

Standards for Advisor Evaluation

Portfolio Building and Asset Allocation with SafeMoneyMetrics™



Courtesy Of

Any investment in managed futures/options should ONLY and ALWAYS be considered within an entire portfolio strategy. When considered in isolation investments using leverage are traditionally "labeled" as high risk speculation and should probably be avoided at all costs. No part of this document should be considered apart from the CFTC Risk Disclosure and Disclosure Document for any investment being considered.

This document includes three sections written by three Professionals uniting independent areas of risk management expertise. When synchronized and integrated the collective strategy has proven to prevent substantial losses and dramatically improve the quality of decisions.

- | | |
|--|----------------------|
| 1. The Foundation | Marlee-Jo Jacobson |
| 2. Portfolio Construction and Monitoring | Daniel B. Stark |
| 3. Decision Rules for Investment | Professor Kevin Dowd |

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Sanctity Capital Management/SafeMoneyMetrics™

Your Solution to Profit and Peace of Mind

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\$29.95

Why People Benefit!

SafeMoneyMetrics™ (SMM) is a managed futures risk, investment management and research service. It optimizes the unsurpassed potential of managed futures with less risk. SMM™ evolved from principles found in hedging and Universal law.

SMM™ is direct approach to identifying, evaluating and monitoring actual capital at risk relative to the realized return and volatility of any investment using leverage. It always isolates the precise relationship between an investments ability to manage open trade risk and how that translates into realized profits. Go to www.safemoneymetrics.com to learn how inherent misrepresentation in traditional performance evaluation dramatically increases risk of loss. SMM™ eliminates that risk.

Because analysis is at a fundamental level common to all investments within an industry, SMM™ can provide a foundation for meticulous comparison of investments over a broad spectrum of strategies and markets traded.

SafeMoneyMetrics™ is applied to performance data over variable time frames and markets including individual trade analysis. Founded by Sanctity Capital Management services are limited risk, private label and have value to investors, industry professionals and media, both electronic and print. Investment guides can be found at <http://www.sanctity.com/guides.htm> Articles at <http://www.safemoneymetrics.com/asmarticles.htm>

Who can Benefit ?

Everyone interested in evaluating the FUNDAMENTAL quality of any volatile investment. Simplistic and direct, the composite strategy presented by SafeMoneyMetrics™ is a course of action for seeking, developing and maintaining high quality investments with minimal effort.

Traders – Alternative Investment Managers – Investment Sponsors

Direct Benefit: Traders and alternative investment managers' can benefit, because SafeMoneyMetrics™ offers increased insight and early warning of possible poor earning potential. Analysis is useful as research to seek, maintain and increase high quality control over time.

Institutions involved with managed futures or any high leverage investment can apply SafeMoneyMetrics™ as an internal control system. It consistently monitors the quality, profitability and efficiency of trading under current market conditions.

As a Client Service: With no out of pocket cost to the sponsor, clients can elect SafeMoneyMetrics™ as a third party service provider, to improve the quality and risk management services of their investments. For sponsors of managed futures investments, their marketplace image and positioning is automatically enhanced.

As a Benchmark: SafeMoneyMetric™ systems improve the fundamental quality of trading strategies that are released into the marketplace.

Pass this investment guide to anyone and everyone who you perceive can benefit from the content. This includes traditional financial advisors and futures industry professionals!

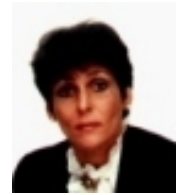
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Professional Backgrounds

The Foundation is written by

Marlee-Jo Jacobson is founding partner of Sanctity Capital Management and SafeMoneyMetrics™. MJ is second generation in futures. Jacobson Commodities Inc was a clearing member firm of the NYMEX. MJ's education was in hedging, capital management and she was an active trading member of the New York Mercantile Exchange through 1980 & non-trading member until 1988. From 1970 until 1980 she designed hedge strategies & managed discretionary accounts. From 1980 to 1984 Ms. Jacobson was an account executive at Merrill Lynch specializing in clearing services for Commodity Trading Advisors, Pool Operators and Broker-Dealers building key accounts of over \$5 million. MJ has attended the New York Institute of Finance, New York University and the Institute of Neurolinguistic Programming. She wrote a Series 3 Training Manual for Securities Training Corporation in the mid 90's.



Value - Ms. Jacobson is responsible for all business development, risk management and General Partner activities. sanctityone@nyc.rr.com

Portfolio Construction is written by

Daniel B Stark Daniel B. Stark (DBS) has over 24 years of experience in the futures industry, beginning in 1981 as a local floor trader at the Chicago Mercantile Exchange. For the past 15 years, Stark has been researching the managed futures industry while compiling and publishing performance statistics on futures traders and funds in his STAR publications. In 1992, DBS formed a joint venture relationship with the Rudolf Wolff office in Tokyo, Japan co-developing the industry's first managed futures investment newsletter in Japanese. In 1999, he co-founded Granite Asset management. His primary responsibility is the development and maintenance of all asset management strategies offered by the firm. Daniel provides all data support for SafeMoneyMetrics™..



Decision Rules for Investment is written by

Kevin Dowd is a Professor of Financial Risk Management at Nottingham University Business School and Author of 'Beyond Value at Risk' published by John Wiley in 1998. (One other book recently completed). From October 1997 to August 2000 he was Professor of Economics at the University of Sheffield, and previous to that held posts at Sheffield Hallam University (1993-97), the University of Nottingham (1988-93), and the University of Sheffield (1986-86). He began as a policy analyst at the Ontario Economic Council in Toronto whilst working on his PhD at the University of Western Ontario. Kevin authored and edited numerous publications on economics and risk management and is currently under contract with John Wiley to complete two more books on risk measurement and management.



Value –Kevin is “very selectively” available for consulting to Pension Funds and Institutions. Kevin.Dowd@nottingham.ac.uk

The Foundation

SafeMoneyMetrics™- How and Why it can Increase Profit Potential

There are a fundamental paradigms of reality used to determine investment value that may actually cause unwanted losses. SafeMoneyMetrics™ offers a few solutions that can prevent uninvited misfortune. Let's begin with a few facts:

FACT: Past rate of return is the foremost element for evaluating investments. A decision to invest evolves from a statistical and analytical process that usually includes past rate of return data.

FACT: How past rate of return is calculated has no relevance to the Capital at Risk (CAR) used to produce the rate of return, or future performance. These fundamental errors are only two CAUSES of poor decisions.

For example: Rate of return (ROR) is calculated using realized and unrealized profit and losses, interest income minus costs and includes the account size required by the advisor. The capital base, or account size used to calculate ROR is called "beginning equity." Although advisors vary, many only use 3% to 10% of a required account size as margin for trading. Also unrealized profits have no value to a client until they are realized and interest income is NOT a trading return earned from capital at risk.

FACT: Past rate of return data also has no relevance to current reality and potential future results. We cannot rely on past rates of return to tell us the capital at risk or potential returns we face in the future.

For Example: Past rate of return on a derivative investment is nothing more than a financial scorecard that measures human skill successfully applied within a specific situation. The situation that allowed success partially includes market condition, perceived "trade-setup" within the market condition relative to an ability to perceive and act effectively at that specific moment. That particular situation with all detail is forever gone and will never repeat itself.

It appears that statistical analysis calculated with superfluous information applied to situations that never repeat is imbalanced human interference we need to eliminate rather than rely on.

