

INTERVIEW

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Monitoring The Markets

Gerald Appel & The MACD

Gerald Appel is perhaps best known as the inventor of the MACD, the popular moving average convergence/divergence indicator. However, he is also the founder of Signalert, a registered investment advisory company; editor of Systems & Forecasts, a newsletter read by money managers, analysts, and private investors worldwide; and an established author and lecturer. His articles have appeared in Smart Money, Money magazine, Barron's, and STOCKS & COMMODITIES; he is also the author of 10 books on investment and market timing. Finally, Appel has been cited by numerous financial publications and is a regular guest on various financial news networks.

The moving average convergence/divergence indicator is a statistical stock market timing model and technical analysis tool that is widely respected and used by traders, investors, and money managers. How is the MACD handling the current markets? STOCKS & COMMODITIES Editor Jayanthi Gopalakrishnan spoke with Appel via telephone on July 9, 2003, to find out.

Can you tell us how you got started in trading?

I started out as a personal trader. We're going back a long way — we're talking about the mid-1960s. And from my personal trading, it kind of evolved into my doing articles for various magazines relating to investment, and then a series of books relating to investment, and then ultimately to the establishment of my own market planner and money management firm.

Is that what you do now — you have a newsletter and you manage money?

Yes, Signalert Corporation, which I founded in 1973, publishes a newsletter called *Systems & Forecasts*, which has been in publication now for 30 years. We also manage, along with affiliated companies, approximately \$580 million of client capital.

Can we talk a little bit about the MACD, or moving average convergence/divergence? What led you to develop that indicator?

I guess I was just looking for new indicators! I was looking for a quality indicator that would be readily interpretable, that would not create so many whipsaws as to be confusing, and that would still be relatively simple to maintain. MACD was originally invented in about 1977, but the way I use it has evolved over the years.

How has it evolved?

Well, we use different time frames for different sets of parameters for buying and selling. It works better when you don't use one parameter. Generally, it should be easier to buy and somewhat harder to sell, because of the way the market moves. Then there's

the original description of MACD, which had no particular references to divergences; it used different combinations of time frames than we use nowadays to a certain degree, and by and large we've improved our interpretation of the indicator patterns over the years.

From my understanding, the MACD is a powerful indicator for trending markets, but can it also be used in markets that are moving sideways?

Oh, sure. Then you use it as an oscillator. If the trading range is *too* narrow, it becomes a problem, but a sideways market movement that has waves of any size at all works just fine. The MACD is a great help in picking up the market cycles — you know, the time cycles, because so often they show up in MACD patterns when they don't show up in patterns on the price movements.

Are you talking about short-term or long-term cycles?

The MACD can be used in both long- and short-term time frames. It can be used for daytrading, or you can create MACD patterns on monthly data and use it for long-term markets.

Do you still predominantly use the MACD?

Well, *predominant* is a hard word to use, but we definitely pay careful attention to the MACD.

Do you use the MACD differently for different types of markets, or is it pretty consistent? For example, if you have a bond market or an equity market, are there differences in their behavior?

Well, there may be differences in the behavior of the markets themselves. The bond markets tend to be somewhat quieter and more trendy than stock markets. So different patterns predominate — the Nasdaq also tends to be fairly trendy, but it's more volatile than the Standard & Poor's 500, so you have different parameters. But by and large, you don't have to make all that many modifications. Once you have a feeling for the indicator itself, the modifications are readily made.

What sort of signals does the MACD give?

MACD gave a good market entry during December of 2002 for the stock market, just a couple of weeks off the low of the market. And the monthly chart gave a pretty good buy signal in April 2003. That's a major trend buy signal. There was another signal on the weekly charts, which we tend to treat as an intermediate buy signal, and that occurred in December of 2002. This signal was confirmed by monthly based signals in April of 2003. Right now, as we speak, a bull market signal is in effect, a major bull market signal.

When you say major, does that mean a long-term, sustainable bull market?

Probably, unless something happens that makes that signal change. Clear sell signals developed on a major trend between the end of 1999 and the beginning of 2000, when MACD patterns turned down and rolled over. So there was a really good sell signal developing at that time, that whole six-month period from the last quarter of 1999 and

about the first quarter of 2000. MACD essentially trended downwards until the end of 2002, when it began to turn and to flatten out. Now it's rising.

