

Sentix: Behavioral Indices A Behaviourally Oriented Development of the TA Tool-Kit

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Abstract

Behavioral Finance is the theoretical foundation of our discipline. The article shows, how Behavioral Finance and Technical Analysis are connected and why we demand better data for investor's sentiment. It introduces a new set of sentiment indicators, the Sentix indices, which enables anyone, without costs, to participate in a global project with sentiment data to various markets. Some examples are shown how to use this new indicator set.

Behavioral Finance as the Foundation of Technical Analysis

For most market participants, technical analysis is more of an art than a science. This is connected to many factors, especially the mostly visual concepts which are the basis of any technical analysis. The nature of markets is also an important factor. From the beginning, technical analysis was the attempt by practitioners to get to grips with the nature of financial markets. Be it the trend analysis (herd behaviour of market participants), the Elliott Wave Theory ("Nature's Law") or Japanese Candlestick-Charts—all these concepts have one thing in common: they base their statements on the psychology of individuals and of the masses and derive their forecasts from the realization that human behaviour repeats itself in certain situations and can, therefore, be prognosticated to a certain degree.

For a long time, this approach was considered unscientific, as Technical Analysts, being practitioners themselves, having little interest in writing scientific texts. It is also based heavily on the fact that at the very latest since the 1960s, the prevalent capital market theory painted a completely different picture of the markets

and its actors. The *homoeconomicus* prevailed and the efficient market hypothesis put technical analysis into question.

This changed completely twenty years ago. Since the crash of 1987, the picture of the rational investor faltered considerably, and again more recently, for example, after the meltdown of LTCM hedge fund and the tech bubble burst of 2000. The idea of efficient markets with rational investors could no longer be supported. This paradigm change is accompanied by a rise and development of a new scientific area, behavioral finance. In contrast to the classical capital market theory, behavioral finance places the individual and his (sometimes hardly rational) decision making procedure in the centre of attention. For technical analysts, the realizations that can be taken from here often read like a repetition of basic convictions that have long been internalised. And, nevertheless, this scientific work is of fundamental importance for our work. For the first time, basic assumptions of technical analysis are reviewed scientifically and (partially) corroborated.

A central concept of behavioral finance is for example the "prospect theory", for which Daniel Kahneman received the Nobel-Prize for Economics in 2002. His theory states that people experience losses much more than gains, and that we are more likely to behave loss-averse than risk-averse.

In this context, reference points and mostly the entry price, play a central role. Translated into the language of technical analysts, this states simply that bear markets have a different dynamic than bull markets and that resistance and support (as significant acting points in the market) play a central role. As technicians, we already

know this, but we have never been able to state it in such a skilfully scientific way.

Now, three main corner stones of a new, behaviorally oriented financial market theory have emerged:

- There are useable momentum effects on the markets (prices move in trends)
- In specific situations, investors tend to over-react (over bought—over sold conditions) or under-react (strengthening of trends)
- The perception of investors is a function of the price, the news flow as well as the prevailing positioning (sentiment can dominate fundamental factors)

From Laboratory Experiments to a Real Time Application

Most of these realizations have been gained in laboratory experiments or through tedious examinations and extensive data material. An analysis in real-time seemed impossible. Richard Thaler, one of the pioneers of behavioral finance, pinpointed the dilemma: "There are better data on prices than people!"¹

At this point, the strength of the technical analysis and its focus on practical requirements becomes apparent. Especially for the analysis of prices, technical analysis possesses a large pool of (more or less suitable) tools. Be it trend following systems, oscillators or the formation theory—we are armed. Specifically, however, in the field of sentiment analysis with the consideration of psychological factors, technical analysis has a gaping void. While asset prices and turnover can be considered to be standardized and comparable, there is nothing comparable concerning the sentiment, the expectations and the positioning of investors. "There are better data on prices than on people" is, therefore, also a valid maxim for Technical Analysts.

