



Moving average trend-following system

System concept: This trend-following breakout system attempts to confirm market conditions and then trades in the direction of the trend.

The system defines the current trend by determining if the 5-day simple moving average (SMA) of intraday highs is above the 28-day exponential moving average (EMA) of closing prices (uptrend), or if the 5-day SMA of intraday lows is below the 28-day EMA of the closes (downtrend). Using high and low prices (instead of closing prices) to calculate the SMA helps the system to react to trend changes quicker.

Figure 1 shows several of the system's sample trades in the AUD/USD currency pair, and demonstrates that its signals produce more profitable trades during longer-term trends, such as the pair's rise from late September to late November 2004, than in consolidating markets.

Rules:

Enter long and exit short on the next day's open if the trend is bullish, which means the 5-day SMA of highs crosses above the 28-day EMA of closing prices, the latest close is above the 5-day SMA of highs, and the 5-day moving average's current value is also higher than its value the prior day.

Enter short and exit long on the next day's open if the trend is bearish, which means the 5-day SMA of lows crosses below the 28-day EMA of closing prices, the latest close is below the 5-day SMA of lows, and the 5-day SMA moving average's current value is also below the previous day's value.

Exit any trade if there is a trend change or if a position loses 20 percent.

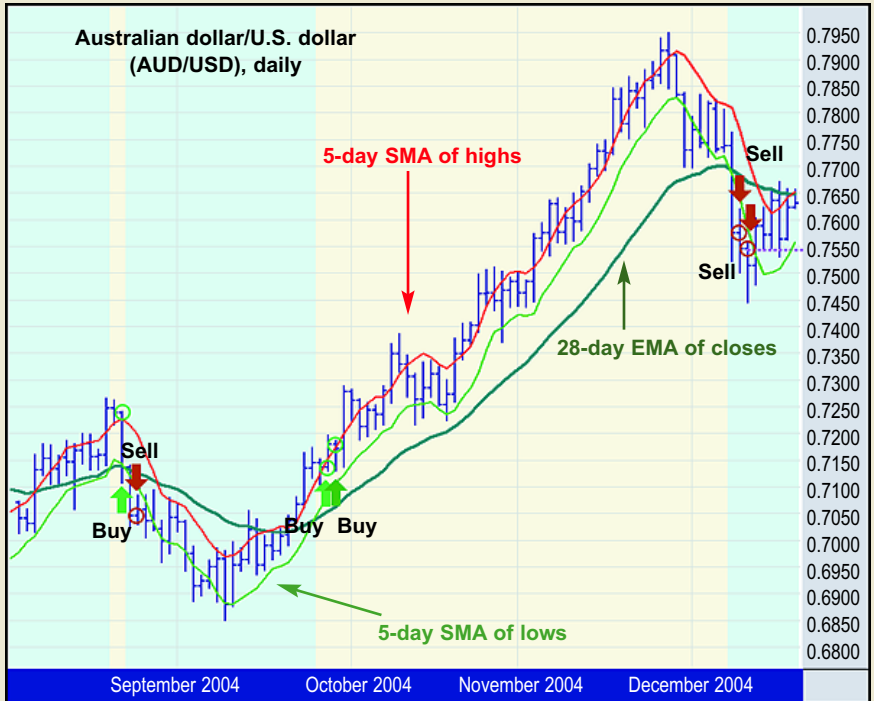
Money Management: Risk 2 percent of total capital for every trade.

Starting equity: \$1,000,000. Deduct 4 pips (0.0004) round-turn commission for every 100,000 units traded in the base currency and 1 pip (0.0001) slippage per 100,000 units when entering and closing a position.

