Changing Your Market Perspective

Relative Performance Charting

There's always a hot sector, but it's not always obvious where it is. Here's a quick, visual way to find it.

Relative performance charting compares the rate of price change of two or more tradable instruments. Its purpose is to point out what's hot and what's cold, so you can focus on the best action.

A broad range of names are applied to relative performance charts (RPC): relative strength charts, rebased charts, dollar-growth charts, and performance charts. They are all variations on the same theme. Although this methodology has long been popular among portfolio and money managers, it is only recently starting to gain popularity on trading floors, as traders discover that relative performance charts are well suited to short- as well as long-term trading horizons.

THE BASICS

Starting with a very basic example, compare the performance

by Phil Doyle

of over-the-counter stocks to their listed brethren during late 2000 and early 2001. Start by using standard bar charts of the New York Stock Exchange (NYSE) and Nasdaq Composite indices to make the comparison (Figure 1). It doesn't take a skilled analyst to see that both indices are down over the period, and that the NYSE *appears* to have performed more strongly than the Nasdaq. Unfortunately, that's about all it tells us.

For a more definitive analysis, overlay the two indices, as in Figure 2. Add a ratio line (Figure 2) as a relative strength tool (not to be confused with the technical indicator known as Wilder's *relative strength index*†, or RSI). The price of symbol 1 is divided by the price of symbol 2, with the result that the line will rise when symbol 1 is outperforming and fall when it is underperforming.

This technique is still untested as to the magnitude of the differing performance. A pure relative performance chart, such as the one in Figure 3, quantifies the difference. In addition to clearly showing that the divergence was far greater than it appeared from either of the other two charts, the scale on the right tells us precisely how much both indices have changed in percentage terms, as well as the amount of the divergence between them.

The concepts and math behind relative performance charts are extremely simple. The first datapoint in the price series becomes a zero, and all subsequent points refer back to it. Figure 4 shows a simple example using the first seven datapoints of the Nasdaq Composite, as depicted in Figure 3. (See also sidebar, "Creating relative performance charts in Excel.") As an example, period 2's value = (3726.5 / 3835.2) –1 = -2.83.

COMPARING SEVERAL SYMBOLS

Relative performance charts are great for comparing dissimilarly priced issues. For example, look at the Russell 2000, the Dow Jones Industrial Average (DJIA), and the Standard & Poor's 500 in addition to the NYSE and Nasdaq composites.

That's quite a few symbols to cram onto one chart, so how can we make such a comparison? You get the information you need by creating a relative performance style chart, as shown in Figure 5. Comparing performance for this many instruments is no easy matter, but the relative performance chart gives us a clear picture of how the indices performed relative to one another.

FINDING WINNERS

One basic lesson that many of us learn early in our trading careers is "Buy strong stocks in strong groups, sell weak stocks in weak groups." In essence, we got our first lesson in relative

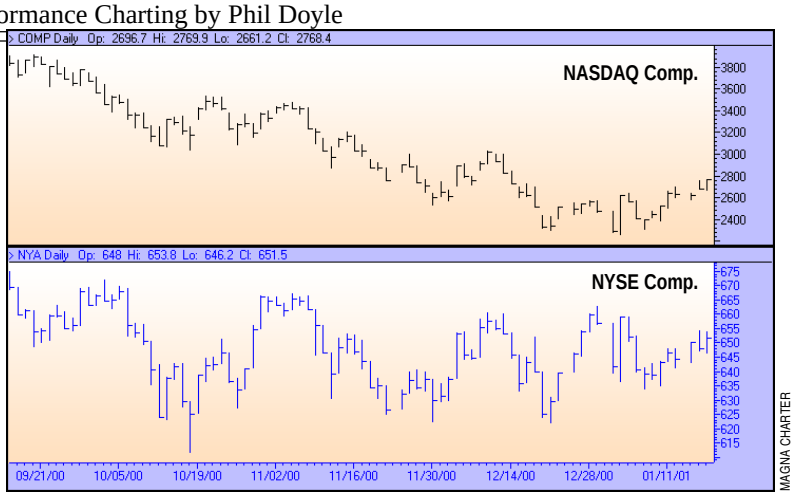


FIGURE 1: OVER AND UNDER. The simplest comparison puts two indices on separate panes in one chart.

