Know What's Hot

The Money Flow Oscillator

When is there more buying or selling pressure? Here's an indicator that answers that question.

There are indicators available to the technician that measure buying and selling pressure such as the money flow index (MFI), the Chaikin money flow indicator (CMF), and the moving average convergence/divergence (MACD). Each has its pros and cons, as all indicators do. After observing these indicators, I came up with an indicator that addresses some of the shortcomings of the existing indicators. I call this indicator the *money flow oscillator* (MFO), which is similar to the MFI, CMF, and MACD in that it measures buying and selling pressure but, as you'll find out, it's a little different. That's not to say it doesn't have its share of drawbacks.

Here's what it does

The MFO measures the amount of MFO volume over a specific lookback period. The default lookback period is 20 but that can be changed based on your trading style. The resulting indicator fluctuates above or below the zero line, similar to the way an oscillator does. Crosses above or below the zero line identify changes in money flow. The indicator can be used on daily, weekly, or monthly charts.

Calculating it

There are three steps to calculating the MFO. Note that for this example I use a lookback period of 20.

1. Calculate the MFO multiplier for each period
2. Multiply this value by the period's volume to find MFO volume
3. Take the sum of MFO volume for the 20 periods and divide by the 20-period sum of volume.

For more details on how to calculate the MFO, see the sidebar "Calculating The MFO."

Each period's money flow volume depends on the multiplier. This multiplier is positive when the current high minus prior low is greater than the prior high minus the current low. Conversely, the multiplier is negative when the prior high minus the current low is greater than the current high minus the prior low. The multiplier equals 1 when the previous high equals or is lower than the current low (gap up) and -1 when the previous low equals or is higher than the current high (gap down).

Volume is, in effect, reduced unless the MFO multiplier is at its extremes (+1 or -1). The table in Figure 1 shows a partial Excel spreadsheet with the calculations using a 20-period MFO for the Dow Jones In-

CALCULATING THE MFO

1. Multiplier = [(High – previous low) – (Previous high – low)] / [(High – previous low) + (Previous high – low)]
2. Money flow volume = Multiplier × volume for the period
3. 20-period MFO = 20-period sum of money flow volume / 20-period sum of volume

Note: Steps 2 and 3 above are similar to the calculation of the Chaikin money flow (CMF) indicator.

BRUCE WALDMAN

by Vitali Apirine

METASTOCK CODE FOR MFO

```
LL:= Security(".DJI",L);
HH:= Security(".DJI",H);

{avoid division by zero}

Dvs:=If((HH-Ref(LL,-1))+(Ref(HH,-1)-LL)=0,.00001,(HH-
Ref(LL,-1)+(Ref(HH,-1)-LL)));

MLTP:=If(HH<Ref(LL,-1),-1,If(LL>Ref(HH,-1),1,((HH-
Ref(LL,-1))-(Ref(HH,-1)-LL))/dvs));

{avoid division by zero}

Dvsv:=If(V=0,.00001,V);

Sum((MLTP*V),20)/Sum(Dvsv,20);
```

—V. Apirine

dustrial Average (DJIA). The MetaStock code for plotting the MFO can be found in the sidebar "MetaStock Code For MFO."

FIGURE 1: CALCULATING MONEY FLOW OSCILLATOR (MFO) USING A SPREADSHEET. Here you see a partial display of a spreadsheet used to calculate the MFO.