Emotions Cannot be Measured, Effects Can

We can say that dispositions in the proper sense of the word cannot be measured, as they arise from inside the individual. However, the effects, i.e. the manifestation of emotions in activity, can be measured. Now, an effect can also be a neglect or omission, and this is the reason why survey-based sentiment indicators have an advantage over turnover-based indicators such as the put-call ratio for the visualization of emotions. Survey-based indicators also mirror the sentiment of investors on the sidelines, who could create future supply and demand just like invested investors. On the other hand, most price- and turnover- based concepts are easier to standardize. With most capital markets surveys, one cannot be sure who is participating and what their underlying motivation is. Also, the results, which are usually directed towards very specific questions or markets, are difficult to compare due to a lack of transparency in the survey modalities. For this reason, inter-market statements tend to be high impossible.

These preliminary thoughts were the basis of a new, behaviorally oriented concept in the year 2001. This concept came from commercial practice and was conceived for the practitioner to receive

better, standardized information on sentiment, expectations and activities of actors on the finance markets while satisfying academic standards. An extensive survey panel was to be established which would allow for comparisons between investment groups, markets and different time-periods. The information should be available promptly to allow for a portfolio regulation that oriented itself according to the published data.

Introduction to the Sentix Indices

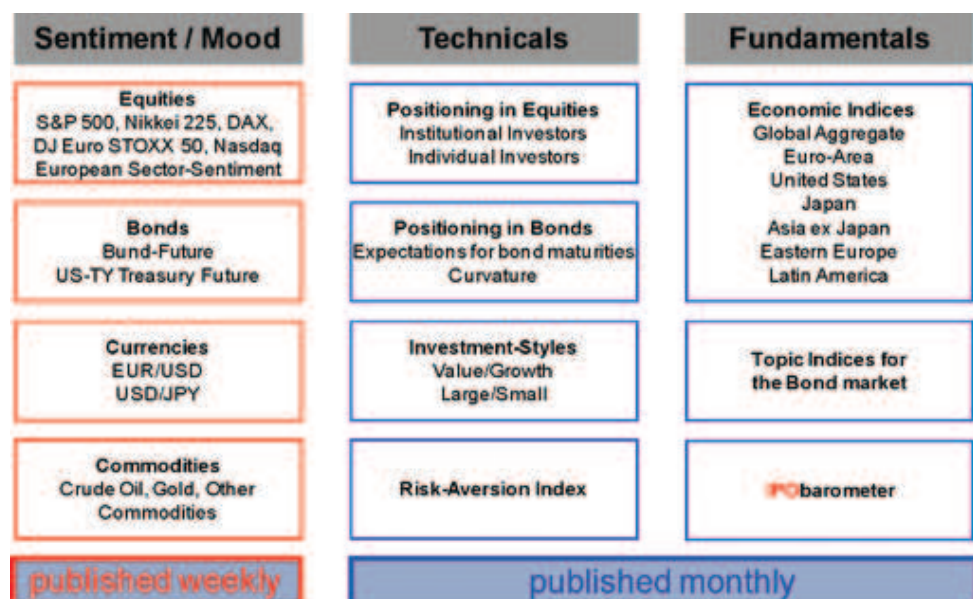
This idea gave birth to Sentix—behavioral indices which, for the first time, presents a comprehensive sentiment picture of a large number of investors and allows for a comparison of sentiments of different investor groups and nationalities, as well as different markets. Without the internet, such a project would have been impossible to realize. The combination of e-mail and internet based surveys gave us the opportunity to collect the answers from thousands of people in a very short time-span, to process this information and to make the results available. The central node of the project is the Sentix website (<http://www.sentix.de>), where anyone can register free of charge to participate in the surveys and the data. Since its introduction, it has been extremely

successful as a conduit to collect sentiment input. At present, over 2,500 investors have made use of this opportunity. Among the participants are more than 550 institutional investors, portfolio managers as well as analysts and economists. We receive sentiment data from more than 20 countries, especially from Europe. Additionally, Sentix is known and used in Asia, including Japan. Currently, more than 700 investors take part in Sentix surveys every week.