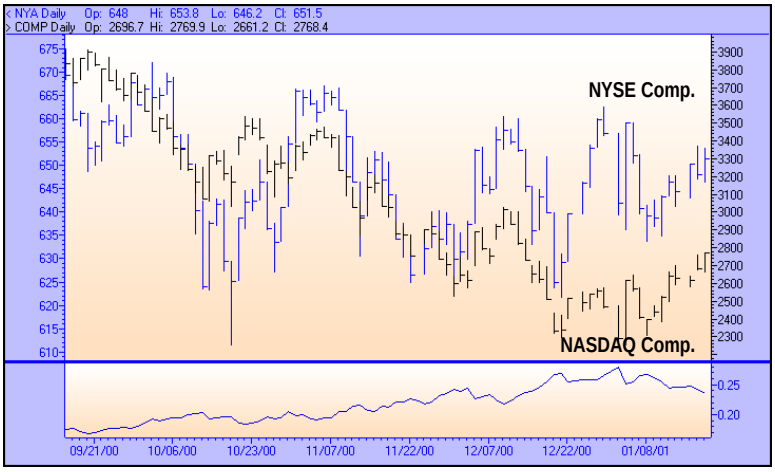


FIGURE 2: RELATIVE STRENGTH (RATIO) CHART. Two indices are overlaid on one chart, with a subpane that shows the ratio (one series divided by the other) of the two indices.

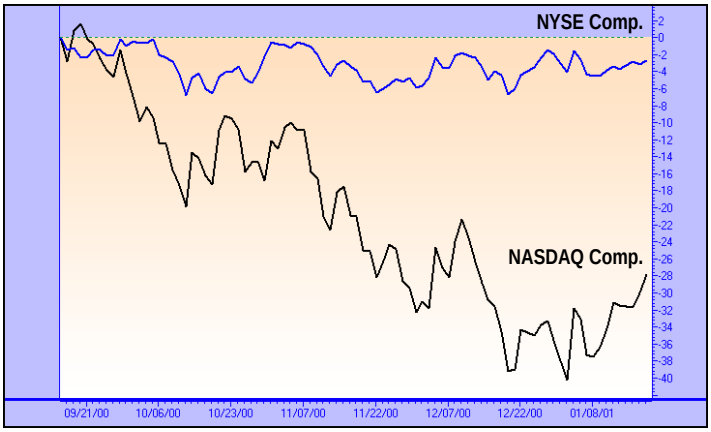


FIGURE 3: RELATIVE PERFORMANCE CHART. A performance divergence of 25% between the Nasdaq and NYSE composite indices is immediately and clearly apparent on the relative performance chart.

NASDAQ DATA POINTS FROM FIGURE 3

	Period 1	Period 2	Period 3	Period 4	Period 5	Period 6	Period 7
Date	9/15/00	9/18/00	9/19/00	9/20/00	9/21/00	9/22/00	9/25/00
Close price	3835.20	3726.50	3865.60	3897.40	3828.80	3803.70	3741.20
RPC value	0.00	-2.83	0.79	1.62	-0.17	-0.82	-2.45

FIGURE 4: NASDAQ DATA POINTS FROM FIGURE 3. This table shows the first seven data points from the relative performance chart in Figure 3. To create the relative performance ratio, divide the price of symbol 1 by the price of symbol 2. Subtract 1 to create negative values when the newer prices are less than the older ones. For example, period 2's value = (3726.5 / 3835.2) –1 = -2.83.

