

*Who's The Boss?*

MIKE YAPPS

# Balance Of Market Power

*Who's in charge, bulls or bears? It doesn't take higher-order math to get a good reading.*

*by Igor Livshin*



**T**

he balance of market power (BMP) indicator measures the strength of the bulls vs. the bears by assessing the ability of each to push price to an extreme level. I deliberately developed BMP not to be a range-bound indicator, so it is as sensitive at extreme points as it is at other levels.

Every day, bulls and bears compete with each other in the marketplace. The idea behind the BMP calculation is to assign a score for both bulls and bears based on their daily performance related to price movement.

For each market day, the indicator is calculated by using the formulas shown below. First, three *reward values* are calculated for bulls and bears:

- 1 Reward\_Based\_On\_Open
  - 2 Reward\_Based\_On\_Close
- and*
- 3 Reward\_Based\_On\_Open\_Close.

Each reward is calculated relative to the full price movement for that day (HighPrice-LowPrice).

**REWARD BASED ON THE OPEN PRICE**

This value measures the ability of each competing group — bulls and bears — to push the opening price in opposite directions (bulls up and bears down). The result of their efforts is registered by the high and low prices (Figure 1).

$$\text{BullsRewardBasedOnOpen} = (\text{HighPrice} - \text{OpenPrice}) / (\text{HighPrice} - \text{LowPrice})$$

$$\text{BearsRewardBasedOnOpen} = (\text{OpenPrice} - \text{LowPrice}) / (\text{HighPrice} - \text{LowPrice})$$

**REWARD BASED ON THE CLOSE PRICE**

This value measures the ability of each competing group (bulls and bears) to reach the closing price from opposite directions (bulls up from the low price and bears down from the high price). (See Figure 2.)

$$\text{BullsRewardBasedOnClose} = (\text{ClosePrice} - \text{LowPrice}) / (\text{HighPrice} - \text{LowPrice})$$

$$\text{BearsRewardBasedOnClose} = (\text{HighPrice} - \text{ClosePrice}) / (\text{HighPrice} - \text{LowPrice})$$

**REWARD BASED ON OPEN-CLOSE**

How each market day finishes (up or down) bears a great psychological importance, so the winning group gets an extra score (Figure 3).

```

If ClosePrice > OpenPrice then
    BullsRewardBasedOnOpenClose = (ClosePrice -
    OpenPrice)/(HighPrice - LowPrice)
    BearsRewardBasedOnOpenClose = 0
Else
    BullsRewardBasedOnOpenClose = 0
    BearsRewardBasedOnOpenClose = (OpenPrice -
    ClosePrice)/(HighPrice - LowPrice)
    
```

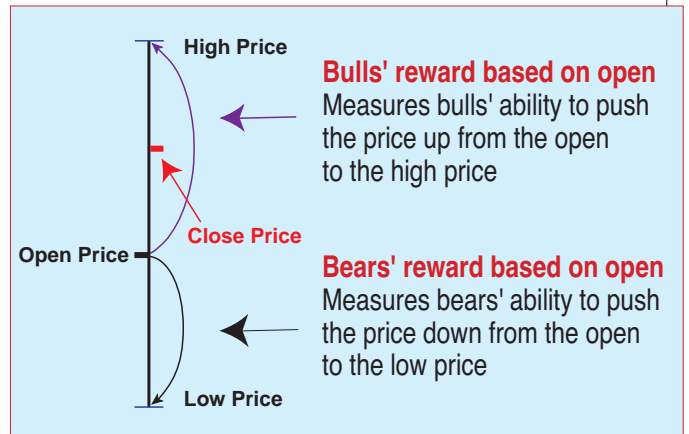
Once the rewards for both sides are calculated, the total daily reward is calculated for both bulls and bears.

$$\text{BullsRewardDaily} = (\text{BullsRewardBasedOnOpen} + \text{BullsRewardBasedOnClose} + \text{BullsRewardBasedOnOpenClose}) / 3$$