FACT: The infamous Standard Deviation, also calculated using past rate of return only measures volatility of past return. Volatility is easily manipulated by account size and is dramatically influenced by unrealized trading returns. Both account size and unrealized returns have no relationship to capital at risk relative to realized investment returns. Also larger accounts usually have less volatility. Tell me something; how does a larger account relate to trading talent? Who decided that big is good? Finally, past rate of returns have no relevance to capital at risk relative to Realized Trading Returns (RTR) and neither does the volatility of return. Layers of superfluous interference are increased causing even greater potential for loss.

An Example: taken from Profit and Peace of Mind guide.

One advisor had larger than normal draw down (41%) with above average returns (over 150%). The account size was only \$40,000. Commitment to margin was 40%, high according to the "mandates of tradition," low when we evaluate the entire scenario. If we transfer the return to a \$200,000 account size, the commitment to margin and return

relative to draw down statistics are altered by five. When a \$200,000 account size is applied to the entire track record, volatility and draw down "looks and feels" acceptable.

We are re-labeled as a conservative advisor!

\$40K Account	\$200K Account
Return 150% / 5 =	30%
Draw down 41%/5 =	8.2%
Draw down 41%/5 =	8%

FACT: Traditional performance evaluation criteria such as the Sharpe Ratio that include past rate of return calculations are a major statistic for evaluating investments. If past rate of return calculations are inappropriate, what value can the Sharpe Ratio or any evaluation criteria realistically have? I'll keep quiet now and just move on!

Conclusion

Erroneous thoughts can ONLY create inaccurate results. Correct mathematical concepts applied to incorrect thoughts will ALWAYS cause colossal confusion, leading to wrong actions causing substantial misfortune.

Nothing Else is or Ever Will Be Possible

Re- Building From the Ground Up

Proving something wrong, for the sake of being right has no value. I have a "need to believe" that people do the best they can with what they have at any time. Notice I said; "need to believe." My need to believe is an Achilles Heel. Belief interferes with and has no relationship to truth. Without awareness and diligent application any belief will always invite difficulty into my life. **POINT:** Once we can discern belief from truth, anything can be built with constructive self-imposed boundaries and objectives.

FACT: "HONEST" Realized Trading Returns on capital at risk can simply be defined using the following information. All models can be built using internal benchmarks on an accurate consistent foundation.

Analysis of the Trade:

Hypothetically assume that a single contract (One) Cranberry Futures trade was completed over 9 days. It was bought at \$3.00. Maximum open trade loss was .50 cents, (\$2.50 market low). Maximum open trade profit was \$11.00 (\$14.00 market high). We realized a gross profit of \$7.00 (\$10.00 liquidating price.) The transaction cost was 0.10 cents. Advisor fees are 20% of trading profits. (\$1.38). That's it.

There is nothing else to include except margin, time and maximum capital at risk. Massive analytical foundations built for what? Go ahead tell me what you get, I'm listening!

Extend the Information:

- Cranberry margin is \$1.50.
- Trades are chosen to risk 1/3 of initial margin. (50)
- Reward potential to capital at risk ratio is 10 to 1 (\$5.00 to 50 cents). Reward potential to capital at risk is a self-imposed parameter used to determine quality of a trading opportunity. (**Internal Benchmark**)
- Transaction cost is 10 cents per contract.
- Over one year we completed. 32 cranberry trades.

Composite trade evaluation produced the following results.

- Average net profit was \$3.75 (\$1.25 under the internal benchmark target).

- Average loss was \$1.00. (50 cents over internal benchmark target).
- 60% of the trades were profitable.
- Total Profit \$72. - Total Loss \$12.8.
- **Profit to loss ratio is 5.62 to 1.**

Finally extend the data into all markets traded within the strategy under consideration. Look for missing information, compensate for the potential error and keep building. **For example:** Order of trades is omitted, a process of integrating all trades simultaneously that built the past performance. Without order of trades, we lack pertinent information. Somehow, we need to compensate for the void. Costs need to be accounted for, also circumstances external to the strategy such as current market conditions and equity under management. Probably most important and least considered is current mental and physical reality of the advisor.

The Internal Benchmark

An internal benchmark is an achievable objective, or self-imposed standard within the investment, rather than external to it.

WHY? Unlike equities, derivative investments have NO "real" external benchmark. A "real" benchmark would be a passive counterpart of the investment equal in risk/return to the investment being considered. The words "equal to" must be mathematically quantified. We not only have NO real benchmarks, what we do have is calculated using irrelevant information. Our "trusty" old friend past performance data!

Peak Performance Evaluation

After we decide how to sort and apply our simple risk management strategy, we have increased accuracy for comprehending the following:

- Realized Trading Returns (RTR) relative to actual Capital at Risk for each market traded and the composite investment when appropriate, relative to an internal benchmark.
- Rather than correlating markets which is probably a superfluous process with derivative investments. We can correlate returns for each market. This gives TRUTH as to whether MPT is an honest attempt at diversification, or a shallow marketing strategy that wastes capital and charges larger fees.
- Correlation analysis also gives early warning of potential imbalances. Once one sector of a strategy becomes imbalanced, it can perpetuate imbalances throughout the composite weakening the entire structure. (Universal Truth!)
- Maximum margin relative to account size. Although still inaccurate, this provides insight into quality of people and offers a uniform foundation for multi-advisor evaluation.
- Tracking equity growth and correlation of returns for each market.
- Tracking profit to loss ratios relative to number or percentage of profitable trades for each market over time. This allows us to monitor the efficiency of the strategy under current market conditions relative to A BENCHMARK or a standard INTERNAL TO THE INVESTMENT. We can see slippage from optimum past performance.
- Remember our decision was based on past data and we have a PEAK, AVERAGE and WORST CASE INTERNAL BENCHMARK TO MEASURE THE FUTURE WITH. This benchmark represents the advisors "trading range" defined relative to our comfort level.

Value of an Internal Benchmark

Universal law (also physics) proves that when fear is removed, strength is automatically increased. There is nothing to do but release fear. Because the benchmark is defined by either the advisors own performance, or in mutual agreement with our objectives, fear of loss is lower. When fear is reduced, people normally become kinder and the position of all participants is stronger as a by-product. Comparing ourselves to someone external to our highest potential weakens us because it goes against the power of nature. External human comparison is superfluous interference that causes unwanted misery in many areas of life.

Universal Law and Investment Returns

When building SafeMoneyMetrics™ the following analogy was originated for Kevin Dowd; I perceive it necessary that we share the information with you. (Kevin Dowd gets all credit for the name SafeMoneyMetrics™).

A Universal Foundation for Investment Selection is an investment guide. <http://www.sanctity.com/guides.htm>. It teaches people to build analytical models in alignment with natural law. (Universal Intelligence) When we live and work with these laws, we live with the power that moves mountains.) Universal Intelligence is proven by physics and sustains all life. It precedes the creation of any material reality. Material reality is created from the energy of people interacting with an environment. Eternal power is and always will be with universal intelligence (God). Nothing else is or ever will be possible.

To create easy understanding, food is used as an analogy in the following hypothetical example. Our objective is to design a strategy for building and maintaining optimum health and energy.