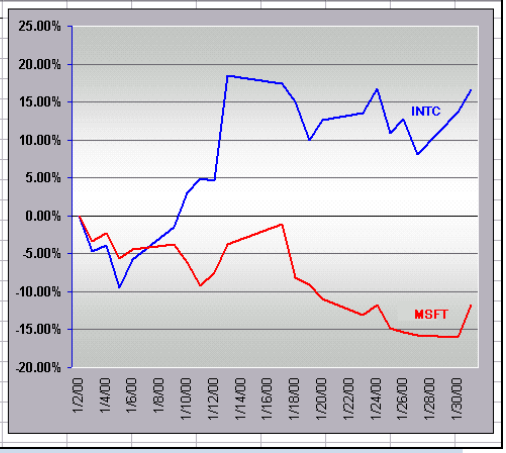
CREATING RELATIVE PERFORMANCE CHARTS IN EXCEL

At ILX Systems, we provide data and software to large institutional clients who generally have become heavy users of relative performance charts (RPC). As a result, our charting program, Magna Charter, is designed to produce RPCs from preset functions or templates. While a number of the other popular charting programs can create RPCs, either by design or user programming, here's a generic approach using Microsoft Excel.

For our example, let's take a couple of tech behemoths, Intel and Microsoft, and compare their performance in the first month of 2000. First, paste the price data into an Excel spreadsheet. You only need closing values to perform the analysis, so paste the dates into column A and the closing values for Intel and Microsoft into columns B and C. In column D and in the same row as the earliest closing price for Intel (in this case, D2), enter the following formula: =(B2/B$2)-1, and copy it down. By using a relative reference {B2} in the numerator and an absolute reference {B$2} for the row in the denominator, we assure that each subsequent closing price will be referenced back to the first point in the series. We subtract 1 to create negative values when the newer prices are less than the older ones. The results in column D should be formatted as percentages. The process should then be repeated in column E for Microsoft. The relative performance chart can then be drawn from the results in columns D and E. —*P.D.*

D2 = =(B2/B$2)-1

	A	B	C	D	E
1	Date	INTC	MSFT	RPC-INTC	RPC-MSFT
2	1/2/00	43.42	116.56	0.00%	0.00%
3	1/3/00	41.39	112.63	-4.67%	-3.38%
4	1/4/00	41.74	113.81	-3.88%	-2.36%
5	1/5/00	39.30	110.00	-9.48%	-5.63%
6	1/6/00	40.92	111.44	-5.75%	-4.40%
7	1/9/00	42.80	112.25	-1.44%	-3.70%
8	1/10/00	44.76	109.38	3.09%	-6.17%
9	1/11/00	45.54	105.81	4.89%	-9.22%
10	1/12/00	45.45	107.81	4.67%	-7.51%
11	1/13/00	51.44	112.25	18.46%	-3.70%
12	1/17/00	50.97	115.31	17.39%	-1.07%
13	1/18/00	49.94	107.00	15.01%	-8.20%
14	1/19/00	47.72	106.00	9.91%	-9.06%
15	1/20/00	48.88	103.75	12.57%	-10.99%
16	1/23/00	49.31	101.25	13.58%	-13.14%
17	1/24/00	50.69	102.81	16.74%	-11.80%
18	1/25/00	48.16	99.38	10.92%	-14.74%
19	1/26/00	48.97	98.75	12.79%	-15.28%
20	1/27/00	46.91	98.25	8.05%	-15.71%
21	1/30/00	49.38	97.88	13.72%	-16.03%
22	1/31/00	50.62	102.94	16.59%	-11.69%



SIDEBAR FIGURE 1: SPREADSHEET SOLUTION. Any spreadsheet can create useful relative performance charts.

ON THE WEB

Relative performance charting is also available on the Internet at these sites, among others:

StockCharts.com
EquityTrader.com
BigCharts.com

performance. The advice was: find the best- and worst-performing groups or sectors, and then find the best- and worst-performing stocks within those groups.

This, of course, is sound, time-proven advice. How many times have we seen a generally flat or even down market where, nonetheless, some particular group of stocks have been stellar performers? There's nothing quite like being in the right place at the right time, and relative performance charts are a great tool for getting us there. They can save us time and give a quantitative edge to our analysis.

