

SATYRICAN

F i n a n c i a l N e w s l e t t e r

Vol. 1, No. 2

Satyrican.Tripod.com

August 10, 2003

Thoughts Galore

The Heisenberg Uncertainty Principle is one of the few rigorous principles that have been haphazardly applied in other unintended fields. Among other things, it has been called upon to explain some peculiar aspects of politics, psychology, and even financial markets. The version of particular interest, the financial version, says that you cannot have higher return without more risk. This has been dubbed the Heisenburg's Market Uncertainty Principle, or colloquially as the No Free Lunch Principle.

Wall Street however thinks otherwise. Wall Street is a tenacious and unwieldy entity; it doesn't like being told that there's no free lunch. The proliferation of hedge funds and the hankering for alpha bear this assertion. The drive to extract free lunch arguably is the heart of Wall Street and to an extent that of capitalism.

This siren of free lunch takes many forms, but the most common is alpha. Alpha is commonly accepted to be the risk-adjusted return of a security or portfolio. Much emphasis has gone into extracting alpha that it has now become the "in" thing.

Alpha has indeed taken up a lifestyle of its own. Trading strategies that seek to extract alpha via beta matching has become ever more popular. In fact, market neutrality is a hot commodity in

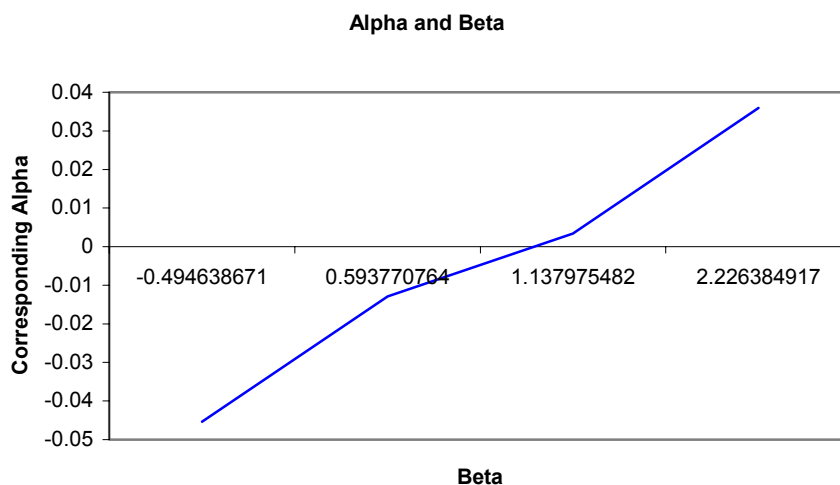
money management as of this writing. The emergence of slicing of alpha (i.e. alpha conditional on other explanatory variables) is becoming more noticeable. Alpha even has its own time series analysis. The heart of alpha, however, has always been its accepted status of the preferred gauge of money manager performance.

Morningstar definition of alpha: "Alpha measures the difference between a fund's actual returns and its expected performance, given its level of risk (as measured by beta). A positive alpha figure indicates the fund has performed better than its beta would predict. In contrast, a negative alpha indicates a fund has underperformed, given the expectations established by the fund's beta. Some investors see alpha as a measurement of the

value added or subtracted by a fund's manager."

All this hoopla about alpha, however, is contingent on it being a good measure of risk-adjusted return. The nature question that seems to evade people: is alpha really a good measurement of risk-adjusted return? If it's not, the resources and attention given to alpha are for naught. The biggest implication of course deals with measuring money manager performance.

Alpha, it turns out, is not a good measurement of risk-adjusted return. The strongest proof of this assertion is the *hidden* relationship between alpha and beta. Beta is commonly accepted as a measurement of risk (although whether it is a good one is debatable). This belies the common assumption that there exists no relationship between the