FACT: When people eat RAW vegetables, we almost allow the maximum benefit of all nutrients and enzymes available from each vegetable to be efficiently used by our bodies. The term almost is used because a few risks are:

- No knowledge of growing conditions, chemicals, or quality of seed used. (Nutrient value and potential chemical poison within the vegetable.)
- Even with testing, true efficiency of a person's physical system and its' ability to absorb nutrients is also unknown.
- Other habits that unknowingly undermine the benefits of our new design for healthy living. (Drinking, eating too much cheese, bread, and cooked food are a few!)
- Finally interaction between mind, belief, emotion and body dramatically affects the physical system. We could be repressing massive amounts of emotion without awareness of the toll that repressed energy steals from our health.

FACT #1: No mathematical strategy exists that can precisely quantify the four points above.

FACT #2: There is much we will never know that affects each point, at different times, therefore decisions will always be inaccurate.

FACT # 3: We all have very limited perception and are prone to greater error than our ego allows us to believe. No matter how good our ego thinks we are, Mother Nature always knows better and will always win!

POINT: We can easily compensate and probably eliminate potential risk defined by facts 1, 2 and 3 by aligning our health management process with the **REAL and ONLY power of universal law.**

When juicing RAW high quality vegetables using the highest quality juicing process possible, we can even increase the benefits beyond those offered from the RAW eating state. We have immediate nutrient absorption without the laborious process of digesting and eliminating waste. Because fiber is also removed from the vegetable, we are working with

pure energy. Now, we have pure energy of the vegetable resonating with pure energy within us. The degree of effectiveness remains unknown because of risks described above. (Our system also needs fiber – so awareness of balance is important for optimum health)

Remember physics and resonating, we are comprised of and benefit from the same God given power and energy that was in each little vegetable seed. Nothing can refute this truth.

More exciting is that every nutrient and enzyme has the intelligence to find its way to the exact place inside us where it does the most good and is the happiest. We can even feel the energy. Notice that our only function is to realize this TRUTH and get out of the way!

Universal Intelligence does the work.

Any statistical application will function with above average results with less error, risk, and cost when applied to this foundation

Optimizing Natures Perfection

Juicing vegetables maximizes energy input and our energy rises because required energy output is less. Energy outflow is energy it takes to chew, digest the vegetables and remove waste so the good stuff finds its normal course to maximum efficiency. Reflect on the natural intelligence of that process. Through the superfluous activity we create, nature still functions and we manage to hang in there for several decades.

Optimizing the power of universal intelligence or nature is the right balance of RAW juicing with eating foods that give each atom and cell in our body new life while cleaning dead cells and waste. How efficiently our system works combined with the right balance of food determines the degree of efficiency that universal intelligence can function through us.

THAT IS PURE POWER.

Negative interference with PURE POWER is how much of humanity functions.

Negative interference is mental, emotional, and physical.

All affect optimum performance of any physical system.

It's also WHY systems fail, we live and work against universal intelligence.

FACT: If anything within us is out of balance, or what we do creates imbalances, we are responsible for weakening the power of nature that always works through us. We can only produce material results that replicate the quality of energy that we are. This is true physically, mentally, emotionally and spiritually.

Annihilating Natures Perfection

If we consume cooked FRESH vegetables, we kill enzymes that are responsible for regenerating life. Although cooked food sustains life, it has no power to build NEW life. Eating RAW FROZEN food, takes us farther from the power of natural law, however it's better than cooked. Consuming frozen cooked food is almost suicidal and finally if we are dense enough to even think about canned foods, well what can I say!

Conclusion

We can conclude that eating or juicing high quality RAW fresh vegetables balanced with optimum whole food intake gives us a maximum reward at the lowest cost and risk relative to other methods of eating. No one can prove otherwise.

We are defining and using power that exists beyond the laws of opposition.
The tide of life is always on our side.

The same principles can be applied to any risk management foundation.
Trade analysis in its simplest form offers the most accurate perception of truth therefore,
the lowest risk.

Refining Performance Evaluation

SafeMoneyMetrics™ Analysis and Evolution From Pure Hedging

The strategic foundation of SafeMoneyMetrics™ originated from hedging. We make decisions to manage cash market risk using a strategy called basis analysis. Basis analysis includes consistent monitoring of the current cash market relative to current futures price. The "spread" "difference" or "basis" between cash and futures always widens or narrows offering opportunity to optimize decisions for adding or removing futures contracts. For financial and other markets the strategy is consistent.

I am a second generation professional from the hedge business. Because of reasons defined in section one called " SafeMoneyMetrics™ Analysis -How and Why it Can Increase Profit Potential," we originated and designed an evaluation strategy integrating time tested concepts from hedging to integrate into traditional investment analysis. More important is using common sense and a never-ending search for truth that has a way of eluding all of us.

"Everything you have taught yourself has made your power more and more obscure to you. You know not what it is, nor where. You have made a semblance of power and a show of strength so pitiful that it must fail you. Power is not a seeming strength and truth is beyond semblance of any kind. Yet all that stands between you and the power of God in you is but your learning of the false, and of your attempts to undo the true." A Course In Miracles Text Page 275.

Standards for Advisor Acceptance

Our foundation for advisor selection is based on analysis that includes realized profits relative to capital at risk and cost of money over a specific time. The foundation is then integrated with traditional investment methods of risk management and decision rules. "Internal Benchmarks" and the volatility of unrealized trading profits are also used. We evaluate the relationship between realized and unrealized profits for each market, each market to other markets within the strategy, the composite relative to current market conditions and the "internal benchmark." The difference between the "internal benchmark" and current profitability represents only one element of the work.

Why Use Internal Benchmarks?

We created the "internal benchmark" application. It represents a standard currently defined and previously delivered by the advisor. Similar to sports, each athlete competes only with his personal best. The benchmark is used to monitor a standard relative to current reality and future potential.

For Example: Assume we contract an advisor that delivered between 20% and 35% annually over several years. Without wasting energy processing information that we have no control over such as how the strategy was built, will it function in current market conditions and numerous other factors I won't bore you with; we track current realized profits relative to volatility and capital at risk. We can track any market and time frame. If current results deviate from the "internal benchmark" by pre-defined values, either up or down, and decision rules trigger specific actions. Choice of actions could include, distributing profits, adding capital, leveraging or de-leveraging the account and possibly changing the advisor.

Comparing ourselves to someone or something external to our highest potential (benchmark) weakens us because it goes against the power of nature. If we can teach this to others, the planet will change in an hour.

"An Oak tree need not compare itself with an Elm to know it's own greatness as an Oak." - MJJ

The 51% Rule for Initial Advisor Acceptance

To accept any advisor and maintain a long-term relationship we ask for and monitor the following over any rolling 12 month time frame. .

1. 51% of all markets traded have to be profitable.
2. 51% of all trades within each market have to be profitable.
3. Profits have to exceed losses by at least 51% for each market traded.
4. 51% of the initial margin required for each market is the maximum capital at risk on each trade.
5. 51% of all markets traded at any time need to be profitable.
6. Profits have to exceed losses of the composite portfolio by at least 51% at any one time.

Acceptable Variables: The above scenario maintains optimum balance and stability. Profitable departures from our optimum, offered by the marketplace may include 35% profitable markets, 45% profitable trades and profits exceeding losses by 65%. Many other combinations are also highly probable.

To accommodate what the marketplace offers, without compromising our standards we ask that if any one or more of the six variables is under 51% that another or others be over 51% by three times the difference.

For example: If a strategy has 45% profitable trades rather than 51%. We require that the profit to loss ratio on each trade be 69%, three times the difference between 45% and 51%.