Using the same chart and method I employed to compare the broad market indices, you can simply substitute some group or sector symbols to accomplish your goal. Here are some of the popular optionable indices. Each index represents a basket of stocks from a particular sector of the market. They are good symbols to know and use, as both historical and real-time data are readily available for them from most data vendors. I use the following optionable index symbols as surrogates for particular groups of stocks:

Symbol	Index name	Type of stocks
BKX	Philadelphia Bank	Banks
XOI	AMEX Oil & Gas	Oil and gas companies
DRG	AMEX Pharmaceutical	Drug makers
MSH	Morgan Stanley Hi Tech 35	Tech companies

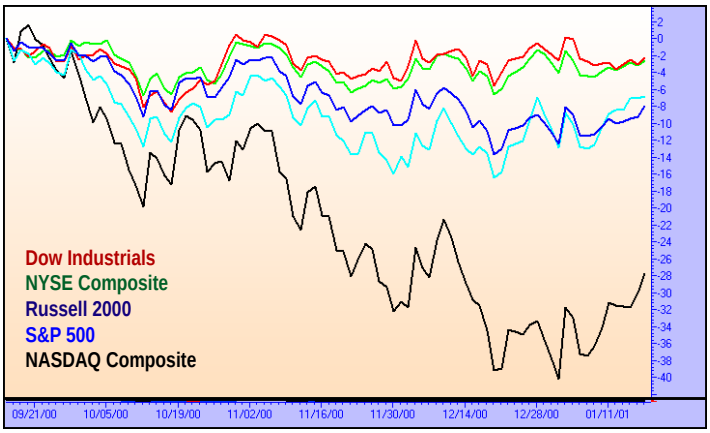


FIGURE 5: THE STRUGGLE TO BREAK EVEN. The once invincible Nasdaq comes up lame in this race. A great number of symbols can be compared if all start from the same base.

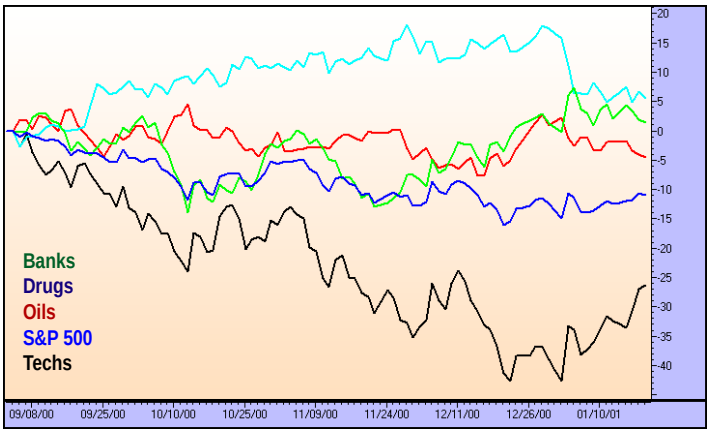


FIGURE 6: STOCKS HIT A ROUGH PATCH OF ROAD. Only drugs and banks show positive returns over this period.

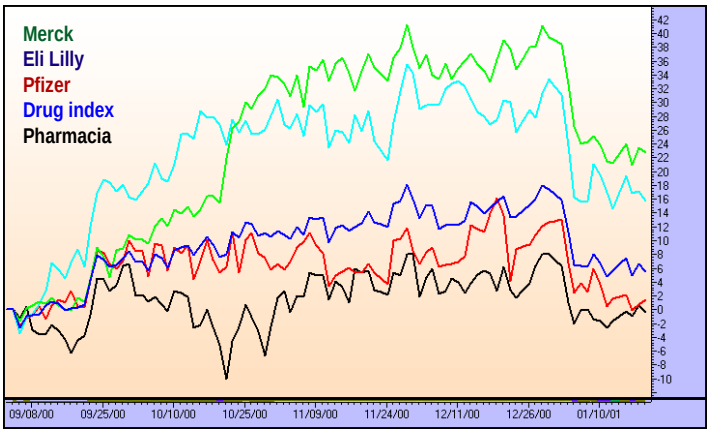


FIGURE 7: AND THE WINNER IS… Clearly, Merck is the top dog in this pack.

