

The Joy of SOX

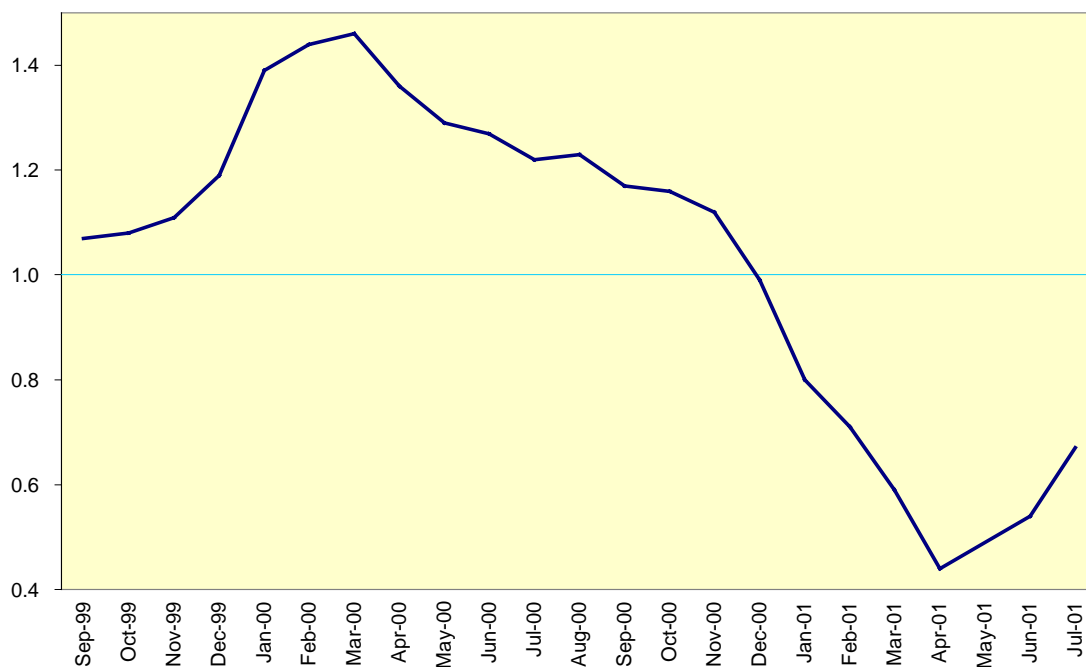
With apologies to aging New Dealers everywhere...

Happy days are here again,
The book-to-bill is up again,
Let's buy the stocks of chips again --
Happy days are here again

Analogies to the Great Depression have become common of late. After all, the immediate aftermath of the 1929 Crash was the only other time the Federal Reserve has cut short-term interest rates so aggressively and has had so little to show for it. The Bank of Japan has cut rates to near zero, and yet the Nikkei is at a 17-year low. Upsetting, maybe. Surprising, shouldn't be: It was predicted on this page in early December 2000 (see "Economies Don't Land. Markets Do").

Now a chorus arises telling us that the semiconductor stocks will lead us out of the mess. The logic is straightforward. Chips are an essential component of everything this side of a garden hoe, so the order books of Novellus, Linear Technologies, Applied Materials, Xilinx, and other firms where grown men walk around in bunny suits should fill in advance of the broader economy. There's little question that the semiconductor industry's book-to-bill ratio, which measures new orders against current shipments, is finally on the mend after a devastating downturn. And, incredibly, the 16-member Philadelphia semiconductor index (SOX) is up on the year; it has risen close to 3.2% against 22.4% loss on the Composite.

North American Semiconductor Book-To-Bill Ratio



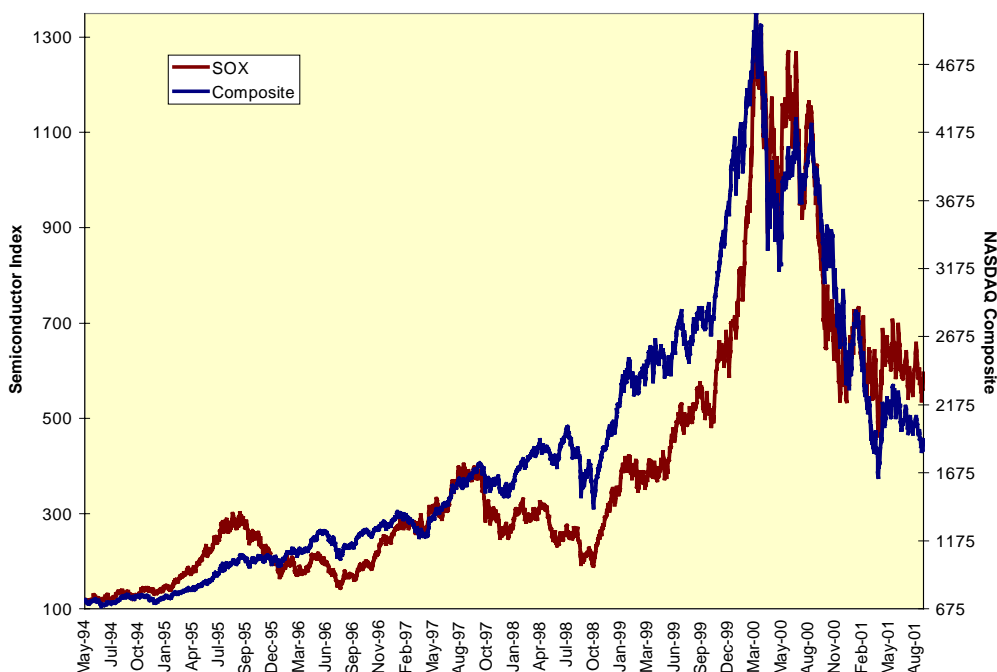
But, does this mean that the SOX will turn higher and lead the Nasdaq Composite out of its funk, as so many have suggested? With further apologies to George and Ira Gershwin's Depression era *Porgy and Bess*, "it ain't necessarily so."