WHY? Balance - although a strategy may be profitable, it may indicate excessive capital wasted to achieve profits, relative to an alternative. Also because of imbalance within the inter-dynamics, I also perceive unwanted potential liability. **WHY?** Nature always seeks optimum balance. When any one element is out of balance nature will release or express the energy to rebalance. In derivatives that aspect of Universal Intelligence or release of energy will manifest as capital loss.

The Monitoring System

We began by establishing a foundation of past performance for each advisor integrating the initial six 51% parameters. This also becomes an internal benchmark for each strategy. Continuing analysis requires tracking realized trades for each market over specific time frames. A ratio of realized and unrealized trade data is translated into a correlation and rate of return based on capital at risk, cost of money and time. Some advisors who trade one or two markets do not track realized trades. In this instance we can use maximum margin relative to realized profits. Inaccurate, however still an improvement over beginning equity. POINT: We focus on one relationship between the realized and unrealized ratio, if that one ratio is out of balance we can use our filters to see where the imbalance exists.

How Information is Applied

Over time a weekly, bi-weekly or monthly table of percentage differences becomes a valuable tool for making decisions. The strategy complements traditional draw down analysis with an accurate method of defining capital at risk relative to rate of return. This table represents a summary of the SafeMoneyMetrics™ Realized Ratio compiled into weekly data. We then took the average minimum and maximum for the composite portfolio and each market traded within the composite.

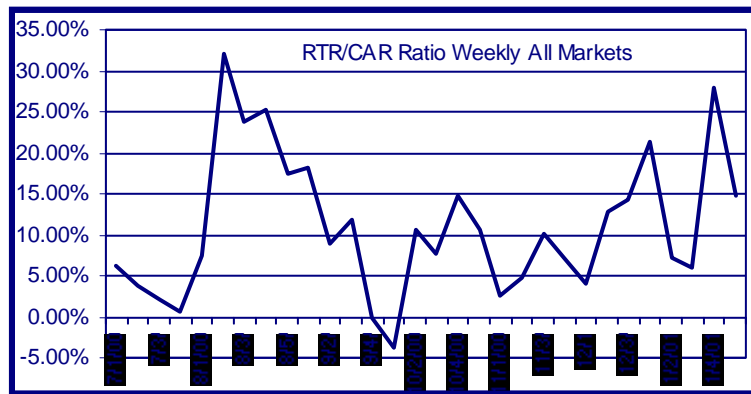
RTR/CAR 7/2000 - 1/31/2001					
	COMPOSITE	EUR-USD	GBP-USD	EUR-JPY	USD-CHF
Average	11.04%	1.75%	3.06%	3.92%	2.92%
Minimum	-3.77%	-3.37%	-2.64%	-4.09%	-2.68%
Maximum	32.16%	6.87%	11.47%	17.12%	13.42%

An increased percentage indicates the ratio being more profitable. As the percentage increases or declines relative to an unrealized ratio (not included here), the strategy moves in one of four possible directions. If the relationship between the realized and unrealized ratios begins to shift for the composite performance - we can easily refer to each market to reference which market is contributing to either increased or decreased performance. More important we have early insight into potential losses before they become catastrophic. Decision rules and trend analysis can then be integrated to concur with the quality of a potential decision. See www.sanctity.com / Monthly Articles #31 - #42

Multiple Applications Become Possible

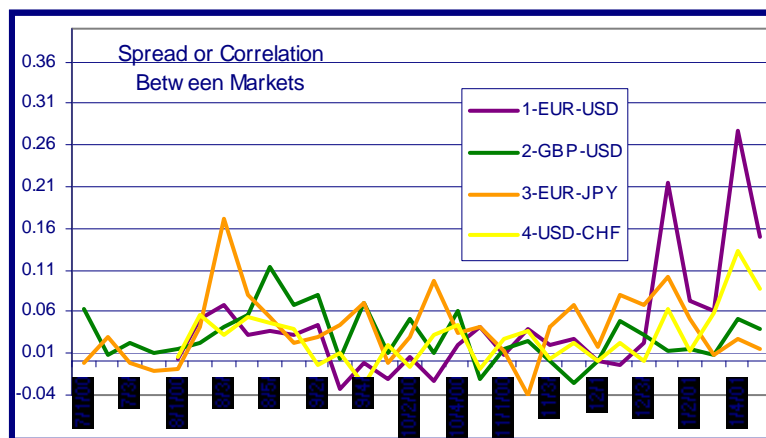
1. SafeMoneyMetrics™ is a direct and precise method of evaluating risk. When traditional analysis is applied to a precise foundation, reliability is always increased. The Sharpe Ratio, Dowd's decision rules, Trend Analysis and other methods of risk management have increased accuracy because analysis can also be applied to SafeMoneyMetrics™
2. As differentials between realized and unrealized ratios shift – we apply decision rules adding increased prudence and discipline to the monitoring and reallocation process.
3. During periods of negative relationships between the percentages, tracking each component of the composite investment efficiently reveals the weakness.
4. Immediate access to useful information is readily available, allowing efficient analysis as to which sector within the strategy relative to current market conditions needs to be adjusted.
5. Superfluous information is eliminated, so the quality of decisions is increased.
6. Compounded \$1000 Unit values can be calculated for presentation purposes without severe distortion of truth.
7. Data is easily applied to or integrated with traditional applications of risk analysis.
8. An abundance of data over a short time period increases the quality of risk management.

9. If data is gathered weekly, time is contracted and risk control is increased. We can also benefit by using advisors having shorter formal track records. **WHY?** Many good advisors are passed over because 36 data points (defined as three years by traditional analysis) as a minimum standard is needed for prudent analysis.
10. Data can easily be reformatted for research purposes.
11. Early warning reveals itself in trade evaluation and correlation analysis for each market relative to the internal benchmark; rather than monthly rate of return calculations, draw down analysis and relationships to benchmarks external to the strategy, which are all misleading.
12. Correlation analysis using realized returns relative to capital at risk offers a suitable foundation to compare and integrate multi-advisor investments.
13. Correlating ratios of realized profits to unrealized returns for the same time frame afford opportunity to quantify and measure account volatility and the investments ability to translate unrealized returns into realized profits. This is all done without distortion.



The graph above represents a composite of all markets within a strategy relative to a 0 baseline. The graph below (on the next page) shows how trading results of each market correlate and contribute to the composite ratio expressed above. I believe this to be an accurate indicator of Modern Portfolio Theory functioning at its best within any strategy.

Better Decisions in Half the Time



Keep High Quality

Using SafeMoneyMetrics™ we only allow and maintain high quality investments. Nothing else can creep into your world pretending to be something that it isn't. Traditional investment and statistical applications are integrated as a cross reference for increased risk management.

"Let truth be what it is. Do not intrude upon it, do not attack it, do not interrupt its coming. Let it encompass every situation and bring you peace. Not even faith is asked of you, for truth asks nothing. Let it enter and it will call forth and secure for you the faith you need for peace. But rise you not against it, for against your opposition it cannot come. " A Course in Miracles Text Pg 345

When evaluating a single trade within a stand-alone environment, hedge or investment strategy, bottom line considerations are capital at risk, cost of money, volatility of the account and time relative to potential return, nothing else matters. If the SafeMoneyMetrics™ Ratio and the 51% rule remain in tact, all is usually well within the foundation. Unrealized profits give answers to account volatility. Unrealized relative to realized account equity give us the ability to evaluate risk under current market conditions. The strategy is simple, keeps anyone (even me) focused on bottom line issues that support and leverage truth from within the entire strategy. **Variable parameters can be applied to consistent principles, so rather than being a rigid strategy that reflects values built on fear, it's also flexible creative and fun!**

When not careful, we can easily find ourselves compensating below average traders larger fees to lose money in more markets on larger account sizes and call ourselves intelligent?