So are you saying that it's a leading indicator?

It's usually somewhat leading, yeah. It's either coincident or leading — it doesn't lag very often.

Is that because you use the exponential or weighted moving average to calculate it?

Well, it's a momentum indicator, and the momentum usually changes before the price trends change. So there's usually an advance warning of price changes. Actually, in 1999 the signal might have been a little premature, because the MACD began to turn down in the S&P 500 anyhow, and the S&P 500 had a little bit farther to go. It began to flatten and turn up before the market actually took off this year, while the base was being made.

I think the important thing, really, is that it turned bearish and began to give bearish vibrations at the end of 1999 or beginning of 2000. It began to give very clear bullish vibrations at the end of 2002 going into the first three months of 2003, and is now in a clear uptrend.

You've been trading for some time, since the 1960s, you said. I think one of the most difficult things traders are faced with is dealing with emotion. How do you avoid falling into that type of trap?

Well, I don't know that I totally avoid it! Truth be told, there are very few market indicators — in fact I know of *none* — that actually have a 100% batting average. So to some extent, you are always dealing with probabilities. How *probable* is it that this signal, this combination of indicators, or this array of signals will be profitable in whatever direction you're trading? There's always a tendency to second-guess the indicators that you have.

What would you advise?

The best advice that I can give to anyone is to put most of your emotional energy into the creation of your indicators, rather than trying to guess the market, and you'll probably come out ahead. Use whatever emotional discipline you can create to follow your own research, as long as the research is well-based. But the real effort should go into the research and development of your timing models. Then try to discipline yourself to follow them, because if you begin to ignore them, then you have no models.

That should help traders focus a little less on emotions and more on results.

Of course, in recalling what took place, you will tend to recall either times you were right or times you were wrong, and your recollection will be very selective. You have no way of backtesting your emotional reactions and saying, well, in *this* frame of mind, what would I have done next? Whereas an indicator can be backtested, validated, and so on. The longer the period of time you do that, the better.

In my own trading, I may do something peripherally to lighten my position in the market, since I tend to be more cautious than brave. But I will never ignore a sell signal or a buy signal. I may take smaller positions, but I will never totally ignore that signal.

When you create these trading systems or indicators, do you alter them constantly to adjust to changes in market behavior?

Well, if you have to alter them too frequently, then you don't really have an indicator of any validity. All you're doing is making it curve-fit to the latest data. You can make a timing model such that it turns out that on the fourth Tuesday of every August, you'd better not buy. But of course, that's just coincidental. A good timing model does not and should not require all that much alteration.

There must be exceptions?

Well, on the other hand, there *are* times when market behavior changes and can throw out an indicator. For example, the reason so many people got so badly hurt between 2000 and the start of 2003 is that market volatility rose to levels that had not been seen since the early 1930s, and most of us were not around then to trade. So the impact of volatility wasn't something people were aware of until it happened. That kind of daily volatility wiped out the performance of most timing models that were in effect.

This even pertains to monetary conditions, which had always been a pretty good indicator for the stock market. The Fed cut rates about 11 times in a row, and there was no positive reaction. In the past, three rate cuts were pretty much enough to start a bull market. Most, or many, indicators had to be rewritten. To rewrite these indicators, it may have been necessary to go back to more stable times, but I somehow doubt it.

Why is that?

I think there was something more permanent happening. The stock market was lending itself to quicker action, more directional movement, and exaggerated movement. I think online trading has had that effect, along with the speculative interest that developed in the Nasdaq, as well as increased trading volume. When I first started to trade, a typical day's activity was perhaps four or five million shares. Ten million was a really big day. Now we're talking about two *billion* shares. So with that kind of viable trading, action is compressed in terms of time. That means you're seeing shifts and movements on an intraday basis that might have taken days to occur in the past. These are all things that little by little have their impact on timing models, and so you have to review your models regularly to see how they're performing. We do that every six months.

Do you review MACD every six months, as well?