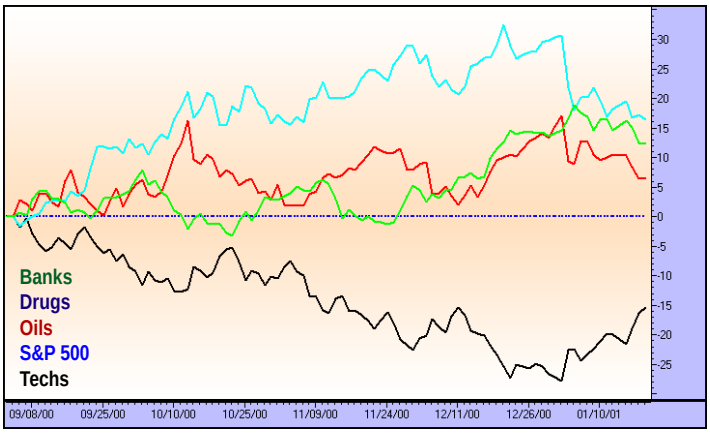


FIGURE 8: BASELINE. Instead of plotting the S&P with the others, plot the others in relation to the S&P 500 as a baseline.

RPC BASELINE COMPUTATION

	PERIOD 1	PERIOD 2	PERIOD 3	PERIOD 4	PERIOD 5	PERIOD 6	PERIOD 7
Date	9/5/00	9/6/00	9/7/00	9/8/00	9/11/00	9/12/00	9/13/00
XOI close	1507.08	1492.25	1502.51	1494.5	1489.26	1481.99	1484.91
SPX close	531.28	541.27	540.89	532.65	544.78	543.55	536.64
RPC of SPX	0.00%	-0.98%	-0.30%	-0.83%	-1.18%	-1.66%	-1.47%
RPC of XOI	0.00%	1.88%	1.81%	0.26%	2.54%	2.31%	1.01%
Net XOI RPC	0.00%	2.86%	2.11%	1.09%	3.72%	3.97%	2.48%

FIGURE 9: All subsequent periods are relative to the first, but the performance of the baseline is deducted from the performance of each plotted symbol.

When I input the symbols, I came up with the chart in Figure 6. Note I kept the S&P 500 on the chart as a reference point. I made several inferences from this one chart:

1. The drugs are the strongest group but appear to be weakening or correcting over the last few weeks.
2. Tech stocks have significantly underperformed but may be staging a comeback.
3. The oil stocks, banks, and drugs have all outperformed the S&P 500.

Once I knew the top-performing group, the next logical step was to find the strongest stocks within that group. To that end, I substituted the symbols for some likely candidates within the drug sector for the symbols of the underperforming groups. This time I kept the AMEX Pharmaceutical Index as a reference point, much as I did with the S&P 500 on the group chart. My new chart was Figure 7. In very short order, I drilled through a myriad of choices and found what was likely to be the "right" place.

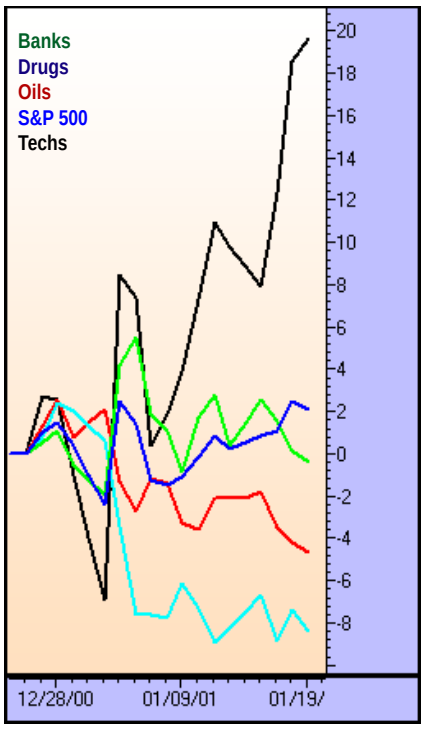


FIGURE 10: TECH RESURRECTION? The Morgan Stanley High Tech 35 (MSH) index breaks out of the pack after having fallen more than 50% from its March 2000 high.