WHY? Because traditional analysts making all the rules said, we should!
The truth will always set you free!

When people blindly say, "it's been proven that money belongs in derivatives, especially using my strategy" I perceive a self-serving motive, rather than a motive of service by managing risk. **WHY?** The asset management side of the derivative industry is fraught with inaccuracies and miscalculations based on erroneous thought. Supporting documentation for this statement can be found at www.sanctity.com Monthly Articles - # 16, 15, and 14. Managed Futures and Options evolved because of a need to manage risk inherent in the underlying cash market. I perceive that much of the investment management industry is built on a consciousness of fear. Fear is better at annihilating money rather than managing risk. Since the process for finding exceptional advisors and successfully managing risk is easily rectified, we did something about it.

How People Lose Their Way

While researching "A Unified Foundation for Investment Selection" I was constructively influenced by the work of Professor David Bohm.¹ His insights into how people learn, plus the devastating effects of fear on our physical health and quality of decisions were especially enlightening. He discusses issues that I have always metaphysically seen and known, physically felt, yet never had the language to express or mathematical means to quantify until now.

For Example:

Modern Portfolio Theory (MPT), a Nobel Prize strategy for managing portfolio risk has been successfully applied to traditional asset management since the 50's. MPT has been also

been adapted by the managed futures and options industry. Because the original intention of MPT assumes normal distribution of risk and managed futures and option risks are non-normal we believe that in many instances application of MPT to managed futures and options may be inaccurate and another cause for unwanted losses. Among other variables, successful modification of MPT applied to futures/options would require supporting documentation proving that investment returns, among two or more strategies reduce volatility and risk. Many diversified traders apply the reasoning of MPT as superficial justification for using multiple strategies within a single market, or maybe trading 28-35 markets. Because thought process or justification driving the application is inaccurate the investment has higher probabilities of increasing losses relative to capital at risk compared to an investment that uses more accurate or prudent reasoning.

FACT: Validation for trading 28-35 markets has no direct relationship to truthful application of MPT. Non-correlating strategies within one market could simply devour capital, each strategy working against the other. If we work against ourselves long enough we only waste energy and tire ourselves. In managed futures, wasted energy manifests as capital loss. Yet, we allow ourselves to believe otherwise. Diversified traders may not only require larger account sizes to trade 28-35 markets but also to maintain low drawdowns. **WHY?** If total margin requirements are low, relative to the account size, that also translates into lower volatility of monthly returns. A consciousness of fear is probably the driving force of the strategy. Fear always weakens the decision making process, therefore where fear exists, risk is always increased.

Financial professionals catering to investor fears of large drawdowns have caused a proliferation of larger account size requirements. Partial funding is usually accepted, however advisors insist on being compensated on the full account value. Larger account sizes reduce the "illusion" of losses to an account. Larger account sizes create an "illusion" of a stabilized track record. **Question:** Who actually evaluates capital at risk relative to return for the composite strategy and each market within the strategy?

Millions of investors will continue to make poor decisions based on incorrect information, causing unwanted risk unless something is done that allows a higher level of truth to be revealed.

Correcting cause of loss requires looking at truth. Truth and common sense are lost in the process of building layers of error. **WHY?** Because people learn and adapt from their environment without taking time to think independently at deeper levels.

As Phil McGraw, author of Life Strategies would say "You need to start thinking and acting for yourself to stop your own misery, no one will do it for you."

Transposing Fundamental Truth for Increased Clarity

When used in hedging, basis is the difference between local cash market conditions and the nearest futures price. Basis can narrow (strengthen) or widen (weaken) independent of market condition or direction. For example, a market can rise, fall or become more volatile and the basis can widen or narrow under any or all conditions. Basis movement is consistently independent of any market condition. This is important to be aware of because SafeMoneyMetrics™ Analysis frees us from any need to know market conditions relative to trading strategies and other factors directly related to prudent risk management. "Basis Analysis" is what people study and use when planning a hedge strategy for their cash commodities. The difference between the local cash market and nearest futures price is used to construct the basis. For example: If cash corn in Iowa Falls is \$2.40 per bushel and

the nearest futures is \$2.60 the basis is said to be - 20 or 20 under. Basis is quoted using the cash market as a foundation. Basis can also be constructed between cash and other contract months with a simultaneous analysis of price differences between any two or more contract months within the same market. Basically people that hedge, look at only two aspects of derivatives to formulate decisions. Basis and futures price, life is that simple folks!

We adapted the strategy to use for asset management. Our capital at risk formula replaces cash market price and realized trading return replaces the nearest futures price. Those two factors are always in a relationship that either adds to or detracts from account profitability. Basis analysis is a direct consistent relationship that can be adapted to individual trade analysis, any time interval bulking trades, each market within the composite or multi-advisor strategies and composite results. It tracks error efficiently and will accurately perceive imbalances before month end rate or return during a drawdown and within the market or sector causing the weakness.

We also adapted the analysis to incorporate a ratio of realized returns relative to realized and unrealized for the same time frame. Although imperfect, it works for directly evaluating what any derivative investment really is, the result of a human being taking disciplined action in a current market for the purpose of achieving a positive result.

Multiple Advisor Comparison and Evaluation

Most advisors use a percentage of an account size as capital allocated for each trade. This does not guarantee that losses will not exceed that allocation only that it does exist as part of their money management strategy. Since we rarely see that percentage exceed the margin requirement for each market, we decided that a working formula should include variations of a margin requirement theme. Although imperfect, it is more truthful than evaluating advisors via an account size **they decided they want**. It is also consistent and can flawlessly be applied across a spectrum of advisors for evaluating and building multiple advisor portfolios.

Realized trading returns have no volatility and we can spend the money. The volatility of unrealized trading returns relative to what is finally realized would astound most mortals unfamiliar with derivatives. Capital at risk and realized returns relative to unrealized returns for the same time frame can also provide valuable insight into a strategies effectiveness and ability to translate unrealized equity into realized returns over time and relative to current market conditions.

Finally, required account size has no real value in evaluating capital at risk relative to return except:

As a simplified "off the top of our head idea", one can quickly calculate returns relative to the maximum margin, minimum funding level and minimum account size required. Anyone can track the difference between all three ratios, fees charged and relationship between the SafeMoneyMetrics™ realized and unrealized ratio. Doing those simple calculations offer insight into any strategy, without too much effort.

Portfolio Construction and Monitoring

Portfolio Objectives Defined

In developing an investment portfolio, of any kind, one must first have a clear-cut **objective** or plan defining a specific goal, method of reaching that goal and time needed for achievement. What someone wants to accomplish in an investment portfolio is typically defined by an expected return they are looking to achieve. How one goes about achieving a

specific return will then depend upon their tolerance for risk and ability to choose investments. One common error among managed futures investors is to expect astronomical returns in a relatively short time frame. This type of investment objective is doom to fail no matter what type of investment vehicle is used. As example below are the rolling returns for one CTA. Note how the longer holding period increases the probability for achieving higher and more desirable returns on the investment.