Dow Jones Industrial Average							
Date	Close	High	Low	Multiplier	Volume	MF Volume	20- period MFO
12/12/2013	15739.43	15845.11	15703.79		105874168		
12/13/2013	15755.36	15792.80	15717.92	0.18	83179152	14689333	
12/16/2013	15884.57	15930.31	15759.60	0.73	101472568	74037323	
12/17/2013	15875.26	15917.96	15836.45	0.26	101487408	25953709	
12/18/2013	16167.97	16173.04	15808.92	0.51	129621880	66188153	
12/19/2013	16179.08	16194.72	16121.54	0.76	94979832	72608629	
12/20/2013	16221.14	16287.84	16178.57	0.82	285189600	234702769	
12/23/2013	16294.61	16318.11	16225.25	0.38	78929776	30048350	
12/24/2013	16357.55	16360.60	16295.70	0.72	33641476	24083753	
12/26/2013	16479.88	16483.00	16370.97	1.00	50158296	50158296	
12/27/2013	16478.41	16529.01	16461.23	0.76	47227168	35791607	
12/30/2013	16504.29	16504.35	16476.87	-0.09	54223736	-5135271	
12/31/2013	16576.66	16588.25	16511.48	1.00	78763168	78763168	
1/2/2014	16441.35	16573.07	16416.49	-0.47	80964640	-38225368	
1/3/2014	16469.99	16518.74	16439.30	-0.13	72770280	-9718192	
1/6/2014	16425.10	16532.99	16405.52	-0.09	89378176	-8436862	
1/7/2014	16530.94	16562.32	16429.02	0.20	81273936	16465412	
1/8/2014	16462.74	16520.00	16416.69	-0.19	103262464	-19252104	
1/9/2014	16444.76	16525.35	16378.61	-0.16	83990464	-13497349	
1/10/2014	16437.05	16487.65	16379.02	-0.15	85190832	-12439885	
1/13/2014	16257.94	16453.13	16240.60	-0.54	111677304	-60135987	0.285
1/14/2014	16373.06	16373.92	16260.03	-0.10	98606496	-17060022	0.201
1/15/2014	16481.94	16505.28	16376.78	1.00	101132128	101132128	0.296
1/16/2014	16417.01	16477.70	16375.56	-0.12	87372416	-10910557	0.278
1/17/2014	16458.56	16495.26	16378.80	0.10	184970544	17600834	0.245
1/21/2014	16414.44	16520.60	16316.25	-0.12	111565088	-12940189	0.198
1/22/2014	16373.34	16453.49	16332.98	-0.16	87568184	-13579998	0.077
1/23/2014	16197.35	16372.96	16140.58	-0.77	100544416	-77762699	0.014
1/24/2014	15879.11	16203.29	15879.11	0.77	141447792	109572757	0.059
1/27/2014	15837.88	15942.77	15783.55	-0.74	127535408	-93945002	-0.131
1/28/2014	15928.56	15945.89	15840.84	0.23	89113136	20370620	-0.136
1/29/2014	15738.79	15927.08	15708.98	-0.47	109588416	-51095732	-0.155
1/30/2014	15848.61	15907.53	15733.27	0.01	92095104	1112388	0.192
1/31/2014	15698.85	15847.19	15617.55	-0.44	137092352	-59758210	-0.198
2/3/2014	15372.80	15708.54	15356.17	-0.69	151048704	-103819497	-0.234
2/4/2014	15445.24	15481.85	15356.62	-0.47	124106544	-58789600	-0.253
2/5/2014	15440.23	15478.21	15340.69	0.07	105125896	7829676	0.261
2/6/2014	15628.53	15632.09	15443.00	0.78	106979688	83913880	-0.215
2/7/2014	15794.08	15798.51	15625.53	0.96	105782496	101949637	-0.161
2/10/2014	15801.79	15801.79	15733.69	0.46	84108640	38879737	-0.139
2/11/2014	15994.77	16027.19	15803.40	1.00	95928328	95928328	-0.070
2/12/2014	15963.94	16036.56	15928.75	0.41	77305536	31406881	-0.049
2/13/2014	16027.59	16039.37	15863.25	-0.22	99466752	-21961496	-0.104
2/14/2014	16154.39	16175.55	15985.39	0.71	84064840	59286756	-0.072
2/18/2014	16130.40	16167.33	16107.04	0.45	91252872	41329067	-0.065
2/19/2014	16040.56	16225.72	16031.66	-0.07	80564720	-5381611	-0.062

MICROSOFT EXCEL

INTERPRETING IT

The MFO oscillates between -1 and +1 (Figure 2) but rarely does the indicator reach these extremes. Typically, this oscillator fluctuates between -0.50 and +0.50 with zero as the centerline.

MFO measures buying & selling pressure for a given period of time. A move into positive territory indicates buying pressure, while a move into negative territory indicates selling pressure.