Test data: The system was tested on daily FX data in the following currency

FIGURE 1 — SAMPLE TRADE

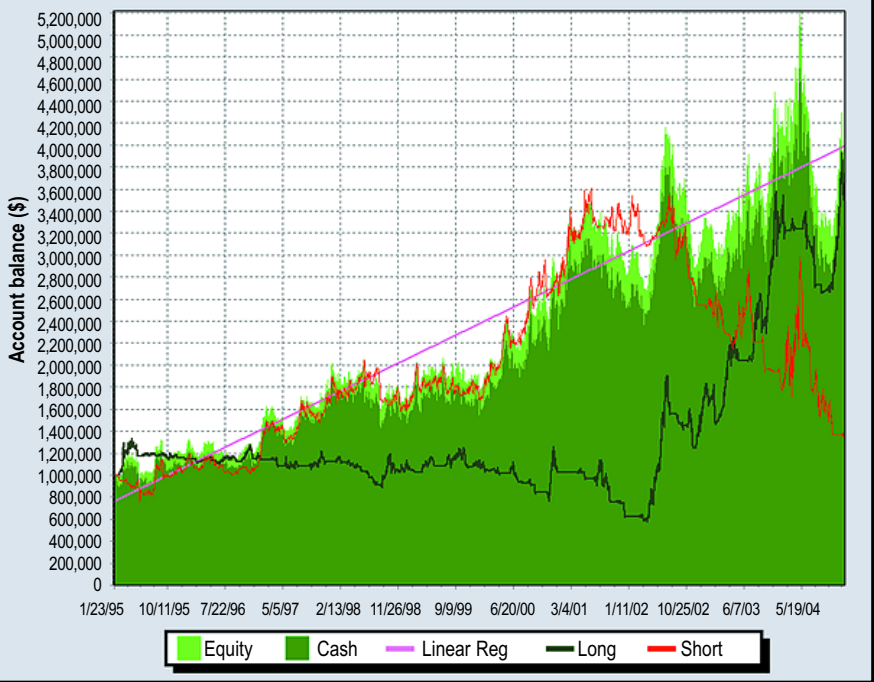
This trend-following system didn't perform very well when the AUD/USD lacked a clear trend in early September 2004, but it caught most of the currency pair's subsequent up move from October to December.



Source for all figures: Wealth-Lab Inc. (www.wealth-lab.com)

FIGURE 2 — EQUITY CURVE

This equity curve shows the system is profitable, but also quite volatile.



pairs: Australian dollar/U.S. dollar (AUD/USD), Euro/U.S. dollar (EUR/USD), British pound /U.S. dollar (GBP/USD), U.S. dollar/Swiss franc (USD/CHF), U.S. dollar/Japanese yen (USD/JPY), and U.S. dollar/Brazilian real (USD/BRL).

Note: Currency pairs for which the U.S. dollar is the base currency (e.g., USD/JPY) were inverted (e.g., JPY/USD) to enable portfolio testing in terms of dollars. Data source: Comstock/FXtrek (www.fxtrk.com).

Test period: December 1994 to December 2004 (except the Brazilian real, which spanned December 1999 to December 2004).

Test results: Figure 2's equity curve shows the system's volatile nature, and Figure 3's drawdown curve, which featured a 40-percent drawdown in November 2004, confirms this trait.

The system's drawback, as with most trend-following systems based on moving averages, is that it's only effective during long-term trends. The system lost ground in sideways markets. Trend-following systems tend to create many small losing trades, and require large winners to offset these. Figure 4's Maximum Favorable Excursion (MFE) chart

FIGURE 3 — DRAWDOWN CURVE

The system experienced several large drawdowns over the past three years, and didn't recover from its 40-percent drawdown in the test period's final month.

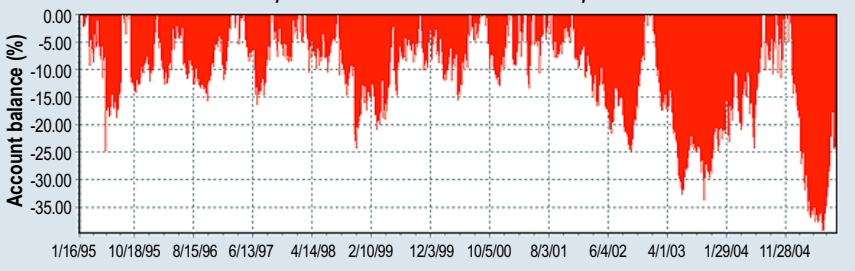
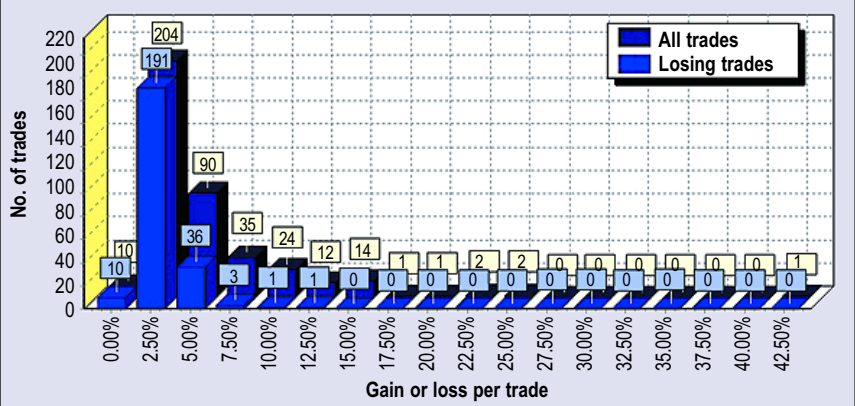