MACD is not actually that type of model. It is in itself less subject to this sort of influence than a lot of timing models that people had, such as the moving average crossings, which were very badly done in by market volatility. MACD actually was not badly done in. I'm not sure just why, but that's how it was. But I do think that people should evaluate any timing model from time to time. You may occasionally have to make changes in the parameters, but if you have to do it too often, then the whole model becomes suspect.

We're basically talking about short-term trading, but do you recommend that short-term traders look at the long-term picture?

I think a short-term trader should always, whatever trading they do, be filtered for greater safety to the next longer trends. There's a four or five-day market cycle, and if you're a daytrader, you may as well look at the daily cycle and try to do your daytrading on the days of the cycle that the market is most likely to rise. That's usually the first two days of the cycle. If you're a short-term trader, you're better off trading in the direction of the intermediate trend. If you're an intermediate trader, you're better off trading in the direction of the major trends. So the next longer trend can act as a good filter for the time frame in which you're moving.

What about in terms of the economy and how the economic indicators are doing, such as interest rates and inflation and so forth?

In terms of economic data, and fundamental data, I think probably the most reliable fundamental data you can deal with is the direction of interest rates. It's not perfect, but it tends to be fairly reliable. It used to be better before the bear market, because rates trended downwards throughout that market and it just didn't help. But historically over the longer run, the stock market has clearly had a better time of it when interest rates were declining, both long- and short-term. So that's a pretty good confirming indicator.

What about other fundamental data?

The ways people interpret fundamental data undergo a lot of changes over time. Right now, we're starting a bull market — it looks like, anyhow — with stocks paying less than 2% dividends, and with the price/earnings ratio up around 30 or so. These are levels that in the past were associated with the starts of *bear* markets, not the starts of bull markets. If you check these things out historically, you find that gradually since the 1930s investors have been willing to settle for less and less in the way of dividends from the stock market. In the 1930s, the recollection of the crash was so close at hand, the Depression was underway, and corporations were naturally suspect. So people who wanted to be involved in the stock market wanted clear paths, at least. With each market cycle since then, the rate of dividend payout at the market top seems to be getting lower and lower as we get along. That's a whole parameter that changes.

What else?

In a similar way, the relationship of stock yields and bond yields has changed over the years. In the past, people could pay less for stocks, because they were considered more risky. Now stocks tend to pay less than bonds because they are considered to have more potential. So there are different ways that people look at fundamentals, and I don't think that too many fundamentalists get together on what constitutes a bullish or bearish condition. Of course, technicians don't either! I pay attention to interest rates, but I happen to be a market technician. It's not the only way to invest, but it's my way. If you contaminate that with too many outside influences, you end up building a sort of technical fundamental indicator that gets very, very complicated and hard to interpret.

It certainly can get complex with the number of indicators out there of every description.

Actually, back to technical indicators, many of them are really quite redundant. Probably investors should concentrate on relatively few of them that they get to know well — how they move, what their paths are, and so forth. I would advise people to do that rather than spend a lot of time tracking loads of indicators that are basically giving the same information, but just take a lot of time to analyze.

Essentially, if you have a market that's trending, and then all of a sudden it starts going sideways and gets into a trading range, traders would like to know when that's going to happen, because a lot of people get thrown off. When they get stuck in a trend, they like that, and they keep going. They can forget that the market has changed direction. Do people need to switch systems at that time?

No, I think if you have a good set of indicators, it will pick up those changes. Remember that nothing's perfect.

That's pretty much what you said about the MACD earlier. It flattens out, or bottoms out...

Yeah, you try to identify these things. We have a concept that we use that has to do with the phases of the markets. It is something that I originally picked up from a newsletter called *The Professional Tape Reader*. It's a simple concept: First, think about the stock market as moving in waves — you know, a wave that looks like a sine wave. It has a flow up, a turn, and then a flow down. It would have a bottoming period, then it starts up again.

How do you use this concept?

We divide these cycles into four phases. There's the bottoming phase that's at the bottom, when the market has finished its decline, but hasn't started to move up yet. That's stage one. Then you have the rising stage, which is when all the money is made, and that's stage two. Then you have a period where nothing much is happening, and you get a trading range at the top. That's a distribution phase, stage three. Then you have a decline, which is stage four, which is when the damage gets done. Stage four gradually melts into a new stage one. We try to look around and see which phase we are dealing with.