To give you an idea of how the MFO works I'll compare it to the CMF, which also measures buying and selling pressure. The main difference between these two indicators is

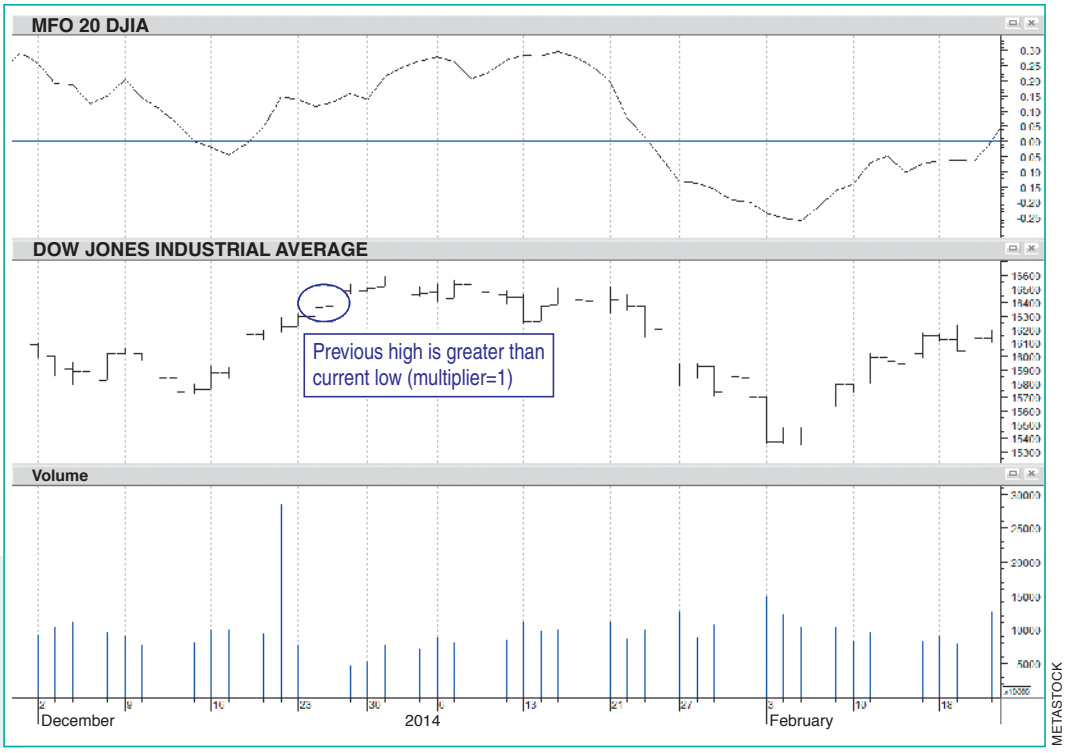

FIGURE 2: THE MONEY FLOW OSCILLATOR. Here you see that the oscillator fluctuates between -1 and +1. When the previous high is greater than the current low, the multiplier equals one.

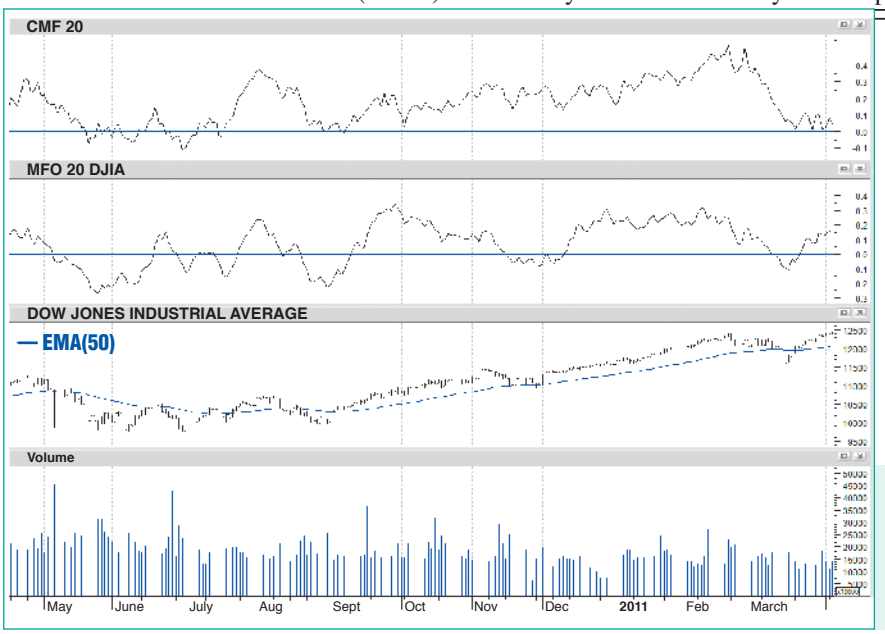

FIGURE 3: THE 20-DAY CMF AND 20-DAY MFO, APRIL 2010–JUNE 2011. Even though the two indicators measure buying and selling pressure, they move differently with respect to the centerline.

that CMF and MFO have different multipliers.