Methods: How Sentix Works

Every Friday, participants receive a mail with a link to our website, on which the survey is then conducted. Standardized questions include questions concerning the short- and medium- term expectations for twelve markets; for equity markets as well as bond-, FX-, and commodities markets. In this context, short-term defines a time horizon of one month, while a six month horizon is set for the medium-term view. The answers are calculated anonymously and turned into indices. In addition to the standard questions, participants are given topics that change on a weekly basis, such as preferred investment styles, sector assessments or positioning. *Figure 1* gives a schematic overview of the more than 400 individual indicators in the Sentix family.

Figure 1. Overview of the sentix indicator family



The Indicators

In the following, we would like to introduce some of the Sentix indicators and to point out appliance possibilities. We would like to start with the mother of all sentiment indices, the Sentix Sentiment Index. This displays investor sentiment in the form of a classic bull-bear index. Participants can give one of four possible answers: bullish, neutral, bearish and no opinion. The index is then computed from the balance of bullish minus bearish answers in proportion to the number of answers (excluding no opinion).

$$\text{sentix} = \frac{\text{Bulls} - \text{Bears}}{\text{All Votes}}$$

Should there be, for example, for a short-term assessment of the DAX-index, 120 bullish, 80 bearish and 45 neutral answers, the sentiment index would result in +16.32%. The Sentix Sentiment Indices are, therefore, valued between -100% and +100%.

Figure 2 shows an example of the short-term sentix sentiment for the DAX index. The index behaves in the same way as other classical sentiment indices. It can be seen that investor sentiment is strongly influenced by the development of market prices. However, in comparison to "normal" technical indicators, these oscillators possess one very significant advantage: they adapt themselves automatically to the respective market dynamic. A variation of the parameters to adjust to the specific market surroundings is not necessary. A further result of our research is that an upper trend turnaround differs significantly from a lower one. Market bottoms usually come about against the background of a very bearish sentiment, while bull markets hardly ever die in euphoria. Mostly, upper turnarounds follow precursory sentiment divergences which—just as with technical indicators—don't support new price highs with accordingly bullish sentiment. The bull camp, therefore, must fall apart "sentimentally" before a trend turnaround is probable. This is also confirmed by Sentix Sentiment data, namely that bull and bear markets are structurally different.

It is also interesting to smooth out indices, to statistically standardize them as so-called Z-scores. Figure 3 shows a short-term Sentix sentiment for the DAX which has been standardized in this fashion. In

Figure 2. Sentix-Sentiment for the DAX Index (short term)