FIGURE 4 — MAXIMUM FAVORABLE EXCURSION (MFE) CHART

This MFE chart shows that many of the system's losing trades began as winners, which suggests a closer stop may help improve profitability.



STRATEGY SUMMARY

Profitability		Trade statistics	
Net profit (\$):	2,928,280.85	No. trades:	396
Net profit (%):	292.83	Win/loss (%):	38.89
Exposure (%):	9.51	Avg. gain/loss (\$):	0.55
Profit factor:	1.35	Avg. hold time (days):	32.37
Payoff ratio:	2.48	Avg. winner (%):	3.89
Recovery factor:	1.41	Avg. hold time (winners):	56.52
Drawdown		Avg. loser (%):	-1.57
Max. DD (%):	-39.73	Avg. hold time (losers):	17
Longest flat days:	484	Avg. consec. win/loss:	9/19

PERIODIC RETURNS

	Avg. return	Sharpe ratio	Best return	Worst return	% profitable periods	Max. consec. profitable	Max. consec. unprofitable
Weekly	0.34%	0.64	12.04%	-18.09%	55.68	8	7
Monthly	1.41%	0.66	22.70%	-13.48%	54.17	5	5
Quarterly	4.18%	0.68	38.80%	-21.60%	65.00	6	3
Yearly	16.24%	0.79	49.40%	-9.58%	80.00	5	1

LEGEND: Avg. return — The average percentage for the period • Sharpe ratio — Average return divided by standard deviation of returns (annualized) • Best return — Best return for the period • Worst return — Worst return for the period • Percentage profitable periods — The percentage of periods that were profitable • Max. consec. profitable — The largest number of consecutive profitable periods • Max. consec. unprofitable — The largest number of consecutive unprofitable periods

Currency System Analysis strategies are tested on a portfolio basis (unless otherwise noted) using Wealth-Lab Inc.'s testing platform. If you have a system you'd like to see tested, please send the trading and money-management rules to editorial@currencytradermag.com.

Disclaimer: Currency System Analysis is intended for educational purposes only to provide a perspective on different market concepts. It is not meant to recommend or promote any trading system or approach. Traders are advised to do their own research and testing to determine the validity of a trading idea. Past performance does not guarantee future results; historical testing may not reflect a system's behavior in real-time trading.



chart shows that many losing trades began as winners, which indicates that it's a good idea to add a stop to lock in profits at a certain point. However, stops must be loose enough to allow big winning trades to develop.

Figure 5 shows the system's profit distribution and confirms that more than half of all trades (210 of 396) were very small losses.

The original 20-percent stop was practically worthless since none of six tested pairs reached that point during the test period. We applied a few random stop-loss percentages as well as several profit-taking stops after the initial results were calculated, but every change diminished profits and failed to reduce the drawdown.

Table 1 shows the results of the portfolio test as well as retests of each of the six individual currency pairs (under the same conditions) to see which approach was more efficient. Single currency pairs had much lower drawdowns than the original test, but their annual profits were much smaller. The original portfolio approach was able to smooth out losses, which is what we wanted it to do.

Bottom line: This system was profitable, but its large drawdowns make it hard to recommend to traders who want to avoid volatility. Experimenting with tighter stop-loss rules or using profit-taking stops may improve this system's performance.

Overall, basing trades on moving average crossovers pro-

vides good entry points, but it's sheer luck whether the market will continue to trend after this breakout, and whether that trend will be profitable enough to overcome all the system's small losses.