- The CMF multiplier measures the level of the close relative to the high–low range
- The MFO multiplier measures the difference between the current high minus the previous low and the previous high minus the current low.

To compare the two indicators I have provided a chart of the DJIA from April 2010 to June 2011 with the 20-day CMF and 20-day MFO in Figure 3.

One of the differences between the two indicators can be seen when there is an occurrence of price gaps. Because the CMF looks at the close relative to the high–low range, when a security gaps up and closes higher, the indicator may move down if the close was near the low. The money flow multiplier would drop if this was the case. The opposite can happen when a security gaps down and closes above the midpoint of the high–low range. In the MFO formula, when a security gaps up, the multiplier equals 1. Conversely, when a security gaps down, the multiplier equals -1.

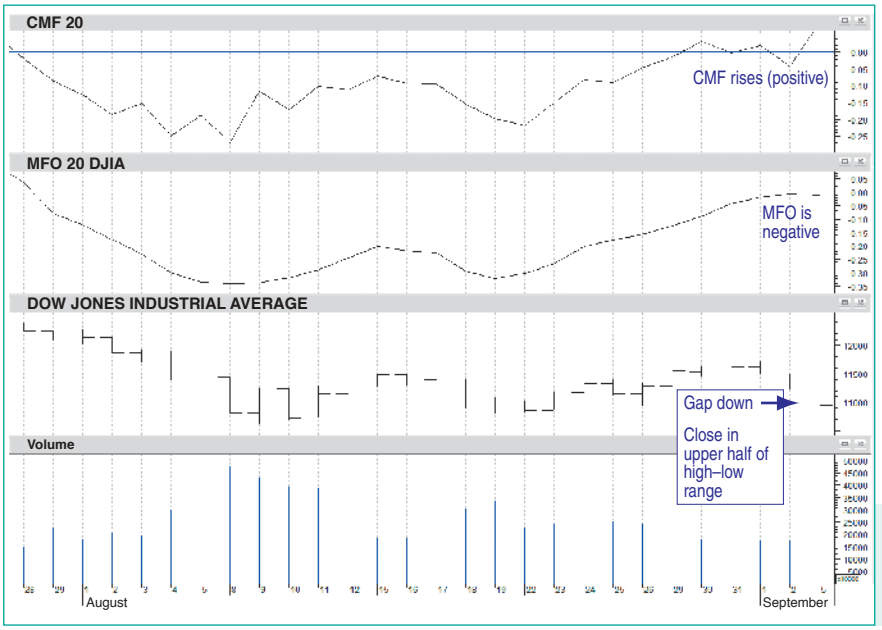

FIGURE 4: GAP DOWN. The MFO stayed in negative territory whereas the CMF rose and is in positive territory.

The chart in Figure 4 shows the DJIA with a gap down and a close near the day's high. Even though the stock closed lower on average volume, the CMF rose and became positive because the money flow multiplier was positive. The MFO(20), on the other