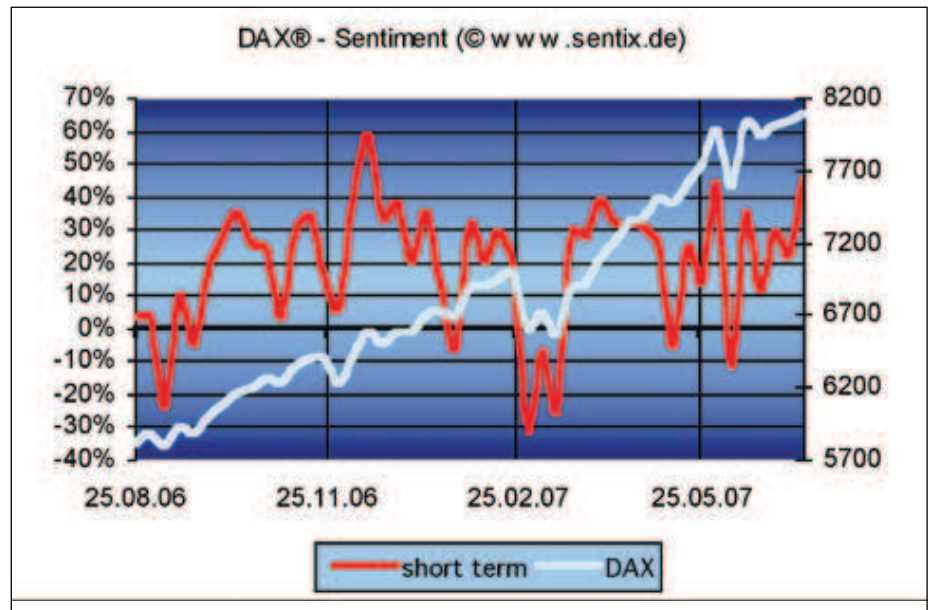
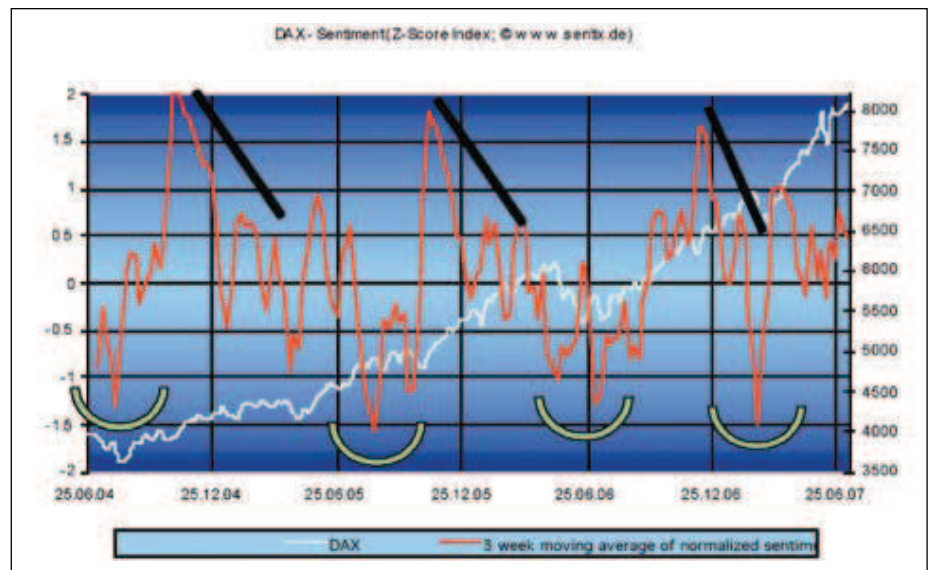


Figure 3. Short-term DAX-sentiment as Z-Score-Index



this case, the sentiment divergences as well as the lower extremes are even more easily recognizable.

Different Behaviour of Sentiment in Bull Markets and Bear Markets

This assessment of the market sentiment shows us that activity against the predominant sentiment must be well considered. In a bull market movement, one should not go against the herd too

soon. Often, activity with a trend which has developed from a gradual transformation from bear to bull, is more promising.

As we stated earlier, we survey market expectations on a short and medium-term basis, and we also divide according to individual and institutional investors. Interestingly, medium-term investor assessment shows completely different patterns than short-term assessments. A study conducted by the University Maastricht² showed that medium-term

expectations of those investors surveyed by Sentix are suitable as a basis for forecasts. While short-term sentiment behaves like a price-based oscillator, medium-term expectations better mirror the assessment of the market. Institutions especially show clear anti-cyclical tendencies. Professionals demonstrate a relatively sound feeling for overpriced or underpriced markets. Therefore, Sentix data does not only deliver insights into market sentiment, but also into the valuation assessment of securities from the viewpoint of investors.

Neutrality Counts: How to Profit from Uncertainty

In the following, we introduce two other indicators. The first is the so-called Sentix

Neutrality Index. This index represents the quota of neutrally positioned investors over time. A high neutrality index means that many investors have no clear view on the market. One could also call this situation an "irritation". A low quota of neutrally positioned investors means that almost everyone has a clear opinion. This could point to a situation of "overconfidence". Figure 4 shows the short-term Neutrality Index for the Euro-Bund-Future (Z-score index).

Turn-around points on this index in the vicinity of ± 1.5 standard deviations are regularly accompanied by turn-around points in the market. It is more interesting to note, however, that after a phase of low neutrality, only small changes in absolute price value tend to follow and that volatility

tends to go down. The opposite is the case when irritation (high neutrality) is predominant amongst investors. In the aftermath, high absolute value changes are probable, as well as rising volatility.

Table 1 shows the statistical processing of future absolute oscillations of the Bund Future depending on the value of the Sentix Neutrality Index. "No. of. occ." means the number of observations in the Sentix database.