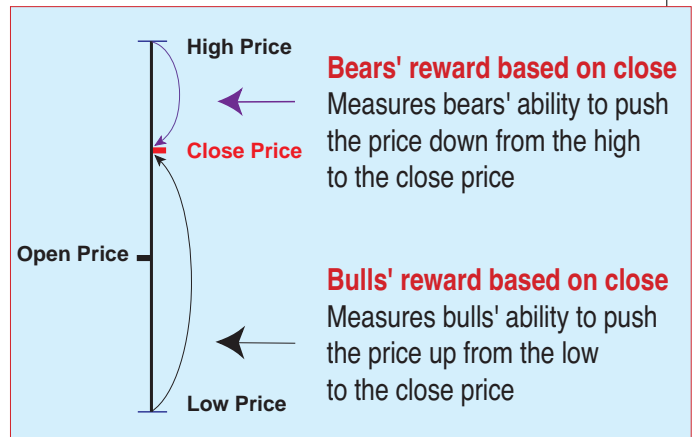
$$\text{BearsRewardDaily} = (\text{BearsRewardBasedOnOpen} + \text{BearsRewardBasedOnClose} + \text{BearsRewardBasedOnOpenClose}) / 3$$

Finally, the balance of market power indicator is calculated as the difference between bulls' and bears' daily rewards.

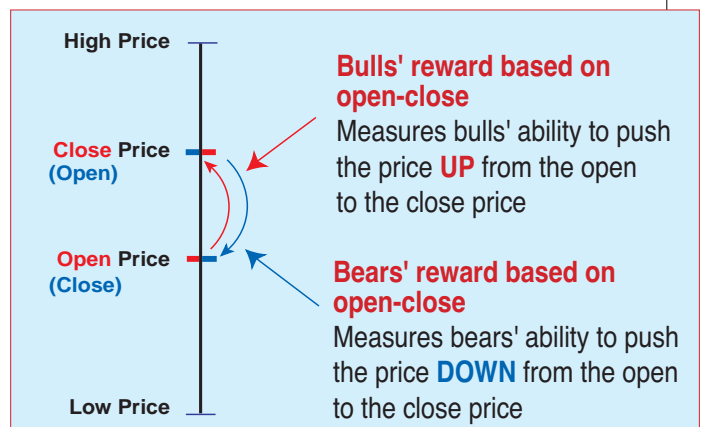
$$\text{BalanceOfMarketPower} = \text{BullsRewardDaily} - \text{BearsRewardDaily}$$



**FIGURE 1: SCORING.** Bulls and bears are each rewarded by their success in pushing price around. Here's one of their rewards based on movement from the open.



**FIGURE 2:** Reward based on the price of the close.



**FIGURE 3:** Reward based on the open-close price.

**FIGURE 4: BMP.** Once charted, BMP tends to make sharply defined reversals that help pinpoint support and resistance.

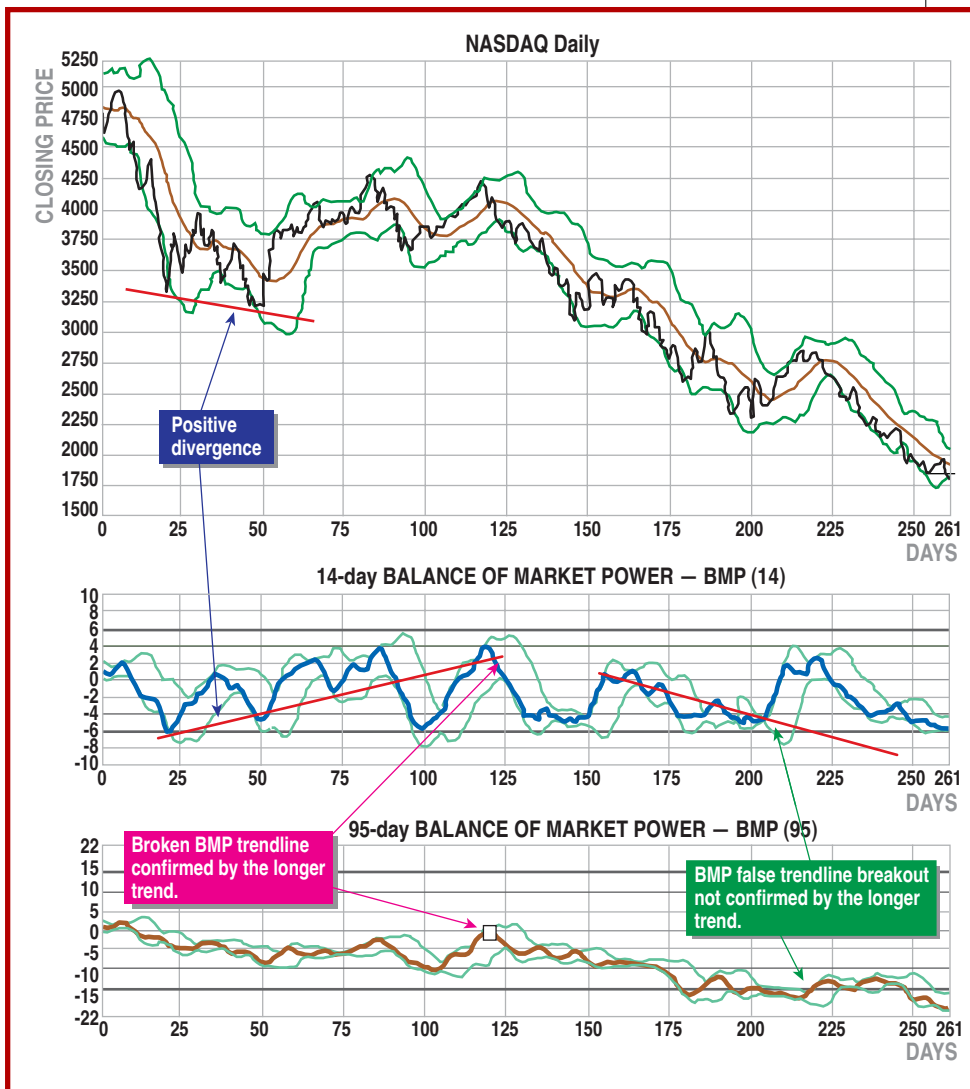
(See sidebar “Calculating BMP in a spreadsheet” on page 30 for an example on how to calculate the BMP in Excel.)