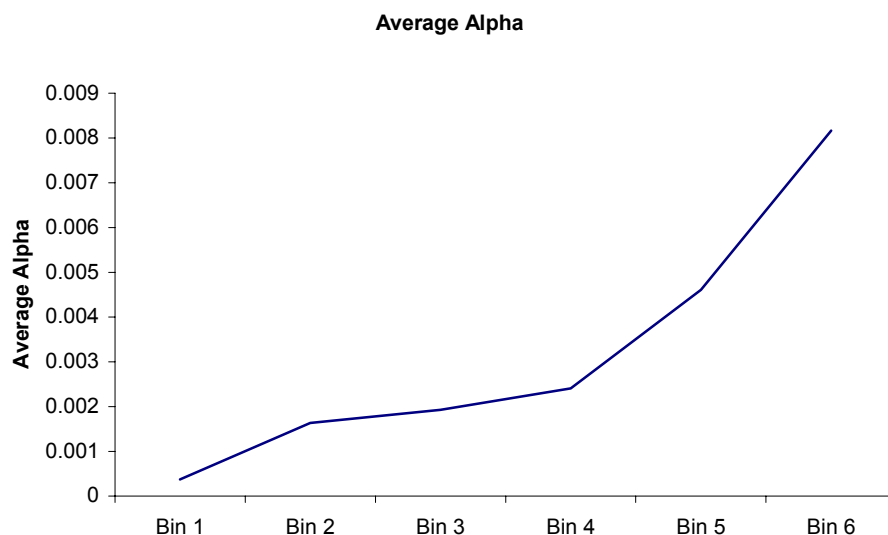
two variables. Alpha after all measures risk-adjusted return. Crudely worded, alpha should be the return left over after risk has been factored out.

To prove the existence of this hidden relationship, let's assume that an investor invests \$100,000 in Microsoft common stock in 2002. With perfect hindsight we can say that the investment didn't pan out well, but that's beside the point. We're more interested in the respective alpha and beta. Using the basic formula of CAPM ($R_f = \alpha + \beta * R_m$, where R_f is daily return less the 3 month T-bill and R_m is the daily market return less the 3 month T-bill), we would find that beta to be 0.5937 and alpha to be -0.0129. This translates into a "supposed"

-1.29% risk-adjusted return; in other words, controlling for risk (beta) the investor should supposedly gain -1.29%.

Now, assume for the moment that instead of just going long the investor margin up 100% to procure twice as much shares. The investor would have \$200,000 of purchasing power in the form of Microsoft shares on a \$100,000 stake. At the end of 2002, the investor would have observed a beta of roughly twice (1.37) that under the original setup (long only). But interesting enough alpha turns out to be *positive* at 0.003393. Thus by leveraging the investor would have earned an alpha of 0.33% instead of -1.29%.

What we just observe is that by simply taking more risk (higher beta) we would obtain a higher alpha. To put it in another way, we can simply increase alpha by taking more risk! Thus a money manager could increase his alpha by eating up more risk. The



relationship between alpha and beta are evidently present. To further see this linear relationship, the graph on the previous page depicts a hypothetical set of scenarios. On the X-axis are betas if we respectively short MSFT, long MSFT, leverage 2x MSFT, and leverage 4x MSFT. The Y-axis shows the corresponding alphas. Conclusion from graph: as we take in more risk, alpha naturally goes up. The hidden relationship has thus been provided.

This little demonstration shows that alpha is *not* a good proxy of risk-adjusted return. Remember, alpha is commonly accepted as "free lunch," i.e. factoring out risk, alpha is the return we would garner. Under this assumption, we would expect alpha to have no linear relationship with risk. But the demonstration explicitly shows the existence of such relationship. Alpha carries more risk than commonly accepted.

The implications are hard to swallow. Investors choosing mutual funds (or hedge funds for that matter) on the basis of alphas would entail more risk than commonly accepted. Equally

unsettling is that alpha trading, which tries to maximize alpha, would inadvertently capture more risks than previous thought.

Likewise, the pernicious advice of buying stock when both alpha and beta are trending up should be discarded. (This advice circulated during the rampant Bull market of the late 90s.) This strategy is nothing more than carrying a high beta stock; alpha is rather meaningless.

Some readers undoubtedly will raise objection to my argument on the grounds that the demonstration is mostly hypothetical. Though the demonstration is hypothetical, that doesn't detract from the results. The demonstration serves as an illustration. The relationship between alpha and beta is undeniably.