Can you give us an example?

MACD attempts to lead the stock market, so it's basing in stage one as the market is basing. It will usually begin to turn up before the market, make double bottoms, and begin to generate a rising pattern, because the momentum of the decline has ended. So then MACD turns up before the markets, while the market is still flattening. It begins to signal that you're getting ready to move from phase one to phase two. As phase two progresses, MACD first accelerates, then moves kind of smoothly to the upside. That's the best time to be in the market, but it's giving you *time* to get in. As MACD begins to roll over, usually a little before the market, that tells you the coming of stage three, and it's the time to take profits, hedge positions, do whatever, and try to be out for stage four. So the big moves take place in stage two on the upside and stage four on the downside, and stages one and three are periods of flatter trading when the trends are reversing.

So this concept can give you a hint that a reversal may be on the way?

As you get used to MACD patterns and the way MACD works, you can begin to identify these types of phases, and begin to move your thinking accordingly, because you usually will have time to prepare for market reversals. The most treacherous sort of market formation is the type that ends the bull market when you have something like an almost vertical spike. This is the sort of pattern the Japanese market had in 1989 and 1990. Gold had it in 1980, and hasn't gotten that high since. The stock market, especially the Nasdaq, had it from 1999 to early 2000. It's a wicked pattern, because it's a lot of fun while it's going on, but once the spike occurs and prices start down, the damage is usually pretty extensive and long-lasting. Presuming that a new bull market is now underway, it still took almost three years for it to happen. And of course we haven't come anywhere near recovering the losses. If we look at this in the long term, you can have what's a tradable bull market, but it may never get back to the 1999 levels for years to come. I think the Nasdaq is still 65% from its peak high.

It sounds like traders should focus on a few indicators and get to really know them.

I would say so, yes. This takes time.

Are there any other indicators you look at?

We do a lot of work with moving average trading channels. That mostly consists of a moving average of some length. Depending on your type of trading, that moving average can be anywhere from 21 hours, to 21 days, to 21 weeks, or something like that. Next, you establish bands around the moving average that usually encompass about 90% of the stock movement. For the S&P 500 we use a 4% band above and below the 21-day moving average. Most of the time, prices stay within those areas, between -4% from the 21-day average or above 4%. If you use weekly data, you have to stretch it out wider. There are certain patterns that become very repetitive, and can be used effectively for the prediction of what's going to take place.

Can you give me an example?

For example, if the market makes a decline to well below the lower band of the channel, it's not going to go up very fast. There's a lot of downside momentum. You can measure the amount of momentum up and down by how far the market moves outside the bands. In other words, if the market is spending 85% of its time within the channel, and it moves out in one direction or another, that has significance. That means something different is happening, right? And that something different means that it's going to continue for a while.

Instead, people tend to overuse the concepts of overbought and oversold, and those are bad concepts.

Why is that?

When you use the word *oversold* it really just means that there's been some pretty expensive selling going on, and it's not likely to turn on a dime. Conversely, if the market really moves up and it has generated a lot of upside momentum, it is not all that likely to simply stop going up. It's going to have to slowly wear down that upside momentum, so

that markets that have become very oversold are likely to keep declining for a while. Markets that have become very overbought are likely to keep advancing for a while.

How can moving averages help in these situations?

There are certain rules you can apply to moving average trading bands and how prices are moving that really help you to predict where the next reaction will come from, where the next advance will arrive, and what to look for. We use that very much in conjunction with MACD, and it's a very helpful way to approach the market.

Do you have any final comments you'd like to share?

I would just emphasize again that traders should use relatively few indicators that they trust, learn how they behave, and try to objectively develop codes for them. And then *follow* them!

Thanks for speaking with me today, Gerald.

RELATED READING

Gopalakrishnan, Jayanthi [1999]. "Trading The MACD," *Technical Analysis of STOCKS & COMMODITIES*, Volume 17: October.

Hartle, Thom [1994]. "Gerald Appel, With Systems And Forecasts," interview, *Technical Analysis of STOCKS & COMMODITIES*, Volume 12: March.

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