Although we can learn from professional money managers, as private traders, we should *not* fully emulate their approach to the markets. Here's how individual trader and money manager goals differ and how the differences affect a key component: money management.

The truth about money management

BY MURRAY A. RUGGIERO JR.

Money management is like beauty — its true quality is in the eye of the beholder. If you asked a cross-section of market participants from new traders to professional fund managers to give their definition of money management, what different answers would you receive? A more telling question would be to ask about the expectation of risk and return plus their plans for future trading as assets grow. When looking at these questions, individual traders and fund managers are as different as night and day. And they should be.

Some view hedge fund managers as "being in the big leagues," reflecting what many traders want to become when they grow up. Of course, not all great traders are fund managers. Consider Larry Williams and Sheldon Knight. Their feats of turning small accounts of less than $50,000 into more than $1 million in less than a year are comparable to Barry Bonds hitting 100 home runs and batting .400 in a single season. Williams did it twice, starting with $10,000 in 1987 and $50,000 in 1997. Knight did it during 1986-87, starting with $50,000.

To be fair, I believe that these traders accomplished this feat merely to show that it could be done, not because that style of trading reflects how they always approach the markets.

In an interview, however, Knight says that belief isn't necessary true. Knight says that his goal and probably Williams' was to make as much money as possible while keeping the risk of ruin, which he defines as a drawdown point where no further trading can take place, at a reasonable level. He also says that he would still trade that way.

This brings into focus the difference between fund managers who trade client money and successful private traders who trade only their own funds. The difference rests at the level of their purpose and goals.

Individual traders need to honestly assess their risk tolerance and determine how much trading capital they can raise. They also need to consider the difficulty in rebuilding their account if their trading fails. Once these questions have been answered, an individual trader needs to develop a trading system and plan with limited capital and personal risk tolerance in mind. They also need to understand their system and trust that it works so they can follow it and

truly understand what can happen in real life drawdowns, so they can handle that issue when it occurs. Most important, they need to understand their goal is to make as much money as possible while trying to ensure that they will have capital to continue trading.

It is not always easy for an individual trader to ensure capital availability because small traders are often undercapitalized. Sometimes, the initial $10,000 or $20,000 may be the only stake a small trader will ever have. If this is your case, you must live with the understanding that your future trading life will be based as much on luck as it is on skill, at least initially. Trading smaller contracts, such as single stock futures, is another alternative until your capital is built up to a sufficient level. This will give a trader several opportunities to succeed even if it takes 10 years.

Small traders can also trade more markets because their liquidity requirements are less. For example, markets like palladium, lumber and feeder cattle are among the markets that are not liquid enough for large fund managers to trade but they are plenty liquid for a one-lot individual trader.

Good examples are the Mini-Russell

1000 and the Mini-Value Line Index. These markets are not that liquid, but a small trader can trade one or two contracts in them as long as fills are acceptable. In contrast, a money manager would never try to trade these markets. Liquidity is one of the biggest problems that a fund manager faces when trying to put large amounts of money into positions in a trading strategy.

DIFFERENT STROKES...

Fund managers and commodity trading advisors (CTA) are different animals than individual traders. Clients give them money because they view professional traders as less risky than trading for themselves. These clients view their positions as investing in the manager, not trading. Clients will pull money from a manager if returns are not much more than the Treasury bill rate or risk is higher than they view the market's risk profile in general. High net worth clients view funds and managed accounts as competing with real-estate and other business ventures. If they do not think the return-to-risk ratio is high enough, they will not keep their money with a manager. A money manager's goal then, is to achieve this superior return-to-risk ratio, but going much beyond it doesn't earn him much in terms of client interest.

As money under management grows, it is harder to maintain the same rate of return because of liquidity issues in most markets. As an example, a manager could start a fund that invests in small stocks priced under $5 per share. Initially, he could have great returns with $10 million under management. But when that rate of return attracts an additional $100 million, his system cannot be executed because he simply cannot buy 500,000 shares of a stock when only 50,000 shares trade in a given day. As a result, the system must be modified or redeveloped and will not match previous returns without increased leverage, which translates into higher risk.

In commodity futures, large funds cannot trade certain markets such as palladium, lumber, feeder cattle and lean hogs because of liquidity problems.

What is money management?

Money management is changing the number of contracts you trade as your account size increases or decreases. There are several ways to mathematically define money management strategies. Here are a few of the more commonly accepted approaches.

Percent risked
Adjust the lot size so the total amount risked (stop loss) on each trade is a fixed fraction of your trading equity.