European Sector Sentiment Allows Sentiment Arithmetic

A significant advantage of the Sentix indicator family is that data from a wide range of markets can be surveyed with a comparable underlying set of principles and with the same survey clients. Once a month, investors are asked for their assessment of a range of equity sectors (18 sectors; STOXX system). As currently the majority of survey participants are based in Europe, this is a European sector sentiment. Every equity sector can be rated on five levels from strongly over average (++) to strongly under average (-). For the calculation of the index, the answers are average-adjusted and statistically normalized as Z-scores. Figure 5 shows, as an example, the relative sentiment for European telecom values in comparison to the relative performance of this sector to the overall market.

Comparable sentiment data for equity sectors did not exist until now; the utility, however, is evident. Extreme readings in the sector sentiment are a precursor for future relative price movements in the sector.

Sometimes, as a group, investors do not accept a dominant price trend. This

Figure 4. Medium-Term Neutrality Index for the Euro-Bund-Future (Z-Score)

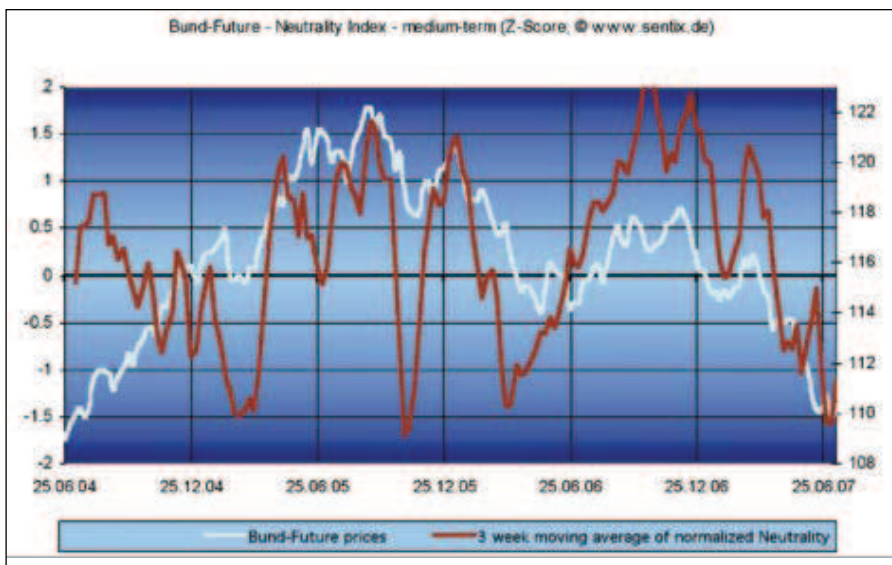


Table 1. Medium-Term Neutrality Index and future Bund-Future price movements

sentix Neutrality medium term		Absolut movement of Bund-Future prices in the next xxx weeks					No. of occ.	%
		1 week	2 weeks	4 weeks	8 weeks	12 weeks		
Neutrality Idx >	0.5	0.67%	1.02%	1.35%	2.02%	2.40%	5	1.54%
Neutrality Idx >	0.45	0.57%	0.77%	1.23%	1.67%	1.86%	35	10.80%
Neutrality Idx >	0.42	0.52%	0.73%	1.09%	1.61%	1.94%	62	19.14%
Neutrality Idx >	0.4	0.52%	0.71%	1.07%	1.64%	1.92%	103	31.79%
Neutrality Idx >	0.38	0.53%	0.72%	1.06%	1.58%	1.86%	158	48.77%
Neutrality Idx <	0.38	0.25%	0.40%	0.61%	0.86%	1.02%	166	51.23%
Neutrality Idx <	0.36	0.22%	0.32%	0.51%	0.70%	0.83%	112	34.57%
Neutrality Idx <	0.34	0.16%	0.23%	0.37%	0.51%	0.61%	65	20.06%
Neutrality Idx <	0.33	0.11%	0.17%	0.29%	0.39%	0.48%	44	13.58%
Neutrality Idx <	0.3	0.03%	0.03%	0.08%	0.13%	0.18%	12	3.70%