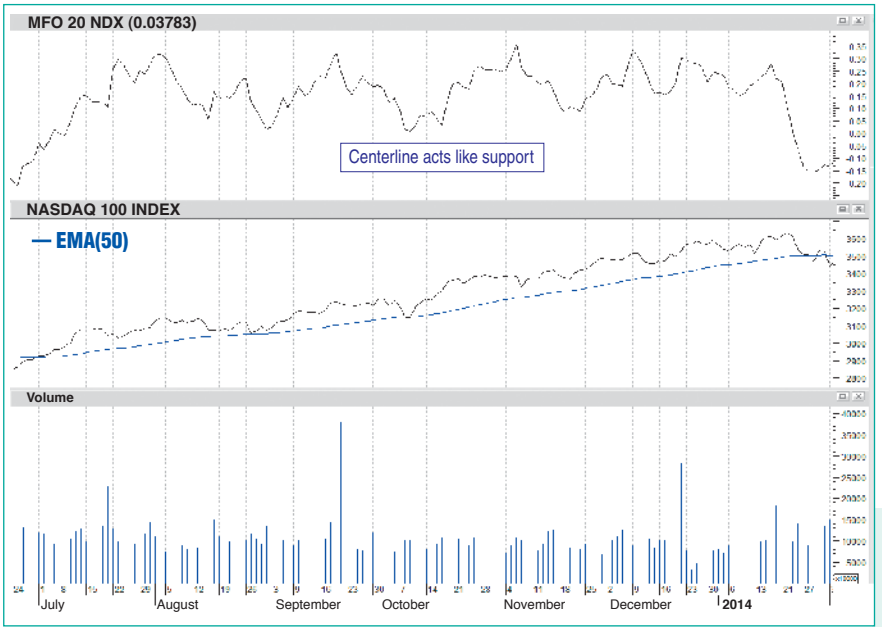

FIGURE 5: SUPPORT LEVEL. The 50-day exponential moving average and the MFO centerline act as a strong support for prices.

hand, was negative.

In Figure 5 you see a chart of the NASDAQ 100 index with the 20-day MFO from June 2013 to February 2014. The 50-day exponential moving average and MFO centerline act as support.

The chart in Figure 6 is of the DJIA with a 20-day MFO from April 2002 to November 2002 during the 2001–2003 downtrend. It shows possible entry and exit points (red arrows/green arrows) for short trades.

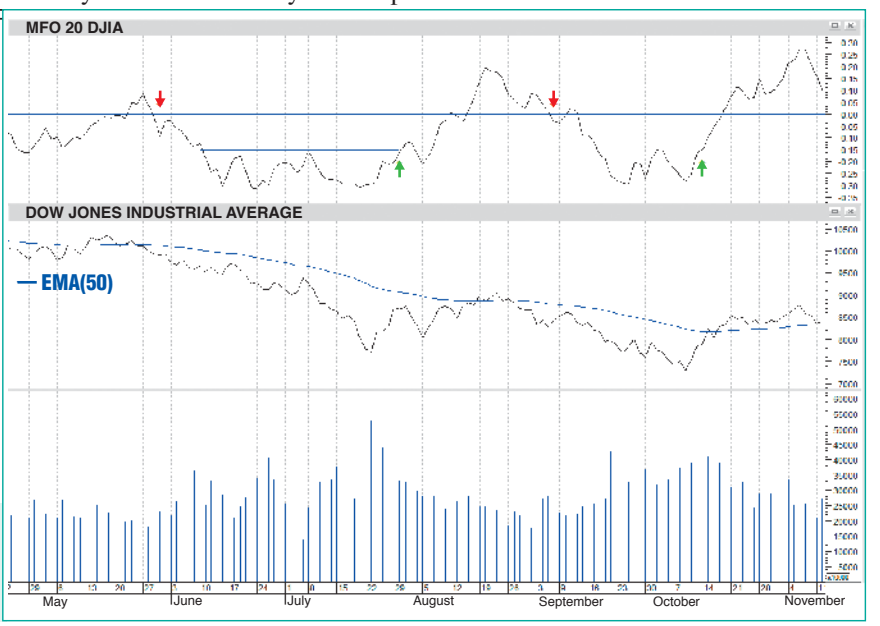

FIGURE 6: TRADING DURING DOWNTRENDS. Here you see possible entry and exit points using the 20-day MFO.

In Figure 7 you see a chart of the DJIA with a 20-day MFO from April 2000 to August 2000. Notice that the market is trading sideways during this time period. The MFO does not generate valid trading signals when the market is choppy.

In the weekly chart of the DJIA from May 2007 to April 2010 in Figure 8, I have added another indicator to compare to the MFO(20). I added the MACD(12,26,9) to this chart for comparison purposes.

An MFO bearish centerline crossover occurred in mid-November 2007, which was confirmed by a bearish MACD centerline crossover in early January 2008. The DJIA dropped from January 2008 to March 2009. The MACD and MFO recorded a higher low as the DJIA formed a lower low from early October 2008 to early March 2009. MACD and MFO bullish divergences were confirmed by a bullish MFO centerline crossover in early June 2009 and a bullish MACD centerline crossover at the end of July 2009.