To further drive home the point, I will turn to actual data to ascertain the argument that alpha is a poor proxy of risk-adjusted return.

With a collection of a little over 3000 mutual funds, the hidden relationship still manifest itself. This collection contains alpha and beta of each mutual fund for the period ending June 2003. For analysis purposes, I

simply compartmentalize the funds according to its beta into strata. Six strata were used with each stratum being differentiated from one another incrementally by a factor of the standard deviation of the collective betas. Each stratum is labeled as bins on the graph with bin 1 containing the lowest valued beta and bin 6 containing the highest. The Y-axis represents the average alpha in that bin. (Special thanks to Matthew Spiegel for generously allowing me to tap into the dataset; check out his website on his work on Kalman alpha, source in author's note).

As we can see from the graph, there is a clear linear relationship between alpha and beta. As beta increases, so does alpha. Again proving the assertion that alpha adds little in terms of being a gauge for risk-adjusted performance.

Weekly Harbor

Like broken glasses, Nasdaq is having a hard time piecing itself together. During last week session, the Dow picked up some steam as it rode on the back of the

retail sector into overcoming Tuesday's 150-point drop. While its partner in crime, Nasdaq was stuck in a midst of a six-day hiatus. Cisco's announcement and the semiconductor sector recent downfall besieged investors with the thought of too fast too soon.

Noteworthy on last week agenda was the stabilizing of the bond market – eliciting relief from those concerned about a possible economic halting due to higher interest rate.

It's worth taking a minute or two to examine this latter issue. Some have argued that the reactions to recent bond market turmoil were blown out of proportional on the grounds that the level of interest rate at the higher end of the yield curve is presently lower than last year's level. What this argument falls to take into account is the market discounting mechanism.

Markets, in particular the equity market, at that juncture have *already* discounted lower interest rates into the pricing. An out-of-leftfield rise in interest rate uproots this discounting. Higher than expected rates would cause equity to be valued at a much lower premium as cost of capital

projection must logically rise.

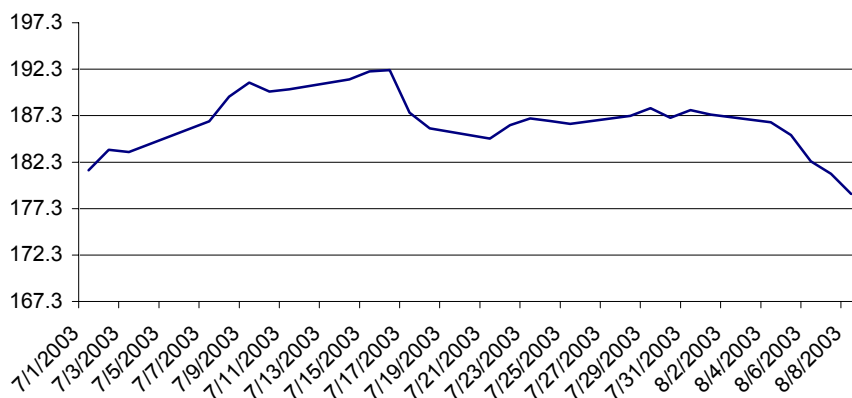
Moreover, the sporadic nature of interest rate (i.e. volatility) makes market evaluation exceedingly tough. Imagine projecting pension cost and capital expenditure when the ten-year note has exhibit volatility that hasn't been seen before. Investors have to factor in this volatility when pricing a security; higher volatility usually translate into more caution and hence the observable pessimism in the current equity market. What this translates into is that unless the economy is definitively on the bull track (which it is not), higher interest rate will hurt the equity market due to market discounting and market aversion to volatility.

It is my humble belief that we're not even close to being on the bull track. Revenues have yet to espouse any bull sentiment. Earnings via favorable conditions: dollar depreciation, favorable fiscal and monetary policy, and lower interest rate, have jumpstarted the economy but are probably not sustainable. What the economy needs is strong consumer demand as a result of a strengthen labor market. Only then will revenue finally pickup and the bulls can rejoice. Until then we're still in a mixed state.