LotSize = RiskFraction * Equity / TradeRisk

This model can skip trades or stop trading if the risk fraction of equity shrinks smaller than the risk or initial stop loss one must endure to enter a trade. If your risk input contains a constant value for risk (as you would input if you didn't have risk data on a per-trade basis), then this model becomes what's called the fixed fractional model. Its power derives from having the risk, or initial stop loss size, of each individual trade.

Percent volatility
Adjust the lot size so that the market volatility in dollars per lot, often measured as the average true range of the last 10 to 20 bars, is no more than a fixed fraction of your equity.

LotSize = VolatilityFraction * Equity / Volatility

This model can skip trades or stop trading if the volatility fraction of equity shrinks smaller than the market's volatility. This model also converts to a fixed-fractional model if you have a constant value in the volatility input.

Optimal f — An overview
Optimal f is a fixed factional money management method. In 1956, J.L. Kelly Jr. published a paper called "A New Interpretation of Information Rate." Professional blackjack players realized the application of this work and began using it in their gaming efforts. The basic concept was to use the probability of winning and the ratio of wins to losses to calculate the optimal bet size.

Larry Williams popularized this concept for traders in 1987 during the Robbins' World Cup trading competition. Money management is a powerful tool when an individual has an edge. Roulette will not work with money management because you cannot get a theoretical edge in that game. However, in backgammon or blackjack an expert player can get a small edge on the casino and use Kelly's formulas to supercharge their returns. The Kelly formula is:

F = ((B + 1) * P - 1) / B

Where:
P is the probability of a winning bet
B is the ratio of the amount won vs. the amount loss

If there is a 60% chance of winning $1.50 or a 40% chance of losing $1.00, the optimal bet size can be calculated as:

f = (1.5 + 1) * 0.60 - 1) / 1.5 F = 0.33

We would conclude that betting 33% of our stake on each bet would produce the best or optimal results.

Another researcher, Ralph Vince, discovered the problem with the Kelly formula in 1987 while working with Larry Williams. He found that the formula was not valid if the amount won or lost on each event was different. Vince developed his own set of equations to solve this problem based on the concept of a Holding Period Return (HPR). The Holding Period Return is the rate of return on any given trade plus 1.00. So, a 10% return equals 1.10 and a 25% loss equals 0.75. Because

When developing a system to manage money, you must ask yourself: Should I build a track record that I cannot realistically expect to maintain in the future?

A system also needs to be evaluated to see what effect establishing a position over several hours will have on returns. For example, if your system trades a daily signal generated on the close that enters on the following open, what effect will entering the position with several orders during the day have on the overall returns of the system when fund growth makes it impossible to enter all trades on the open?

The goal of a fund manager is to out-perform competing investments with the same or less risk after fees. If this can be done with little or no correlation to major markets, such as the S&P 500, then that's all the better. In fact, many money managers do well because they provide diversity, not necessarily because they offer high returns. As an individual trader, unless you have considerable holdings in the non-correlated assets as well, there is no tangible benefit to being uncorrelated to them.

For a money manager, an average return with less risk after fees of five percentage points per year over the S&P 500 will raise hundreds of millions of dollars. Management fees are normally 2% of capital and 20% of profits. Some funds charge a 3% management fee. As you can see, a partner in a successful fund can become very wealthy as a manager without the high return figures that would be necessary for an individual trader starting out with a $10,000 account to do so.

SHARPE AS A TACK
A popular measure for fund performance is the Sharpe Ratio, which is a measure of returns over the T-bill rate per unit of standard deviation. This measure is useful in comparing returns from programs that exhibit different risk characteristics. If two programs have the same return, the one with the higher Sharpe Ratio has less risk.

The problem with the Sharpe Ratio is that it penalizes programs that have a higher standard deviation even if the volatility is entirely to the upside. A fund manager who shows a 100% per year return with a 40% drawdown would have trouble raising money because prospective clients would view him as too risky because his Sharpe Ratio would not be as high as more conservative programs.

The flip side of this issue is a conservative money manager who accepts notionally funded accounts where an investor can fund an account with less

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percentage returns are being calculated based on a fixed fraction of the account size, we can define HPR as:

HPR = 1 + f * (-T / BL)

Where:
f is the fixed fraction of the account to trade
T is the profit/loss of an individual trade
BL is the largest losing trade of an entire sequence of trades

The HPR formula is applied to each trade. By multiplying HPR for each trade, we can obtain a multiple of our original stake, the Terminal Wealth Relative (TWR):

TWR = Product (1 + f * (-T / BL))

We maximize the TWR function by changing the values of "f" to find the value that produces the highest TWR, which is called optimal f. After calculating optimal f and TWR, we need to calculate how much equity is required to trade one unit:

U = (ML / - f)

Where:
U is the trading units in dollar
ML is the maximum loss in dollars
f is the optimal value for f

Using the trading units in dollars, starting account size and trade history, we can run a simulation of the equity curve for any trading system using optimal f. These simulations often yield astronomical results after 50 or 100 trades. The problem is optimal f quickly can require trading more contracts than is realistic for a given market. Another problem is that optimal f returns are also based on trading fractional contracts. For example, if U is $4,000 and our account equity is $10,000, optimal f would call for 2.5 contracts to be traded. In real life, we would round the number of contracts down to the nearest whole number, which would be two contracts.