REFINEMENTS

As you begin to use relative performance charts as an analytical tool, you'll also discover some variations and techniques that can further enhance your work. In my opinion, the first and most useful is to factor in broad market performance. After all, these stocks or groups do not trade in a vacuum; they are all part of the broader market. Certainly, we would want to know not only how much a particular group is up or down, but how it has

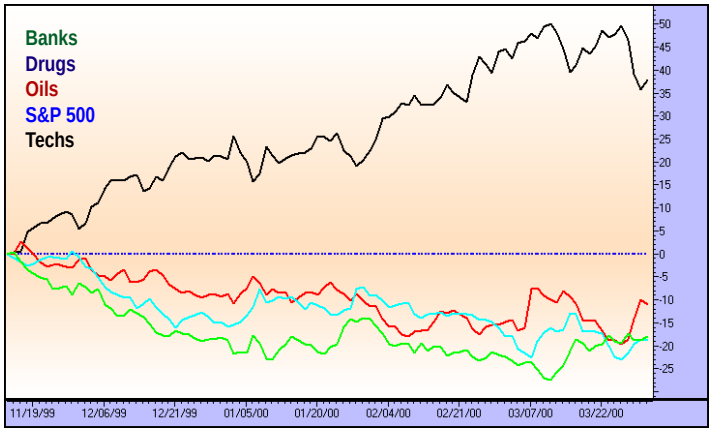


FIGURE 11: BUY THE DIP? The Morgan Stanley High Tech 35 (MSH) in March 2000.

done relative to the overall market. If, for example, the bank stocks are up, say, 10% for the period, what we'd really like to determine is how that 10% gain looks *relative to* the overall market. If the broad list is up, say, 4% over the same period, then we can be confident that we've found a strong group based on the bank stocks' outperformance by 6%. However, if the market has been steadily advancing and is up more than 10%, then that's a different story. In that case, the gain in the individual stock is not indicative of outperformance. Remember, we want the best of the best.

To this end, add a broad market index and present it as a baseline against which you gauge the performance of individual groups, as shown in Figure 8. This chart is the same as in Figure 6, except that we have added the S&P 500 as our baseline — the horizontal line across the middle of the screen.

A baseline provides a reference point from which all other computations are made. As illustrated for the Oil Index (XOI) in Figure 9, the baseline-adjusted RPC value for each symbol is equal to that symbol's actual RPC value less the RPC value of the baseline index.

A baseline study enhances the relativity concept by using the baseline index as an alternative to zero as a reference point. As can be seen in Figure 9, although the XOI is up 1.01% at period 7, it is up 2.48% *relative* to the S&P 500.

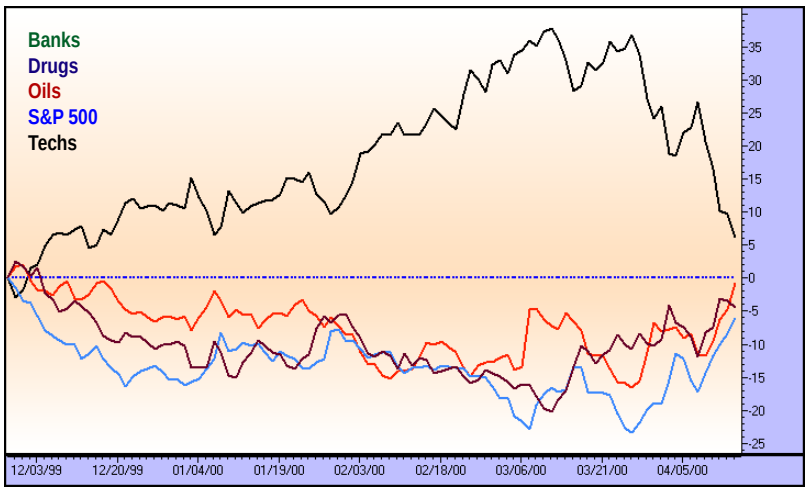


FIGURE 12: THAT DIP *WAS* DIFFERENT. Another lower high and lower low in the RPC line confirm the downtrend in the Morgan Stanley Tech 35 Index (MSH) as of April 14, 2000.