Speaking of mixed, my forecast last week could be described as mixed. As prognosticated, the VIX trended down to 21.39 on Friday. The Dow edged up higher as I anticipated, but Cisco's earnings and announcement took me by surprise. Subsequently, the Nasdaq bottom fell out (I anticipated otherwise).

Looking towards next week, the plethora of economic reports

(Nasdaq-Dow) Spread

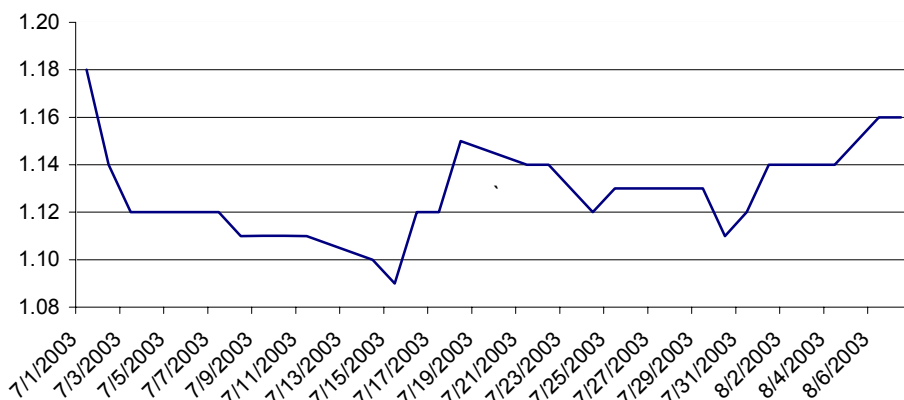


will be a sharp contrast to last week's scarcity. On everyone's calendar is the FOMC Announcement on Tuesday. Market's opinions are neutral as of this writing, as investors are not expecting an interest rate cut or hike. Towards the latter of the week, price indices (PPI & CPI) and University of Michigan's consumer sentiment are due out.

Monday session and to a less extent Tuesday session will be mixed as the Fed's passivity might not be to the investors' liking. My gut feeling says that the Fed will merely announce positive outlook for the economy with an eye for caution, not much value-added information if you asked me. But market will rebound towards the latter of the week, as economic reports should be very favorable (price indices and consumer sentiment).

With regards to overall forecast, I see the Dow edging higher and the Nasdaq finally edging up as well. The Nasdaq spread is trending down, leading me to believe that the Dow will further outperform the Nasdaq. The BAA-AAA spread is also in a nice upward trend, further adding optimism in the market. By weeks end, the VIX might drop below 20.

(BAA-AAA) Spread



As I noted in the last newsletter, market will not be shabby in the next week or so, but long-term projection are not encouraging. (Reread last week newsletter if necessary)

● Cash City

Nothing is certain except death, tax and perhaps government spending. In early July the Bush administration announced a projected deficit of \$165 billion for this fiscal year, a surprising 56 percent gap up from previously announced figure. While we can frown upon such unbridled fiscal inefficiency (as well as the alarming inconsistency in budget projection), instead I say why not

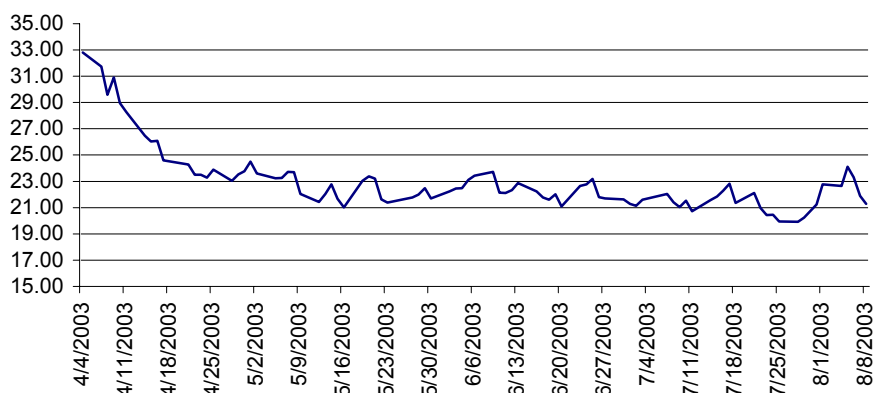
profit from this government tendency.