Months	1	3	6	12	24	36	48
Best	39.5%	59.5%	100.7%	191.7%	177.7%	225.3%	295.0%
Worst	(20.1%)	(32.0%)	(24.6%)	(20.9%)	(7.4%)	(5.9%)	(1.6%)
Avg.	1.8%	5.2%	10.1%	20.5%	36.5%	58.0%	82.2%
Latest	15.2%	21.1%	43.5%	45.8%	58.4%	52.2%	46.6%

So in setting prudent objectives it is important to have realistic and attainable return expectations associated with realistic corresponding levels of risk and time. Return expectations are simply defined as the amount of return you are looking to achieve. Although inaccurate risk in the managed futures sector of the alternative investment industry, is typically defined as an investment's maximum draw down. Maximum draw down is defined as the largest percent decline, peak to valley, of an account's Net Asset Value.

Example Portfolio Objectives:

Realistic	Unrealistic
Expected Return: 30 - 35%	Expected Return: 50 - 55%
Acceptable Drawdown: 15 - 20%	Acceptable Drawdown: 5 - 10%

Diversification and Modern Portfolio Theory

The essential principal for building a mix of several investments is to diversify away specific risk. Diversification provides opportunity to reduce the volatility of returns inherent within a single investment or market sector. Diversification also serves to mitigate draw downs in overall portfolio performance. A main premise behind Modern Portfolio Theory is to combine a mix of investments that have little or no performance correlation between them. The idea is that investments that correlate to each other do not maximize diversification because they perform in the same direction up or down over similar time frames. An important step in our advisor selection process is to compile and analyze a correlation matrix of advisors considered for a specific portfolio. That portfolio is then correlated to other market sectors.

Sample Correlation Matrix:

A: Alternative Advisors to Each Other:

Alternative Investments					
	#1	#2	#3	#4	#5
Alt. Inv. #1	1.000				
2	0.063	1.000			
3	0.436	-0.083	1.000		
4	-0.157	-0.203	-0.143	1.000	
5	0.034	-0.009	0.267	-0.081	1.000

B: Alternative Investments to Stocks and Bonds:

	Bonds	Stocks	Alt Inv
Bonds	1.00		
Stocks	0.198	1.000	
Alt. Inv.	0.153	0.007	1.000

Above is a correlation matrix of alternative investment advisors to each other and alternative investments to stocks and bonds. The S&P500 Stock Index represents stock investments, the Lehman Brothers Bond Index bond investments and the Stark 300 CTA Index represents Alternative Investments.

Correlation coefficients go from a high value of 1.00, indicating that two variables move together down to a low of -1.00 that reveals two variables moving in totally opposite directions. Correlation coefficients do not indicate that any two variables move together by the same amount or even proportion. We tend to interpret correlation coefficients by allocating them into thirds. For example, any two investments having a correlation coefficient of between 0.666 and 1.000 we would interpret as having significant performance correlation. Coefficients between 0.333 to 0.666 somewhat significant correlation, while 0.000 to 0.333 the correlation becomes insignificant.

To repeat, the reason we seek to mix investments with little or no correlation is to develop concrete diversification. Then opportunity for meager performance in one investment can be offset by first-rate performance in another investment within the same portfolio. When futures are constructively integrated into a total portfolio, the strategy will level performance and lower overall volatility.

Advisor Selection Process

In addition to specific return and risk parameters, investors may desire or need to add other specific filters to the selection process. When all appropriate parameters have been determined the next step is to begin a search of acceptable money managers suitable for the clients objectives. Searching our database using these quantitative and qualitative parameters as filters quickly eliminates investments that clearly do not fit. We are then left with a short list of viable money managers.

From this short list, we then look at the historical trading performance for each individual money manager to determine which one, on a stand-alone basis, would provide the paramount opportunity for achieving the investor's objectives. After isolating the "best" trader, which is defined as our primary trader, we then search back towards the remaining short list to determine which traders will then provide the most benefit to the primary choice, when diversifying in an overall portfolio mix. Critiquing quantitative and qualitative analysis helps to determine this. Our goal is to create a well-balanced portfolio among the money managers in terms of correlation, trading approaches, trade time horizons, markets traded, etc.

Downside Risks Defined

In our viewpoint quantifying acceptable down side risk is the single most important aspect of building a composite portfolio. Losses caused by untimely decisions, can be avoided by being aware of daily account volatility that an account will incur over time. So with this in mind we always look to analyze daily performance history rather than the traditional

monthly returns available in every disclosure document. We believe that analyzing daily performance is necessary to determine the worst intra-month draw down that has occurred in the past. The process eliminates negative surprises possibly causing bad decisions.

It is important to understand the amount of day-to-day volatility that can be hidden inside monthly rate of return figures. This also allows us to define a predetermined stop-loss point that if broken would require us to either reevaluate or terminate the investment.

Also, when developing a hypothetical mix of CTAs it is easy to back test various allocations until a very attractive past return with low draw down is achieved.

Of course if it was as easy to achieve these great back tested returns on actual money invested today, with the same mix of advisors moving forward, then everyone would make money with alternative investments.

However, since this is not the case we feel it is important, when analyzing the performance in a mix of CTAs, to also look at a worst-case scenario. That is, what would happen to our portfolio in the event that all our money managers hit their worst historical drawdowns at the same time? This we feel gives a more realistic view towards the possible drawdowns that may be experienced by our overall portfolio investment moving forward.

Another important point to realize when investing in alternative investments, especially managed futures or a long term trend following strategy is that sometimes performance from only one or two months out of any year can sometimes mean the difference between positive or negative returns. A good example is what happened in the year 2000 where many CTAs were showing relatively poor performances for much of the year. Then in November and December several markets made substantial moves that enabled a lot of traders to show double digit gains for both months and thus turn poor performances into respectable gains on the year.

Only when using trend following advisors, it has been our observation over the years that successful managed futures investment evolves from positioning clients with a strategic allocation among advisors enabling them to comfortably remain through draw downs, however be well positioned if and when specific markets change and substantial profit opportunities begin to present themselves.

Monitoring Performance

When building a multi-advisor portfolio each trader should bring a specific characteristic or benefit to overall performance. Once these investments are in place and trading begins; it is our responsibility to monitor each account. That ensures that the account is being traded along the guidelines and parameters that caused us to initially select each advisor. As of the first trading day we begin to develop a file of daily performance data. Daily account statements (equity runs) are analyzed and end of day equity balances are determined, converting all foreign balances into US Dollars. The monitoring process allows us to track intra-month peak and valley account volatility. Markets being traded and position sizes in each market are reviewed in order to ensure that the trader is not deviating from normal trading style or patterns. Normal trading styles are typically defined in each respective CTAs disclosure document, a thorough written due diligence and conversations with the trader. After watching the trading, on a daily basis, certain styles become evident so that any trading activity out of the ordinary is readily identified. We then inquire if and why changes or adjustments to the strategy have been made. If we are uncomfortable with answers or reasons for change, or if changes seem significant, more than likely we will look to exit the investment.

Significant changes to any trader's system or program could very well make their historical performance that was used to initially select the trader null and void. In this case we would want to be on the sidelines at least for the foreseeable future.

Industry Data Bases

Databases are proprietary and computerized. They currently monitor and analyze the performance of more than 400 CTA programs. (Please note that in some cases a single CTA firm may offer more than one managed futures investment program.) In the future, the total number of CTA programs monitored by Databases may be greater or lesser than the present total. These people make no representation that the Database includes or will identify each and every CTA program that might be of benefit to a particular client portfolio.