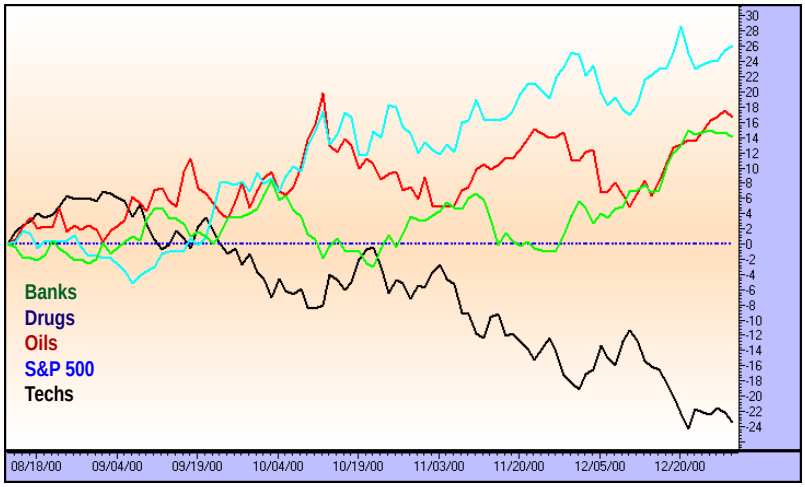


FIGURE 13: PAST PERFORMANCE IS NO GUARANTEE. By the end of the year, "tech" had become just another four-letter word.

TIME

Another enhancement technique involves varying the analysis over different time frames. It is not unusual for relative performance charts to flash important buy or sell signals as directional movement in one group in contrast to flat or opposing movement of a broad index or another group. This compounds the divergence visually. Generally, that divergence is more striking when fewer datapoints are used on the time scale.

Look back to Figure 6. The performance of the tech stocks appears to be turning up compared with the S&P. The chart in Figure 6 has 100 datapoints on it. Now, take a look at Figure 10 and see what happens when you cut the number of points back to, say, 20, and begin at the start of the tech upswing. The move appears much more dramatic, as the measurement occurs over a shorter time span. I frequently scan my relative performance charts looking for those little movements and then shorten up the *x*-axis to see if there's a jump like the one in Figure 10. The technique is often useful in catching a move early on.

CASE STUDIES

Relative performance charts can help you spot major moves. They can even help find good short candidates. A case in point can be seen at the beginning of the tech meltdown during 2000.

Figure 11 shows a baseline chart at the end of the first quarter of 2000. Following a period of almost unprecedented outperformance, the mighty tech index started to show the first signs of possible weakness in the waning days of March. In the final week, the RPC line made a lower low just after failing to make a new high, and some of the other groups appeared to be trying to base and turn up after underperforming for several months.

Shorting techs in the prior several months had been an exercise in futility and the ruination of many a trader, as every correction seemed to just bring in more and more buyers. So far, this dip was looking like just another in a series of modest, intermediate-term corrections. However, a mere two weeks later, on April 14, the

By the end of the year — some eight months later — the final chart in this series looked as though someone had taken the first chart and turned it upside down.

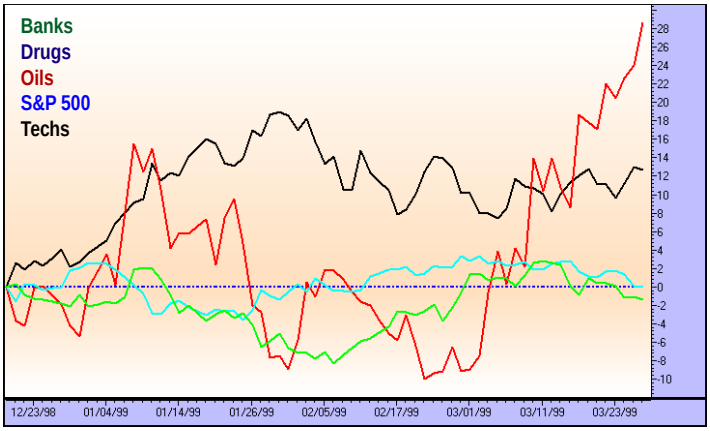


FIGURE 14: TALK ABOUT A REVERSAL… Appearing to be running on rocket fuel rather than crude oil, the Oil Drilling and Exploration Index (OSX) takes off in March 1999.