**USAGE**

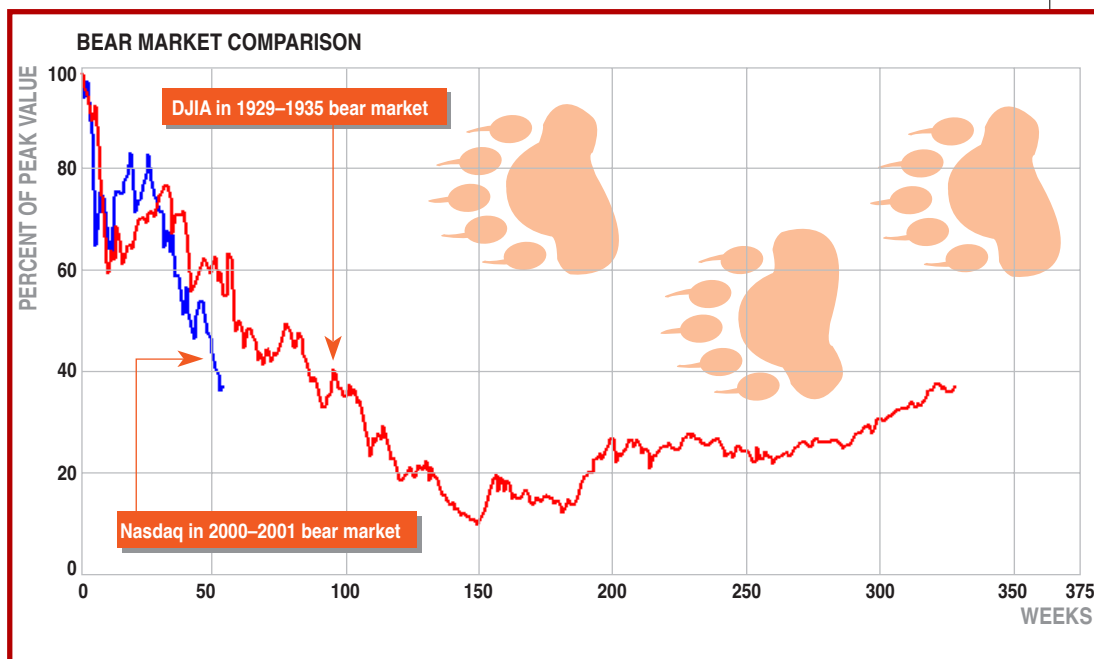
For daily charts, I typically plot a 14-day moving average of the balance of power indicator, though the number of periods varies depending on the nature of the market and the time frame.