The primary data utilized by Databases are the performance history of the CTA programs as disclosed in the CTA's most current disclosure document or as provided by the CTA to Barclay directly. At times databases may use estimates of periodic performance for recent periods as provided by the CTAs until final performance figures are available. The performance data as provided by the CTAs typically shows the past performance of a composite of accounts and does not reflect the results of any one account. In certain cases, performance data may reflect the performance of an actual pool account. Different accounts for a particular CTA were likely to have had more or less favorable results than the composite and no representation is made that a client will or is likely to achieve results similar to those contained in the composite tables. Data base people updates performance figures in the Database periodically but makes no guarantee as to their accuracy.

Databases may be utilized to calculate, based upon periodic performance data, more than 20 different statistical parameters for individual or combined groupings of CTA programs. In general, as consultants, they use some or all of these parameters to measure or compare historical rates of return in varying time increments versus the volatility of those returns. The Database may also be used to measure the correlation or relationship of the historical performance of multiple advisors. The most important point to remember is that the insight and skills of the Trading Manager or analyst applying the tools that causes success.

Decision Rules for Investment

We now need decision rules. Mathematical rules that tell us how to choose between possible alternative investments, how much to allocate, when to add capital and when to take profits.

Introduction

This paper sets out a "decision rule" approach to risk-return analysis. This approach highlights the importance of dealing with net rather than gross exposures, and can be used for investment, hedging, and general portfolio management decisions.

Despite the vast amount of interest in risk management over the past few years, it is curious that certain basic issues have still not been fully sorted out. One of these, as Bob Litterman (1996, pp. 52-53) has recently pointed out, is the development of portfolio analytical tools to guide risk managers in their decision-making. What rules should risk managers follow to guide them when choosing between alternatives that offer different prospective returns but involve different risks?

This paper suggests a possible answer to this question. As with traditional approaches, the underlying aim is to compare risk and expected return and go ahead with prospective decisions if the risk-return tradeoff is sufficiently favorable. However, the new approach outlined here interprets risk in terms of the impact of the prospective change on overall Value at Risk (VaR i.e., risk is interpreted in terms of incremental VaR). We therefore go ahead with any change if the incremental Value at Risk, the Incremental Value at Risk (IVaR) associated with that change is low enough, relative to the expected return, and we can determine whether the tradeoff is sufficiently favorable by using an appropriate decision rule. -

Once we have this rule, we can apply it to **any** decision with measurable risk-return implications. It can therefore be applied to investment or allocation decisions, hedging and more general portfolio management decisions: all three types of decisions are closely related and can be handled in much the same way. The approach suggested here thus offers a simple unified approach to risk-return analysis, and so provides a useful addition to the risk manager's toolkit.

The Generalized Sharpe Decision Rule

Suppose we face a choice between two assets, A and B , and intend to finance either acquisition with cash. The well-known Sharpe rule tells us to choose the asset with the higher Sharpe ratio, where the Sharpe ratio in this case is equal to the expected return on the relevant asset divided by the standard deviation of its return. Consequently, the Sharpe decision rule is to choose A if $SR^A > SR^B$ and choose B if $SR^A < SR^B$, where SR^A is the Sharpe ratio applicable to asset A , and SR^B is the Sharpe ratio applicable to B . This rule gives the correct choice of asset acquisition in a mean-variance world, provided that each asset has a correlation of zero with our existing portfolio (see, e.g., Sharpe 1994, p. 57)). However, this condition is unlikely to be met, since most investments we would want to consider will have a non-zero correlation with the portfolio we already hold. (What is actually correlated when looking for non-correlation of investments?) The traditional Sharpe rule can therefore be unreliable in most cases where we would want to use it.

Fortunately, this problem is easily remedied. Instead of considering the Sharpe ratio applied to each asset on its own, we consider a new asset position relative to our existing portfolio. In other words, we take a prospective asset, A , and apply the Sharpe ratio to the choice between our existing portfolio, on the one hand, and the existing portfolio plus the new asset, on the other. We then acquire the new asset if it increases the Sharpe ratio on our existing portfolio, i.e., if:

$$(1) \quad SR^{new} = R_p^{new} / \sigma_{R_p^{new}} \geq R_p^{old} / \sigma_{R_p^{old}} = SR^{old}$$

where SR^{new} is the 'new' Sharpe ratio associated with the acquisition of the new asset, SR^{old} is the 'old' Sharpe ratio associated with our existing portfolio, R_p^{new} is the expected rate of return on the new portfolio, R_p^{old} is the expected rate of return on the old portfolio, and $\sigma_{R_p^{new}}$ and $\sigma_{R_p^{old}}$ are the standard deviations of the rates of return to the new and old portfolios. Now suppose that the new portfolio consists of positions in asset A and the old portfolio, with a relative amount a invested in asset A and a relative amount $(1-a)$ invested in the old portfolio. The expected return to the new portfolio is therefore:

$$(2) \quad R_p^{new} = aR_A + (1-a)R_p^{old}$$

where R_A is the expected rate of return on asset A . Substituting (2) into (1) and rearranging, we then acquire the position in asset A if:

$$(3) \quad R_A \geq R_p^{old} + [\sigma_{R_p^{new}} / \sigma_{R_p^{old}} - 1] R_p^{old} / a$$

This rule tells us to acquire asset A if its expected return is at least as great as the expression on the right-hand side of (3). The term on the right-hand side can therefore be interpreted as the required return for asset A . This required return consists of the expected return on the existing portfolio plus an adjustment factor that depends on the risks associated with acquiring asset A : the higher the risk, the higher the risk-adjustment factor, and the higher the required return. We can also write (3) in an equivalent form using information on VaR instead of portfolio standard deviation. If the return to a portfolio is normal, the VaR of the portfolio is equal to $-\alpha\sigma_{R_p}W$, where α is the confidence parameter on which the VaR is predicated, σ_{R_p} is the standard deviation of the portfolio return, and W is a scale parameter reflecting the overall size of the portfolio. However, since the two portfolios are the same size, it follows that:

$$(4) \quad VaR^{new} / VaR^{old} = \sigma_{R_p^{new}} / \sigma_{R_p^{old}}$$

where VaR^{new} is the VaR of the new portfolio and VaR^{old} is the VaR of the old portfolio. We now use (4) to substitute out the standard deviations from (3) to obtain:

$$(5) \quad R_A \geq R_p^{old} + (VaR^{new} / VaR^{old} - 1) R_p^{old} / a$$

Since the incremental VaR, $IVaR$, is equal to $VaR^{new} - VaR^{old}$, we then rearrange (5) to get:

$$(6) \quad R_A \geq R_p^{old} + (IVaR / VaR^{old}) R_p^{old} / a \\ = [1 + \eta_A(VaR)] R_p^{old} / a$$

where $\eta_A(VaR)$ is the percentage increase in VaR occasioned by the acquisition of the position in asset A divided by the relative size of the new position. $\eta_A(VaR)$ is therefore the elasticity of the VaR with respect to a , for the particular asset position in question. This elasticity is a measure of the increase in the risk of our portfolio, adjusted for the size of a . (6) tells us that the **required return** is equal to the **expected return to the existing portfolio times one plus the VaR elasticity**. Clearly, the bigger this elasticity (or the bigger the IVaR), the bigger the risk associated with the new investment, and the higher the required return.