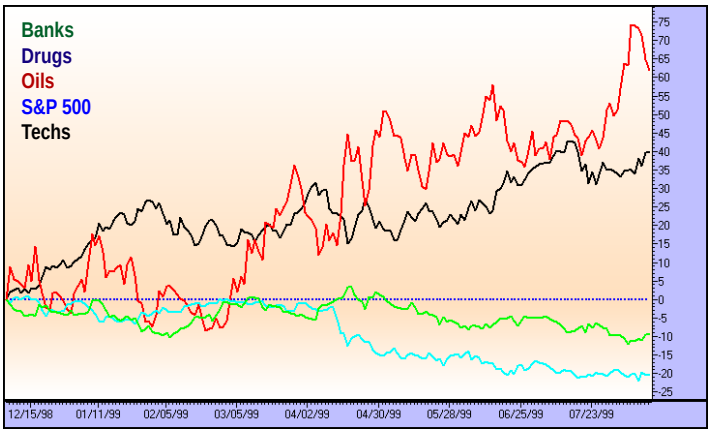


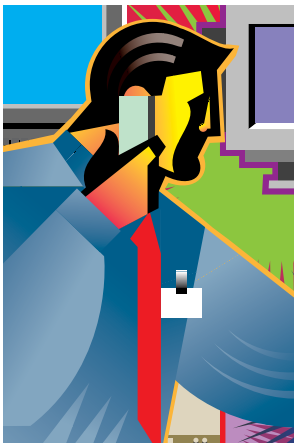
FIGURE 15: GUSHER. The OSX blows past the techs in both performance and volatility.

relative performance chart in Figure 12 was sending warnings that this time *was* different. The Morgan Stanley Tech 35 Index (MSH) had fallen more than 30% in less than a month, *and* the other groups were turning up with a vengeance.

By the end of the year — some eight months later — the final chart in this series, Figure 13, looked as though someone had taken the first chart (Figure 11) and turned it upside down. The relative performance charts were instrumental in giving early indications that funds were starting to rotate out of the techs and into the other groups.

Spin the clock back even further to examine a case on the long side. In January 1999, crude oil was trading at a near-record low of $12/bbl. Few groups looked more hopeless than oil drillers and explorers, as represented by the Philadelphia Oil Drilling and Exploration Index (OSX). Malaise was the only thing "growing" in the oil patch, so the group caught my attention when it spiked violently in early January (Figure 14). The move had no staying power, however, and more new lows were made in the following weeks. The group spiked again in early March, but this time it looked as though the rising price for crude was putting some wind in the groups' sails.

The initial move was huge: Relative to the S&P 500, the OSX went from *under*performing by 10% to *out*performing by 28% in roughly three weeks' time. In fairly short order, the drillers and explorers had asserted themselves as the top-performing stock group (Figure 15).



SUMMARY

About two years ago, I went to London to assess the charting needs of our UK clients. Users there had been clamoring for what they referred to as "rebased" charts; what they were seeking was a variation of relative performance charting. The visit was an eye-opener because it was the first time I had seen this style of charting used on institutional trading desks. In the months following my return, I saw more and more users in the US incorporating some form of "rebasing" as a standard part of their work and, ultimately, wound up adopting it myself.

Is relative performance charting a replacement for conventional technical analytical techniques? No, of course not. But used properly, it can be an important adjunct that provides yet another perspective on the market. No security trades in a vacuum, and that is the greatest argument for using relative performance analysis.

Phil Doyle is a senior product manager for ILX Systems.

†See Traders' Glossary for definition

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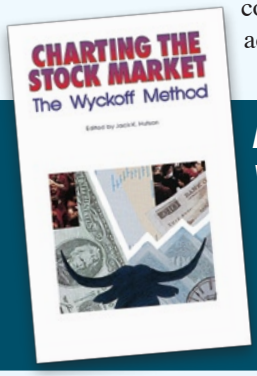

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