Unlike many indicators, BMP typically does not meander at extreme levels but rather forms v-shaped tops and bottoms. Therefore, when BMP is getting close to a well-established level where its tops or bottoms previously found resistance or support, the odds of a price reversal are high. The price and the BMP indicator can continue advancing or declining beyond these points, but the likelihood is much less and the risk is much higher.

Like many oscillators, BMP supports price divergence, trends, and overbought–oversold levels. BMP also helps to determine the market trend. Figure 4 shows the



**FIGURE 5: NASDAQ VS. DJIA.** The loss in value of the Nasdaq in 2000–01 and the DJIA of the 1929–35 bear market.



	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Date	Open	High	Low	Close	Bull's score based on open	Bear's score based on open	Bull's score based on close	Bear's score based on close	Bull's score based on open to close	Bear's score based on open to close	Raw balance of power	14-day average BMP
2	9/7/98	100	101	99	100	0.5000	0.5000	0.5000	0.5000	0.0000	0.0000	0.0000	
3	9/8/98	114	116	107	107	0.2222	0.7778	0.0000	1.0000	0.0000	0.7778	-0.7778	
4	9/9/98	115	115	113	113	0.0000	1.0000	0.0000	1.0000	0.0000	1.0000	-1.0000	
5	9/10/98	116	117	116	117	1.0000	0.0000	1.0000	0.0000	1.0000	0.0000	1.0000	
6	9/11/98	115	122	113	118	0.7778	0.2222	0.5556	0.4444	0.3333	0.0000	0.3333	
7	9/14/98	114	119	109	118	0.5000	0.5000	0.9000	0.1000	0.4000	0.0000	0.4000	
8	9/15/98	118	122	112	115	0.4000	0.6000	0.3000	0.7000	0.0000	0.3000	-0.3000	
9	9/16/98	113	114	108	112	0.1667	0.8333	0.6667	0.3333	0.0000	0.1667	-0.1667	
10	9/17/98	109	119	108	110	0.9091	0.0909	0.1818	0.8182	0.0909	0.0000	0.0909	
11	9/18/98	112	117	106	109	0.4545	0.5455	0.2727	0.7273	0.0000	0.2727	-0.2727	
12	9/21/98	119	121	101	111	0.1000	0.9000	0.5000	0.5000	0.0000	0.4000	-0.4000	
13	9/22/98	123	125	108	115	0.1176	0.8824	0.4118	0.5882	0.0000	0.4706	-0.4706	
14	9/23/98	118	125	117	121	0.8750	0.1250	0.5000	0.5000	0.3750	0.0000	0.3750	
15	9/24/98	130	130	116	127	0.0000	1.0000	0.7857	0.2143	0.0000	0.2143	-0.2143	-0.1002
16	9/25/98	120	141	119	132	0.9545	0.0455	0.5909	0.4091	0.5455	0.0000	0.5455	-0.0612
17	9/28/98	133	138	132	135	0.8333	0.1667	0.5000	0.5000	0.3333	0.0000	0.3333	0.0181
18	9/29/98	146	149	129	136	0.1500	0.8500	0.3500	0.6500	0.0000	0.5000	-0.5000	0.0538
19	9/30/98	139	147	134	135	0.6154	0.3846	0.0769	0.9231	0.0000	0.3077	-0.3077	-0.0396
20	10/1/98	139	139	128	131	0.0000	1.0000	0.2727	0.7273	0.0000	0.7273	-0.7273	-0.1153
21	10/2/98	134	136	125	126	0.1818	0.8182	0.0909	0.9091	0.0000	0.7273	-0.7273	-0.1958
22	10/5/98	119	121	117	121	0.5000	0.5000	1.0000	0.0000	0.5000	0.0000	0.5000	-0.1387

SIDEBAR FIGURE 1: BALANCE OF MARKET POWER (BMP). Computing the balance of market power isn't complicated, but it does take up space!