Figure 5. Telecom sector sentiment and relative Performance of Telecoms versus STOXX600

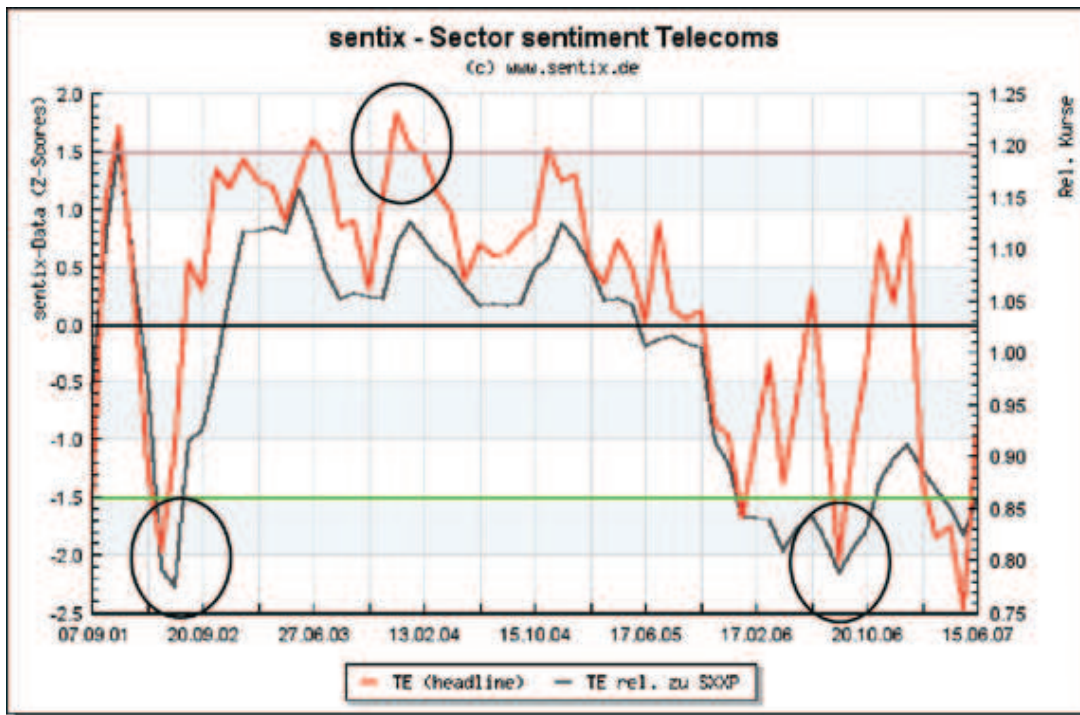
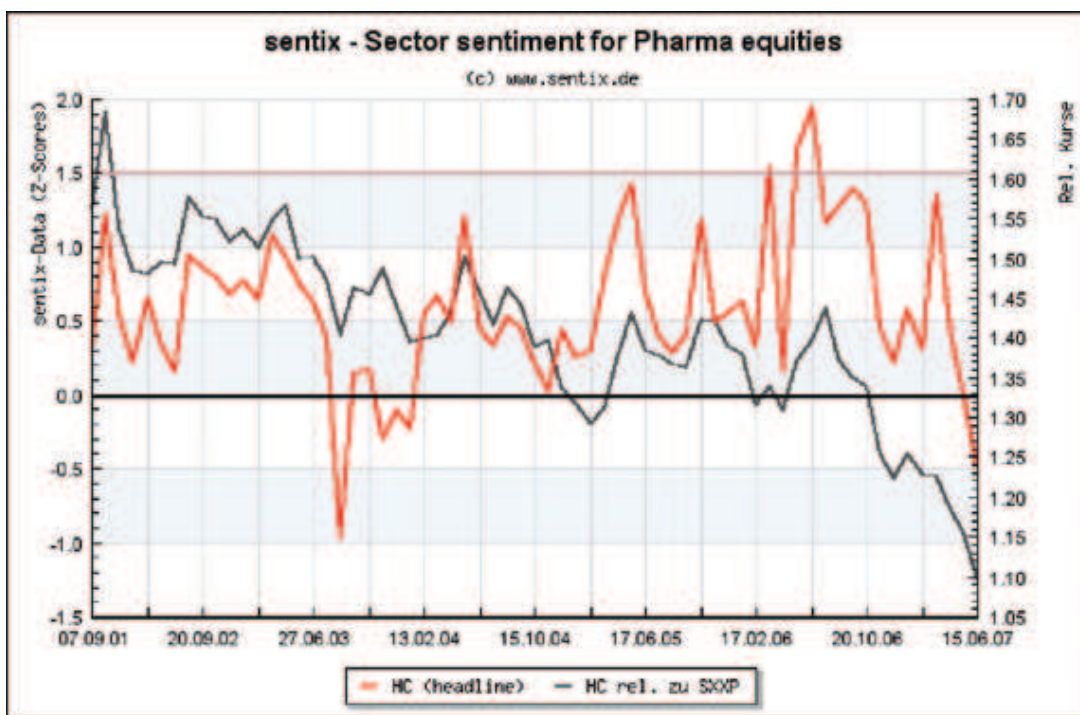