Because the largest losing trade is used to calculate TWR, it has a major effect on optimal f. This is not a problem when working with historical simulations, but when we are using optimal f on a real system where protective stops are based on volatility or channel size, we cannot define optimal f.

The distribution of trades greatly affects the value of optimal f.

We can have two trading systems that make $100,000 on 1,000 trades for an average profit of $1,000 per trade. The optimal f values for these two systems can vary widely based on the distribution of the returns on the trades. It is dangerous to trade anywhere near optimal f because the distribution of trades in real time can change. For illustration's sake, say, in testing you had 500 straight winners and 500 straight losers, while real life may deliver any mix of winners and losers to achieve the same results.

The problem is that when an account is in a run up, the number of contracts being traded can increase rapidly and when the system goes into a drawdown, the account takes a hit that takes it below the level before the run up. This happens because lot numbers can double within a few trades.

Professional money managers also trade a fixed percentage of an account on a given trade. The standard for professional money managers is to risk 1% to 3% of trading capital on a given trade. We will call this term RiskFraction, so it is between 0.01 and 0.03. The number of units to be traded can depend on market conditions as well as the system.

capital than is effectively traded. For example, an investor deposits $250,000 in an account and the fund manager trades it like it is $1 million. In effect, the fund manager's returns and risk have been leveraged four to one. The fund manager who makes 15% annually with a 5% drawdown makes 60% with a 20% drawdown in this scenario.

ZEN OF MONEY MANAGEMENT

We have discussed the differences between individual traders and fund managers. Now, we need to expand our understanding of the concepts of money management. Successful private traders and fund managers agree that a trader should increase his position size as capital increases. There are many money management strategies based on trading a percentage of assets. The most popular strategies are discussed in "What is Money Management?" (page 51).

According to Knight, a trader who wants to make as much money as possible needs to expect 40% to 60% drawdowns in his trading. In his view, the 60% drawdown is the point where a trader needs to stop trading to reevaluate things. But, if you do not have a 40% drawdown every few years, you are not trading aggressively enough to maximize profits. Generally, fund managers need to have a drawdown characteristic that is about one-third that of an individual trader's. A 15% drawdown with consistent 30% returns will make you a very successful money manager.

The problem for both groups is that the markets have major events that occur more often than they should. These unusual situations are called "three sigma" or "five sigma" events. If we took average returns over time and calculated the standard deviation, 95% of the cases should fall within two standard deviation units of the mean and 99% of the cases should fall within three. Typically, a five standard deviation event should occur once every 100 years or more. But, if you have followed the stock market for the past 20 years, there have been at least half a dozen five sigma events. Because these events happen far more frequently than statisti-cal theory would suggest, a money management strategy needs to take this into account. It also needs to consider that a system will often not perform as well in real time as it did during its developmental period. If these issues are not addressed in the money management strategy, the trader or manager will fail.

Here are five steps that an individual trader needs to do to succeed:

1. Allocate sufficient capital and understand his risk tolerance.

2. Have a trading system or systems that can be trusted and followed even in a drawdown period. A trader needs to be able to follow his system and take every trade almost without question.

3. On the basis of risk tolerance and system parameters, develop a money management plan for increasing position size, adding markets or systems as trading capital increases.

4. Know what happens when a five-sigma event occurs. Can you withstand a five-sigma event? This is the only time when it might be necessary to override the rules, or establish special rules for this case.

5. Set realistic goals for the account and establish a point where reevaluation of trading and money management occurs if the goals are not met.

If an individual trader follows these five steps in developing his trading systems and money management plans, he can be successful. A key point is that his systems should perform similar to backtesting. An individual trader can become successful following these steps, if that happens.

The goal of trading is to make money for yourself or for your clients. If you are trading for yourself, you can set risk/reward parameters the way you want. Trading for clients is different. As a money manager, you need to make your clients feel that their money is safe. Both types of traders need to use money management to be successful. |**FM**

Murray A. Ruggiero Jr. is a consultant in East Haven, Conn. His firm, Ruggiero Associates develops market-timing systems and publishes a newsletter called *Inside Advantage*. He is the author of *Cybernetic Trading Strategies* (John Wiley & Sons, 1998). E-mail him at ruggieroassoc@aol.com.