Our decision-maker would then plug in the relevant parameter values and check whether (6) holds or not. He/she would presumably sit at a suitably programmed computer terminal and input the details relevant for the candidate position. The computer would then apply the decision rule (6) to its data bank and indicate whether this condition is satisfied. If it is, the decision-maker would authorize the deal, the transaction would be logged and records amended accordingly. **If it is not, the deal would be rejected.**

Making Investment Decisions

This decision rule can be applied to any decision that involves expected return and/or risk, and takes account of the incremental risks associated with those decisions in a theoretically

correct way (i.e., taking proper account of the risks involved as they relate to our existing portfolio). One obvious use of this decision rule is in making investment and disinvestment decisions. Assuming we already have the necessary data about the old portfolio and the benchmark asset, we simply estimate R_A and the IVaR for the asset in question (or the VaR elasticity, if one prefers), and check whether R_A exceeds its required return given by the right-hand side of (6). A disinvestment decision or a decision to take a short position can be handled in the same way by considering the decision as a negative acquisition. The generalized Sharpe rule is thus very useful in helping us to decide whether to acquire new assets, keep assets we already have, get rid of them, or take short positions in assets we don't have.

This decision rule indicates whether we would be better off making an investment (or disinvestment) decision of a particular given size, and is obviously well suited for situations where the size of the investment is given and where all we need to do is decide whether to proceed with it. However, it is frequently the case that we must decide not only whether to make an investment, but must also decide how large the investment should be if we go ahead and make it (i.e., we must select the position size a as well). We therefore need to adapt the rule to handle investment problems where the investment size is itself a choice variable.

Optimal Investment Sizes

To do so, we begin by using (6) to estimate the investment asset's required return, for a range of different values of a ranging from very small to large. This will produce one of two types of relationship between required return and position size, as given in Figure 1:

Figure 1: Required Return and Position Size
INSERT FIGURE 1 HERE

Remember that required return increases with incremental VaR, so the shape of the required return curve reflects the shape of an underlying IVaR curve. The curve showing the relationship between required return and position size will therefore either fall initially and then start to rise (as in Figure 1a), or rise indefinitely (as in Figure 1b). Whether the curve initially falls or rises depends on the correlation of the required return on the asset with the return to the rest of our portfolio, but the curve *must* eventually rise, if only because at some point the new investment would become so large relative to our portfolio that it would start to dominate it. Further increases in the size of the new investment would then add to overall risk, push up the IVaR and, therefore, push up the required return. The answer to our decision problem now depends on the relationship between this required return and the expected return on the asset. Applying standard intermediate microeconomic theory, the optimal level of investment turns out to be where the required return curve cuts the expected asset return curve from below. Consider the two cases in Figure 2

Figure 2: Optimal Investment Levels
INSERT FIGURE 2

In both cases we assume for convenience that the required return curve first falls with a and then rises. The expected asset return curve is taken as horizontal, on the (also innocuous) assumption that the expected asset return is given. There are now two possible outcomes:

- In Figure 2a, the expected return to the new asset is always less than the required return, regardless of the size of the position in the new asset. It is then obvious from (6) that no amount of the new asset is worth acquiring.
- By contrast, in Figure 2b, the two curves cross at two points. The answer to our decision problem is therefore to invest in the new asset, with the size of our investment (given

by a^* in the Figure) determined where the required return cuts the expected return curve from below. This level of investment is optimal because it maximizes risk-adjusted expected return: at any investment level above a^* , marginal increases in investment have a required return that exceeds the return expected from the asset, which means that we would be better off cutting back on our investment; at any investment level below a^* , marginal increases in investment have a required return that is less than the return expected from the investment, which means we are better off increasing our investment. The optimal level of investment is therefore that at which the investment level actually equals a^* .

Our decision problem is now resolved: our decision rule not only tells us *whether* to invest, but also tells us *how much* to invest if we do.

Managing Portfolios

A VaR approach can also help with portfolio management. Perhaps the most important use is to assess the efficiency of our current portfolio and of any prospective changes to it. This efficiency check is based on the principle, embodied in (6), that any position *included in* our portfolio should have an expected return at least as great as the required return. Similarly, any position *excluded from* our portfolio should have an expected return that is *less than* the required return. If our portfolio is efficient, any position included in the portfolio should therefore have an expected return at least as great as any position excluded from our portfolio. If this condition is not met, there will be some currently excluded asset with a greater expected (risk-adjusted) return than some currently included asset, and we should acquire the former asset (or increase our holdings of it) and sell (or reduce our holdings of) the latter.

A simple way to implement this rule in practice is to give portfolio managers an efficiency score for each position they hold or are considering acquiring. This score would be the ratio of expected to required returns. An efficiency score of more than one indicates that a particular position has (or would have) an expected return greater than its required return; an efficiency score of more than one therefore indicates that the position in question is good for our portfolio. An efficiency score of less than one indicates that a position has (or would have) an expected return that is less than its required return; it indicates that the position is bad for our portfolio. And an efficiency score of about 1 indicates that the expected and required returns are about equal, and so indicates that the position is marginal. The efficiency scores of current and prospective positions give portfolio managers easily comprehensible and very useful leads on where and how they should change their portfolios.

Limitations of the Approach

However, it is also important to appreciate the limitations of the VaR approach.

The dependence of any VaR approach on (sometimes questionable) distributional assumptions means that we would be very unwise to rely *only* on this approach when making decisions. Since our models to produce exactly the same VaR estimates for the same portfolios, and the empirical work of Beder (1995) and Marshall and Siegel (1997) suggests that these differences can be quite substantial in practice. We must therefore be careful to check our VaR systems where possible and not place too much reliance on the precision of our VaR estimates. These considerations further reinforce the point made earlier (in footnote 4) that the VaR approach is best regarded as an additional tool, rather than a replacement for existing ones.

Inappropriate distributional assumptions can also give us a mis-leading picture of our actual exposure. A standard example is the risk of a large market move, such as a market crash. Market returns often show fat tails that indicate that large losses are more likely than implied by normality. Reliance on normal-based measures can therefore lead to drastic under-estimates of the 'true' VaR. For example, we might have a delta-hedged portfolio, which protects us against small market moves but not against sudden large moves. We might think such a portfolio has a low VaR because we have assumed normality, but the true VaR might be much higher because the risk of a sudden large move is much higher than normality would suggest. The sensible response to this type of problem is to supplement any VaR risk measurement system with a system of stress testing to look for potential vulnerabilities and so identify risk exposures that a VaR approach might underestimate or miss entirely.

Conclusions

The VaR approach outlined here identifies the required return that would make any decision worthwhile, and the required return itself depends on the estimated impact of the decision on our overall risk exposure. This approach also highlights the importance of dealing with net rather than gross exposures, and can be used for investment, hedging and general portfolio management decisions. It is particularly useful when making hedge decisions, where it can help avoid a number of problems that can easily arise using the traditional textbook approach that tends to ignore the ways in which risks interact in our portfolio. The traditional approach can therefore lead to the excessive use of micro-hedges against individual risk exposures, as well as over-hedging, unintended increases in net exposure, and an inability to deal with basis risk. All these problems are avoided with the new VaR approach.

Nonetheless, users of this approach must also be aware of its limitations - most particularly, of the underlying assumption of normality. It therefore needs to be used with care if there is reason to suspect that the normality assumption might be inappropriate. However, no risk measurement system is perfect and the approach suggested here might still provide useful indicative information even if normality does not hold. A flawed tool can still be useful in the right hands - and all tools have their limitations.

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