Figure 6. Pharma sentiment stays bullish and price declines go beyond “fair values”



happens, for example, if the valuation case seems to favour the sector. The price and sentiment development in the European pharmaceuticals sector is such an example. Figure 6 illustrates the relative weakness of the sector compared to the bullish sentiment, which dominates for a relatively long time.

As all Sentix indices are surveyed on a comparable basis, one can also work with them and, for example, determine the relative sentiment between telecom and energy values. Figure 7 shows the difference in sentiment between both sectors as well as relative performance. Here, one can see the completely new appliance functions for which this data allows.

One could also combine the sector sentiment with the Crude Oil sentiment. The bullishness for Oil in the summer of 2006 compares nicely with the strong bullishness for Energy stocks and gives additional hints on a coming weakness in the relative performance of BP & Co.

Practical Considerations

What should one take into consideration when using the Sentix data in practice? First, and especially, short-term indicators may be used as classical sentiment indicators. However, the analyst should use caution with the assumption that a bull market dies in a phase of optimism. We have regularly observed the break-up of bull camps before the actual course summit. Medium-term investor expectations also fall backward long before a top is achieved. In a bear market, it is often worth grabbing the falling knife with conviction and confidence in the face of highly pessimistic values. Bear markets are simply different.

It is always important for us to inspect sentiment data according to which psychological state they represent. If behavioral finance theory defines cognitive dissonance to be events going other than what was expected, then this corresponds with a falling market with a high level of investment positions. In this case, the theory allows the expectation that investors will use suppression methods. This, in turn, can be reviewed with the help of Sentix indicators in the fundamental group, which measures those topics which are favoured by investors.

Another example of how to spot behavioral anomalies in real time is the

discussion of the all time high in the DAX Index. As expected, the medium-term sentiment declines near the top of 2000. That shows that the imagination of investors did not go beyond that point. A higher willingness to take profits was therefore expected.³ And indeed, as official flow statistics showed, investors behaved in a loss-averse manner and pulled the money from the table. It's clear that as soon as new highs are confirmed, regret will dominate investor's feelings and people will have to buy into their underinvested portfolios.

Sentix: A Unique Project with Global Reach

The Sentix indices are a unique project to survey investor sentiments and investor activities. They possess the potential to give "better data on people". Without appropriate data, which also needs to be available in real time, a systematic implementation of the insights of behavioral finance would not have been possible. For technical analysts, the Sentix indices are an important supplement to our tool box. *Every investor can actively participate in the surveys and get free access to the results.* If many investors from around the world take part in this project, we can gain a completely new global perspective. [IFTA](http://www.sentix.de)

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³ Manfred Hübner, "Die nachgelieferte Mai-Schwäche", Börsen-Zeitung vom 30.05.2007

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Figure 7. Relative sentiment—Energy sector vs. Telecom sector and the relative performance between the two sectors