Idea submitted by Antonio Martinez from Karlsruhe, Germany.

—Michael Schneider of Wealth-Lab

FIGURE 5 — PROFIT DISTRIBUTION

The largest group of trades were small losers.

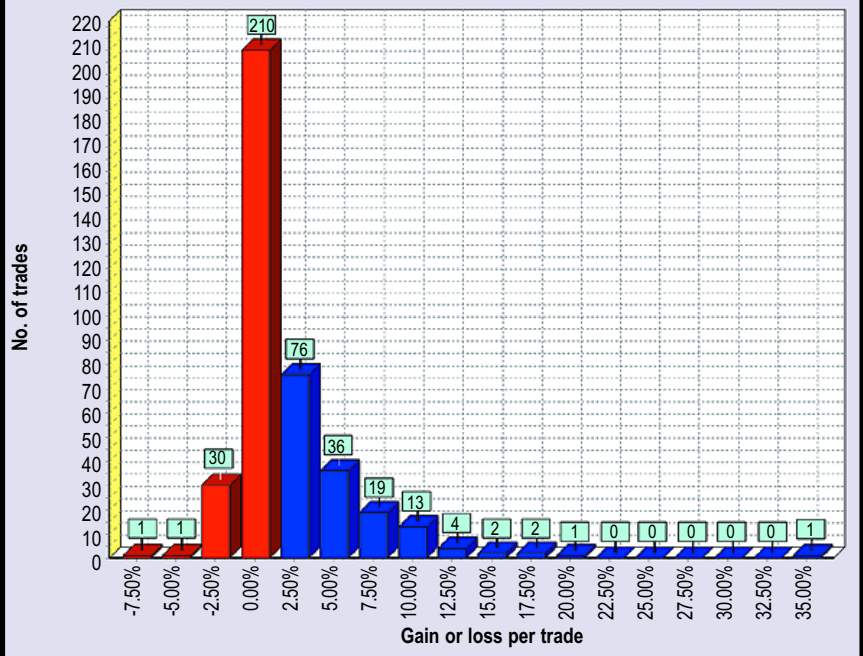


TABLE 1 — PORTFOLIO VS. INDIVIDUAL CURRENCY PAIRS

This table compares the system's annual performance and maximum drawdown to a retest of the six individual currency pairs. Overall, the portfolio had larger profits, but also had higher drawdowns than each currency pair.

Portfolio System	USD/JPY		GBP/USD		EUR/USD		USD/CHF		USD/BRL		AUD/USD	
	% Return	% Max DD	% Return	% Max DD	% Return	% Max DD	% Return	% Max DD	% Return	% Max DD	% Return	% Max DD
1/16/95	18.98	-24.89	28.18	-11.53	-9.4	-13.11	5.21	-9.75	-2.77	-9.87	-0.12	-4.3
1/1/96	6.15	-15.75	3.23	-4.89	4.43	-9.39	-4.9	-7.2	11.05	-3.46	-6.03	-8.85
1/2/97	49.4	-16.55	13.87	-4.47	7.11	-9.26	14.44	-7.21	-1.62	-9.44	10.27	-3.09
1/2/98	-9.58	-24.47	0.74	-9.5	-8.79	-16.8	-2.33	-8.15	-1.07	-6.89	2.8	-6.35
1/4/99	12.86	-12.97	-0.13	-8.16	1.95	-7.92	9.75	-9.06	5.03	-6.24	6.9	-7.52
1/3/00	47.79	-14.18	0.51	-6.85	8.58	-8.81	14.89	-6.68	5.48	-3.57	2.61	-3.68
1/2/01	1.21	-19.31	4.48	-9.57	-4.88	-10.24	-3.78	-6.73	-1.9	-5.05	8.1	-3.89
1/1/02	7.16	-32.76	1.81	-6.85	-7.33	-20.37	4.17	-8.15	3.79	-6.45	11.71	-4.43
1/1/03	32.08	-17.45	-4.35	-9.83	16.21	-7.01	6.6	-9.64	-0.71	-8.38	0.42	-3.81
1/1/04	-3.63	-39.73	-0.35	-8.34	8.67	-14.43	-6.16	-15.99	-2.41	-7.87	-0.38	-3.52