**CALCULATING BMP IN A SPREADSHEET**

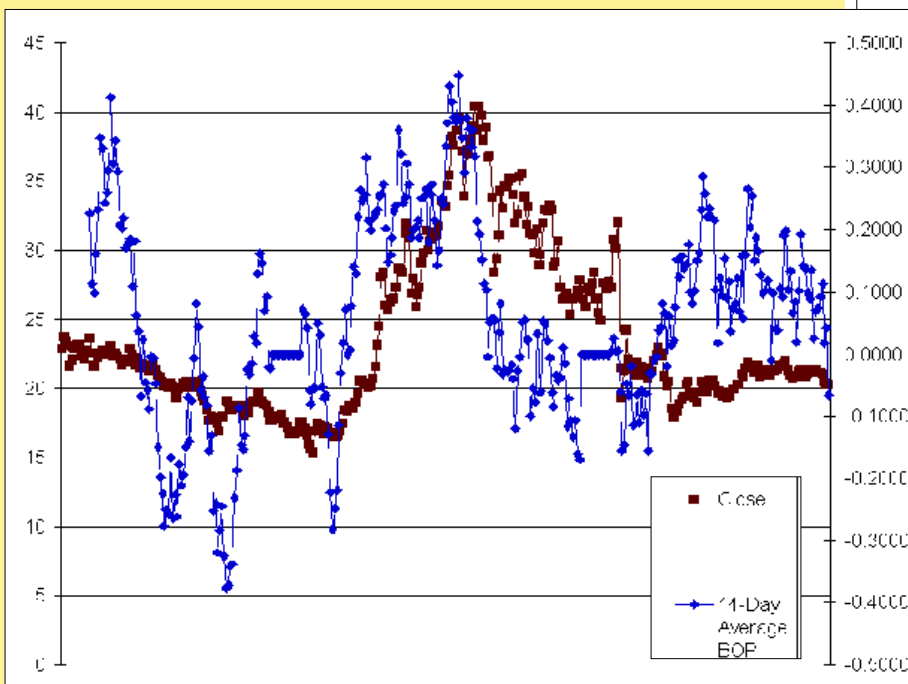
To compute balance of market power in a spreadsheet, we've used Excel as an example (Sidebar Figure 1). Most other spreadsheets can translate Excel code into their own formats. Begin by importing the data (for plotting purposes), open, high, low, and close as shown. Then, place this code in cell F2 :

$$=(C2-B2)/(C2-D2)$$

Then enter the following code in these cells :

```
G2=(B2-D2)/(C2-D2)
H2=(E2-D2)/(C2-D2)
I2=(C2-E2)/(C2-D2)
J2=IF(E2>B2,(E2-B2)/(C2-D2),0)
K2=IF(B2>E2,(B2-E2)/(C2-D2),0)
L2=(F2+H2+J2)/3-(G2+I2+K2)/3
M15=AVERAGE(L2:L15)
```

Copy all these cells down to the end of the price data and you're done. Sidebar Figure 2 displays a typical output, showing BMP's leading behavior in the S&C standard price series.—I.L.



SIDEBAR FIGURE 2: BMP AND THE S&C STANDARD PRICE SERIES. When BMP abruptly shifts from one far side of zero to another, it's a clear sign that control has passed from bears to bulls or vice versa. This can presage extended periods of advance or decline.

Nasdaq daily chart with an attached 14-day BMP (short-term) and 95-day BMP (intermediate-term).

One of the most important properties of BMP is the level at which it clusters its tops and bottoms. During the bull market, its tops often reach the upper level and never reach the bottom level. During the bear market, the picture is reversed.

As with other oscillators, BMP measures the velocity of the price trend. The BMP trends are less sustainable than the price trend — simply because it is more difficult to maintain the same velocity of the trend than the trend itself. Thus, when the BMP trend changes its direction, the price can continue to advance but at a slower speed. Therefore, a change in the BMP trend serves as a warning signal and should be confirmed by a change in the price trend.

**FOR FUN**

Figure 5 compares the Dow Jones Industrial Average (DJIA) of the market crash of 1929 against the Nasdaq losses between