Leads And Lags

One of the most difficult things to distinguish in data analysis is the difference between correlation and causality. If past performance did indeed predict future results, market analysis would be an uninteresting sport, and we could accept living in a world where leading Wall Street strategists still are calling for year-end values on the S&P 500

north of 1500. Such intellectual laziness isn't for us, however, so we must test whether the SOX does in fact lead the Composite.

Do Semiconductors Lead?



A visual examination of the two indices over the past seven years does not support the thesis consistently. The SOX led the Composite higher in 1995. A SOX downturn during the Asian and Russian financial crises in 1997-1998 failed to pull the Composite down significantly, and the Composite rose more rapidly into the first quarter of 2000. The SOX outperformed the Composite during the summer of 2000, but the two indices fell at more or less the same pace into the March-April 2001 lows. Now, the SOX is holding up a little bit better than the Composite, but can we confirm a tendency for one index to lead the other?

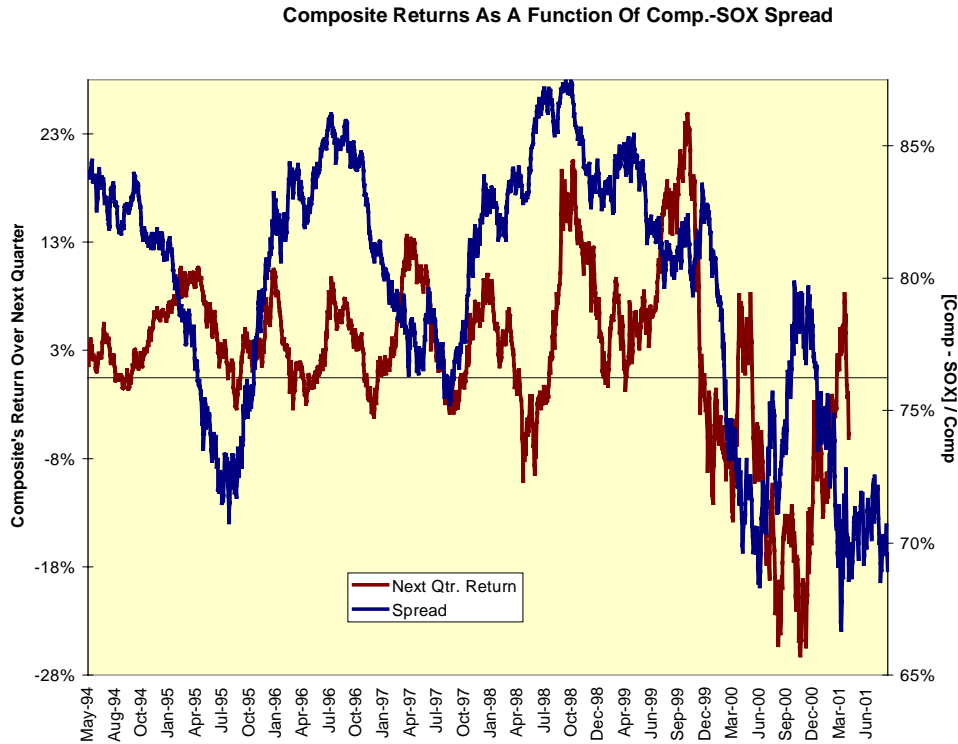
No, not even close. We can construct a correlation matrix of daily returns over 1,847 trading days, and see whether lagged values of one index' returns lead the other index' returns. The two measures have a very strong correlation, 79%, on a same-day basis, but the results quickly dwindle into statistical insignificance. The previous day's return on the SOX has only a 10% correlation with the Composite's return. If there's a longer-term leading relationship, it's certainly not apparent at lags of two, three, or four weeks. The opposite holds true as well: The Composite does not have a leading relationship to the SOX.

Correlation Matrix

	SOX Leading Comp	Comp Leading SOX
Same Day	0.790	0.790
One Day	0.100	-0.044
Two Days	-0.045	-0.071
Three Days	0.001	-0.005
Four Days	0.004	0.019
One Week	-0.032	-0.043
Two Weeks	0.021	0.016
Three Weeks	-0.003	0.008
Four Weeks	-0.012	-0.038

Let The Chips Fall Where They May

Another way to look at the relationship is determining whether the SOX is cheap or expensive relative to the Composite; we can do this by taking the spread between the two as a percentage of the Composite. At present, the $[\text{Comp.} - \text{SOX}] / \text{Comp.}$ percentage is quite low by historical standards, which suggests the SOX is expensive relative to the Composite. This measure does not appear to be useful in predicting the return on the Composite over the next 90-day rolling time frame, however.



No matter how the data are examined, the conclusion appears constant: The SOX is virtually useless as a leading indicator of the Composite. At this point in the industry's life cycle, the chipmakers are just one more manufacturing sector, with all the rights, honors, and privileges pertaining thereto.

It's always important to distinguish between great stocks and great businesses. The dot-coms may have been great stocks at one point, but few even at the time confused them with great businesses. Many going concerns are terrible stocks; three of the worst performing industry groups in 2001 have been oil well services, natural gas, and oil & gas drilling, down 31.1%, 32.3%, and 39.4%, respectively.

Let's declare it now: The SOX has some great companies whose businesses ten years from now will be much larger than they are today. Whether they'll be great stocks is questionable. Let's not look to them to lead us out of this Nasdaq bear market, however, especially if the evidence for such an argument is conspicuous in its absence.