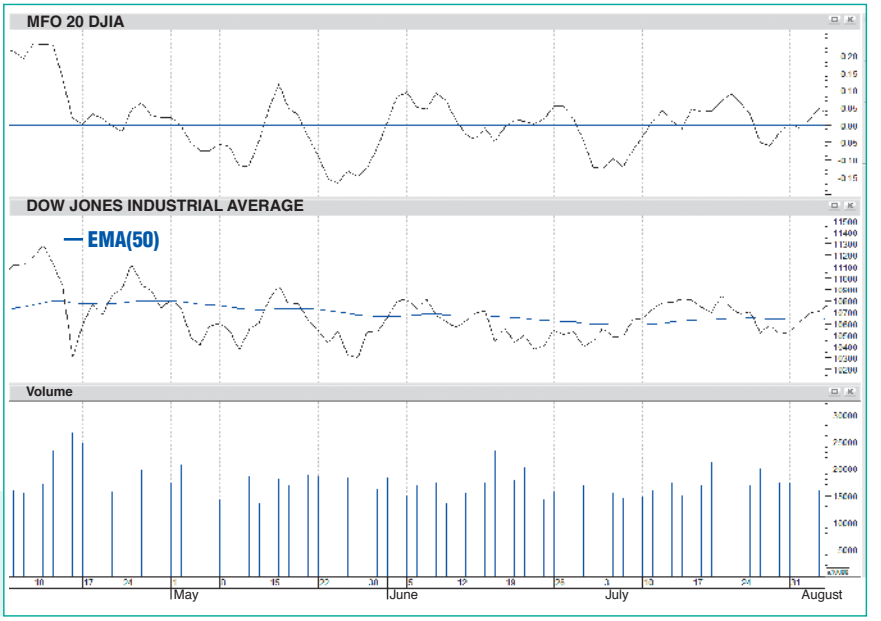

FIGURE 7: CHOPPY MARKETS. The MFO is not seen as a suitable indicator to use during choppy markets.

The monthly chart in Figure 9 shows the DJIA with MFO(20) from December 1994

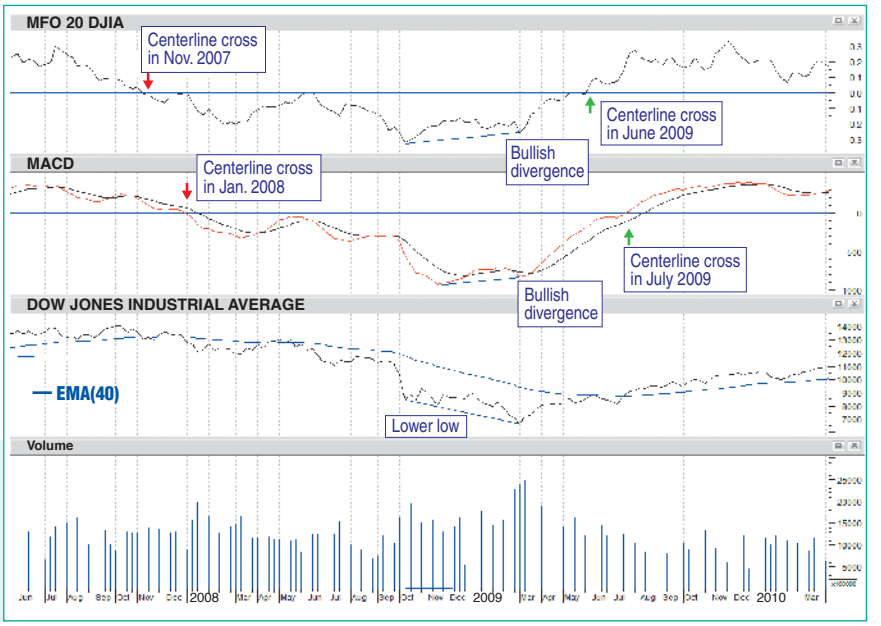

FIGURE 8: WEEKLY CHART OF DJIA WITH THE MFO AND MOVING AVERAGE CONVERGENCE/DIVERGENCE (MACD). The MFO(20) gave an earlier indication than the MACD on two occasions.

