

Technical Analysis, Sentiment and the Cross-sectional Stock Returns

Abstract

Long deemed as “mumbo jumbo” by financial economists, technical analysis is puzzlingly popular among experienced traders over hundreds of years. We reconcile these two conflicting views of technical analysis by exploring an unexamined sentiment channel through which technical analysis adds value. Building a new sentiment indicator (hereafter TA sentiment) from a spectrum of commonly used technical trading strategies, we document its high correlations with other popular sentiment indicators. A rise in the TA sentiment predicts an increase in the near term returns and a decline in both subsequent returns and return skewness in the cross section. Simple trading strategies based on the TA sentiment yield substantial (risk-adjusted) returns, especially in the high sentiment periods, which are unexplainable by traditional risk factors and the momentum factor. We explain our results by relying on the synchronization problem (Abreu and Brunnermeier 2003) of rational arbitrageurs who detect sentiment through technical analysis and ride the mispricing before it’s eventually corrected.

Long Abstract

Technical analysis is probably one of the most controversially debated issues between financial professionals and academic researchers. The traditional academic wisdom posits that publicly available information such as past prices or trading volumes, which serve as the basis of technical analysis, should have already been incorporated into current asset prices, therefore any attempt to predict future returns based on technical analysis must “share a pedestal with alchemy” [Burton G. Malkiel (1973)]. In practice, however, technical analysis is popular among experienced traders and even many top fund managers,¹ raising immediate questions such as why traders adopt it in their costly trading, and why investors pay them to do so. Adding to this debate, the once was a central banker and an academic who is now a fund manager, Sushil Wadhvani, said that overcoming the prejudice against technical analysis was the most important lesson he had to learn when moving from the ivory tower into the laboratory of real life experience as a trader.²

This paper aims at reconciling these two conflicting views of technical analysis by studying an unexploited channel through which technical analysis adds value. More specifically, we argue that technical analysis is a barometer for investor sentiment. Such a view is prevalent among traders as a major tenet of technical analysis. In the presence of limits to arbitrage, investor sentiment leads to temporary mispricing. We further borrow from the academic insight that due to the synchronization problem (Abreu and Brunnermeier 2003), rational arbitrageurs who extract sentiment information from technical analysis won't eliminate mispricing immediately but ride it. Since sentiment-driven mispricing is more likely to occur for stocks that are more prone to investor sentiment and immune to arbitrage (e.g., small, young and more volatile stocks), we hypothesize that when there is an increase in market sentiment embodied in the technical analysis, returns of those stocks rise contemporaneously relative to less sentiment prone stocks. Such an increase persists for some time as long as the rational arbitrageurs ride the mispricing, and price plunges when rational arbitrageurs eventually coordinate their attack on the mispricing, leading to more negatively skewed returns of those sentiment prone stocks.

To test our hypothesis, we first build a daily market sentiment indicator (hereafter TA sentiment) based on trading signals generated from applying 2127 technical trading strategies to S&P 500 index. The universe of the trading strategies is the same as Qi and Wu (2006) and nests nearly all the trading rules studied in the top three finance journals. We validate the TA sentiment by showing its strong correlations with several popular sentiment indicators. Both the level and the change of TA sentiment

¹ Taylor and Allen (1992) find that at least 90% of experienced traders place some weight on technical analysis. Schwager (1995) and Lo and Hasanhodzic (2009) report that many top traders and fund managers they interviewed are in favour of technical analysis.

² See “Technical analysis pulled out of the bin”, October 17, 2010, Financial Times.

are significantly correlated with the level and the change of CBOE Volatility Indicator (VIX), the CBOE Options Total Put-Call ratio, the detrended trading volume of S&P 500 (VOL), as well as the bull-bear spread. Our TA sentiment is an easy-to-construct, real-time measure, which is available at daily frequency and can be applied to other markets.

We then test the cross-sectional effect of TA sentiment on cross-sectional stock returns and return skewness. To that end, we follow Baker and Wurgler (2006) and build 16 portfolios that long the more sentiment-prone and difficult-to-arbitrage stocks (e.g., small, young and high volatility stocks) and short sentiment-immune and easy-to-arbitrage stocks (e.g., big, old and low volatility stocks). Our sample spans from 1964/01/01 to 2008/12/31 and includes all common stocks in NYSE, AMEX, and NASDAQ.

We find that the change in the TA sentiment indeed positively correlates with the contemporaneous portfolio returns, and an increase in the level of the TA sentiment predicts near-term momentum and subsequent reversals of portfolio returns. Such a cross-sectional effect is stronger during high sentiment periods (when short selling constraints are more binding). Controlling for the commonly used risk factors does not alter our results. Also consistent with the synchronization explanation which predicts that price can plunge when some coordinating events promote joint attack (Abreu and Brunnermeier 2003), we find when the beginning of the period TA sentiment increases, the portfolio returns over the next 25 days are typically more negatively skewed.

We further examine whether riding the TA sentiment can yield sizable risk adjusted portfolio returns. We devise a simple trading strategy that longs the portfolio when the current TA indicator is higher than its past five days average, and shorts the portfolio otherwise. We find substantial returns from applying this TA timing strategy, which cannot be explained by traditional risk factors and the momentum factor. Transactions costs reduce but are unlikely to eliminate the profitability of the strategy. These results are consistent with Han, Yang, and Zhou (2013), although they consider the cross-sectional profitability from applying five moving average rules only while we consider a broader range of trading strategies. In addition, we find that our TA based trading strategy is more profitable during high sentiment periods than low sentiment periods, consistent with the idea that mispricing is higher when short selling constraints are binding during high sentiment periods but not binding during low sentiment periods.

A number of papers have documented sophisticated investors ride the mispricing. Brunnermeier and Nagel (2004) report hedge funds ride the technology bubble by heavily investing in technology stocks. Termin and Voth (2004) present evidence through a case study of a sophisticated investor invested knowingly in the South Sea bubble and earned profits from riding the bubble. Since there is no short-sale constraints or agency problems, Termin and Voth (2004) argue that the synchronization problem among rational investors leads to the bubble and the

subsequent crash. Smith, Wang, Wang and Zychowicz (2015) find hedge funds using technical analysis exhibit better performance than non-users, especially during high sentiment periods.

To summarize, we provide evidence that technical analysis has value as a sentiment indicator. In line with the theoretical predictions of Abreu and Brunnermeier (2003), our TA sentiment predicts the cross-sectional stock returns and crash risk, and sophisticated investors who extract sentiment information from technical analysis can make sizable risk-adjusted returns. Overall our results help bridge the conflicting views of academics and professionals.

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