as their counterparty. The pragmatists fill in the trading gaps opportunistically. This market-clearing allocation in variance comes as a surprise: the generally accepted interpretation of the negative variance premium in the S&P 500 market is as an insurance premium against market crashes.

### Pessimism is not risk aversion

To appreciate the background to these unexpected trading allocations, one ought to discard the notion that pessimists are necessarily more downside risk averse than optimists. Likewise, optimists are not necessarily more risk loving. Analogies are easy to find. Pessimists may pack their bathing suits and beach towels despite their expecting bad weather. In contrast, optimists decide to leave them at home, because they simply do not want to be bothered by the extra weight, despite their strong expectations of a sunny day. Downside risk aversion is the most prominently and robustly observed trait of human decision-making, but there is a great variation in its strength that is not necessarily connected to expectations.

### Could there be another explanation?

Schneider's results hold true even when he modifies his baseline model in various ways. Transaction costs (or lack thereof), market power, noise traders, or the ability to learn about the underlying distributions over time through sample averages—none of these elements change the outcome. The pessimist remains the most successful agent, with the optimist paying for that success.

Positive thinking, it is clear, does not always pay off. On the option trading floor, it seems, optimism all by itself is rather unhelpful.





## Dr. Michael Markovich

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# Who Wants to Be an Optimist and How to Profit from Optimism

In finance, taking risks is associated with collecting premia that compensate investors for their exposure to uncertainty while smoothing future income. The most commonly known and traded risk factors in finance are equity risk (equity premia) and sovereign bond risk (term premia). In each of these two markets (equities and bonds) investors will usually gain if markets actually do not move. If markets do not move, investors will collect an equity dividend, in bonds an interest rate coupon. On top of this, investors will collect risk premia via price appreciation in both markets as uncertainty about future cash flow vanishes (e.g., a sovereign bond drifts to its par value of 100). Collecting profits over the course of time is the most general definition of a positive carry strategy and will serve as my definition of an optimist. Optimists are confident that risk taking will be properly compensated as they assume that future cash flows are sufficiently discounted relative to the risk-free rate such that each day on which uncertainty is resolved they profit by moving closer to the final, “certain” cash flow.

## The triumph of optimism?

Dimson, Marsh and Staunton<sup>1</sup> analyzed a century of investment performance concluding that optimism has triumphed in equities (collecting the equity risk premium vs. bonds) and in bonds (collecting the bond term premium vs. cash). Similar results are shown by Jorda et al. (2017)<sup>2</sup> and other researchers. In a nutshell, their analysis shows that being exposed to equity and bond risk was incredibly beneficial to investors; hence, it paid off for investors to be optimistic since future cash flows have been discounted sufficiently beyond the risk-free rate. I will refer to this investor as the premium optimist.

SFI Prof. Schneider’s focus on optimism is conducted via the option derivatives market. The author defines optimists, pessimists, and pragmatists and extracts via a unique equilibrium model the positioning behavior among the three agents. The results show—leaving the pragmatists aside—that pessimists sell forward equity

and volatility variance swaps to the optimists. This, however, is a loss-making strategy for the optimist and a very profitable strategy for the pessimist, as the author shows. Does this contradict the results from Dimson, Marsh, and Staunton? I believe not. Neither should it lead us to conclude that pessimists do better on the trading floor.

What is the portfolio position of the derivative optimist? The optimist ends up with a long forward and a long variance swap position. This, however, is equivalent to being actively long a call option. When buying a call one effectively engages in a delta-adjusted long position in the underlying (long the forward contract) and in a long volatility position. However, in premium terms this trade is a negative carry trade (loses money over time). One element is the negative carry coming from the forward if interest rates are positive. However, over one month this is likely to be negligible. The much larger negative carry comes from being long on volatility (long gamma risk)—that is to say, with the passage of time a call will lose value. The derivatives optimist will gain only if the market moves beyond what is implied in the call price or the variance swap. If the market moves less, the premium paid for the call was overpriced. Hence, the derivatives optimist loses if the implied volatility of the call option is higher than the realized volatility (the volatility premium is negative, for which we have plenty of historical evidence<sup>3</sup>). The loss for the derivatives optimist comes hence from the fact that he or she is an insured optimist and that the insurance is overpriced.

## The relevance for practitioners

SFI Prof. Schneider’s remarkable results show that the option market is highly efficient and that the price-setting mechanism is controlled by the sell side rather than the buy side—that is to say, a derivative optimist will be the price taker while the trading floor (now revealed to be the pessimist) is the price maker. By applying his unique equilibrium model he confirms, from a new angle, that the volatility risk premium is negative.

<sup>1</sup> E. Dimson, P. Marsh and M. Staunton (2002), “Triumph of the Optimists”, Princeton University Press.

<sup>2</sup> O. Jorda, K. Knoll, D. Kuyshinov, M. Schularick and A. Taylor (2017), “The Rate of Return on Everything, 1870-2015”, NBER working paper.

<sup>3</sup> J. Jackwerth and M. Rubinstein (1996), “Recovering Probability Distributions from Option Prices”, Journal of Finance.