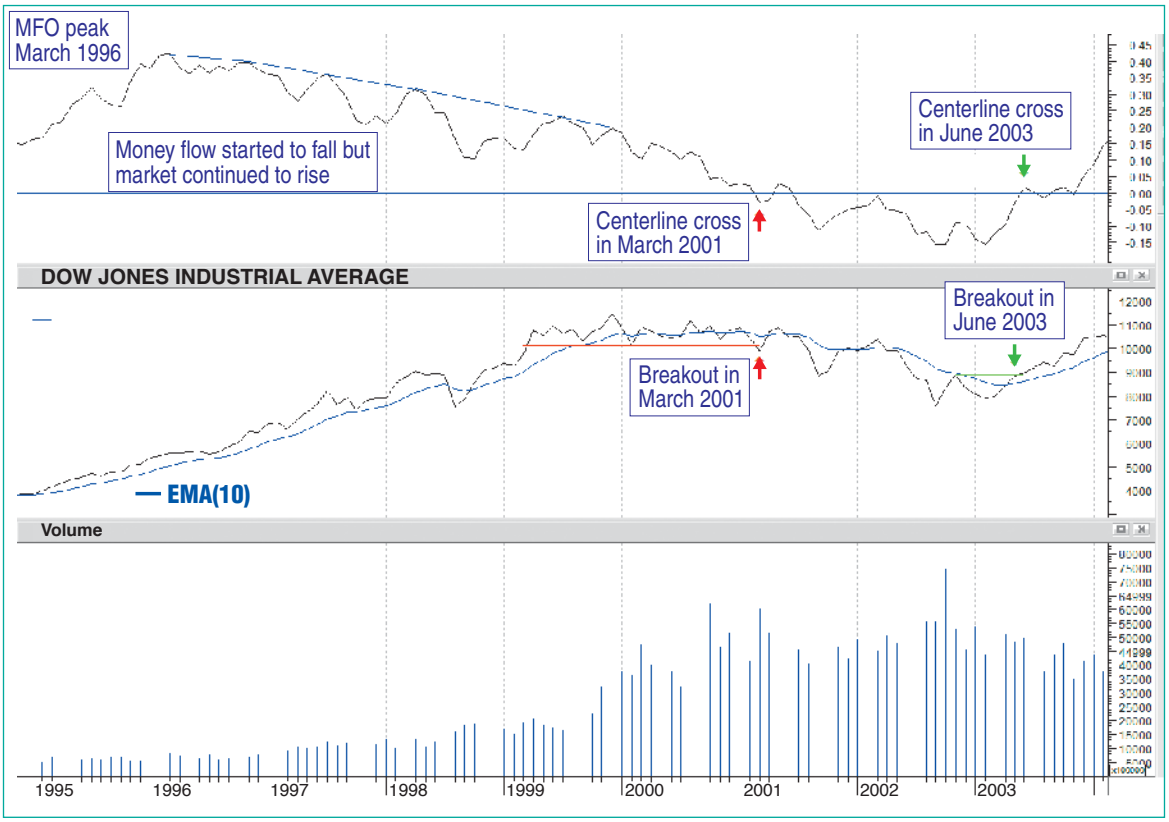

FIGURE 9: MONTHLY CHART OF DJIA WITH MFO. The MFO fell below the centerline in March 2001, signaling the start of the 2001–2003 bear market. When the MFO crossed above the MFO centerline in June 2003, it signaled the end of the bear market.

to February 2004. The MFO peaked in March 1996, but the DJIA continued to rise until January 2000. When the DJIA dropped below the February 2000 low and the MFO fell below the centerline in March 2001, it signaled the start of the 2001–2003 bear market. The DJIA breakout and MFO bullish centerline crossover in June 2003 signaled the end of the bear market.

GO WITH THE FLOW

The MFO is an oscillator that measures buying and selling pressure over a specific period of time. When there's a bullish divergence, it indicates less selling pressure. The MFO would have to move into positive territory to indicate buying pressure. Conversely, bearish divergence simply indicates less buying pressure. The MFO would have to move into negative territory to indicate selling pressure. To get additional confirmation, you can use the MFO with other indicators.

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*The code given in this article is available at the Subscriber Area at our website, www.Traders.com, in the **Article Code** area.*

Since the MFO looks at the difference between the highs and lows from the current and previous bars, it tends to be a leading indicator.

*See our **Traders' Tips** section beginning on page 48 for commentary on implementation of Apirine's technique in various technical analysis programs. Accompanying program code can be found in the Traders' Tips area at Traders.com.*

FURTHER READING

Apirine, Vitali [2015]. "The Slow Volume Strength Index," *Technical Analysis of* STOCKS & COMMODITIES, Volume 33: June.

——— [2015]. "The Slow Relative Strength Index," *Technical Analysis of* STOCKS & COMMODITIES, Volume 33: April.

Gopalakrishnan, Jayanthi [2012]. "Marc Chaikin," interview, *Technical Analysis of* STOCKS & COMMODITIES, Volume 31: October.

‡MetaStock, ‡Microsoft Excel

‡See Editorial Resource Index