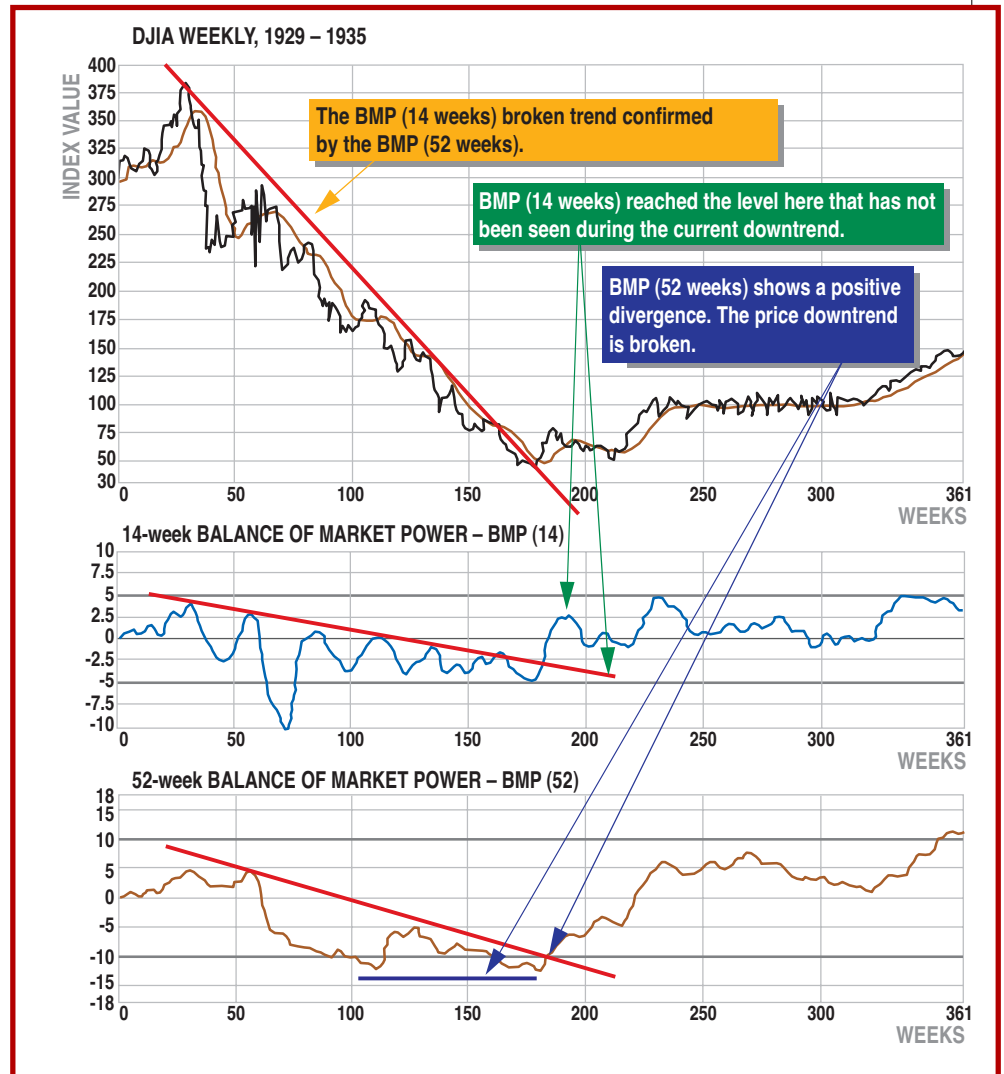
March 2000 and March 2001. The chart shows the Nasdaq managed to lose more than 60% of its value in 12 months, which was 1.75 times faster than the DJIA declined in 1929. In 1929, it took the DJIA 21 months to lose the same percentage relative to its top value.

How about comparing the BMP indicator reading at the bottom of 1929 with the BMP reading for the current Nasdaq market? Figure 6 shows a weekly DJIA chart (1929–35) with two calculated BMP indicators (measuring 14 weeks and 52 weeks, respectively).

The BMP is compressed between the two intersecting trendlines† that form a descending triangle. Close to the apex, BMP breaks up out of the pattern.

For the sake of comparison, Figure 7 shows the current Nasdaq chart built under similar conditions. Unfortunately, I can see nothing that resembles the bottom of 1929–35: Neither price nor BMP trendlines break out, nor positive divergence, and the BMP top does not reach a level seen during the bear

**FIGURE 6: BREAKOUT.** Once the 1929 DJIA had descended to the point where the BMP broke out, it signaled the recovery that followed.



**FIGURE 7. BAD NEWS.** If BMP is any guide, the Nasdaq has a way to go before it hits a bottom.

phase.

Further, BMP indicators prompt one more question: Will the major bottom happen when the BMP reaches the same extreme value on the downside (about 15) as it reached on the upside? If the answer is yes, the Nasdaq still has quite a way to go down.

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**RELATED READING**

Pring, Martin J. [2001]. "Analyzing Trends In Momentum," *Technical Analysis of STOCKS & COMMODITIES*, Volume 19: April.

†See Traders' Glossary for definition