GTSI Corp is an information technology solutions provider that primarily tailors to the whims of the United States federal, state and local government. Among other things it resells microcomputer, UNIX workstation hardware, software and miscellaneous to government agencies. It plays the role of "middlemen" for global IT leaders like Panasonic, Microsoft, and Sun Microsystems.

The beauty of GTSI is its relative lack of exposure and exceedingly low beta. It carries with it the potential upside of the NASDAQ without the necessary high volatility. This couple with a lack of exposure could explain its undervaluation. Using a five-year cash flow projection, the stock is trading at a decent discount to warrant some buying attention.

We'll assume sales growth of 3% and profit margin of 1.310%. Profit margin is simply derived from taking the average of the prior two years figures. Sales growth rate is assumed to be equivalent to GDP growth rate. This conservative growth rate is to insure any potential cut in government IT spending. Lately, government officials have

VIX



expressed concern about the excessive IT spending and have pushed for clearer communication among agencies to buy in “bulk.” This is certain to hurt IT vendors like GTSI in the short run, but in the long run IT spending should easily outpace the rate of GDP growth. When government IT spending does pick up (probably soon than most believe), GTSI is one of a handful of companies in front of the line.

(As an added step of caution, the growth rate for 2003 will be assumed to be –5% instead of the aforementioned 3%. All subsequently growth rate will be 3%, however)

We’ll peg cash tax rate at a hefty 40%. Fixed-capital rate as a percentage of additional sales is assumed to be 7%, and working capital rate as a percentage of additional sales will chime in at –5%. Cost of capital is assumed to be in the order of 8% and inflation

rate comes in at 1%. And lastly we’ll assume no nonoperating asset and peg nonoperating debt (primarily employees stock options) at a constant \$507K.

Note that the cost of capital assumption is incongruous with GTSI current state. We would actually expect a *lower* cost of capital due to its beta of 0.25 and its eye-popping debt to equity ratio of zero.

The fair value based on all the above assumptions is \$12.67. As of Friday, August 8, GTSI is trading at \$9.11 – beckoning an attractive 39% discount. 52 week high is at 15.10; I wouldn’t be surprised if it touches this number by early November.

● Author’s Note

All the relevant excel files are in the download section under August 10, 2003. Files are

AlphaFallacy.xls and GTSI.xls (self-explanatory). The source for the collection of mutual funds is <http://som.yale.edu/~spiegel/dynamic/FundsRankedbyKalmanAlphaR2Sort.html>

I received a plethora of criticisms via email harping about last week article on the possible mutual inclusiveness between random walk and technical analysis.

I want to state for the record that the simulation is for illustration purposes only. It is not intended for pure academia. The article and the excel file were kept simple so as to pacify the general circulation and not just the sub segment comprising of quants. Again, the focal point was that a *possible* reason why technical analysis might work in an assumed state of random walk is due to trendiness of random walk. Although random walk by definition is a Markov process,

	2002	2003	2004	2005	2006	2007
Sales	\$934,730	\$887,994	\$914,633	\$942,072	\$970,334	\$999,445
Operating Profit	\$12,245	\$11,633	\$11,982	\$12,341	\$12,711	\$13,093
Less: Cash Taxes on Profit		\$4,653	\$4,793	\$4,936	\$5,085	\$5,237
Net Operating Profit After Tax		\$6,980	\$7,189	\$7,405	\$7,627	\$7,856
Fixed-capital investment		-\$3,272	\$1,865	\$1,921	\$1,978	\$2,038
Working-capital investment		<u>\$2,337</u>	<u>-\$1,332</u>	<u>-\$1,372</u>	<u>-\$1,413</u>	<u>-\$1,456</u>
		-\$934.73	\$532.80	\$548.78	\$565.24	\$582.20
Free Cash Flow		\$7,914	\$6,656	\$6,856	\$7,062	\$7,273
Present Value of Free Cash Flow		\$7,328	\$5,707	\$5,442	\$5,190	\$4,950
Cumulative Value of Residual Value		\$7,328	\$13,035	\$18,477	\$23,668	\$28,618
Present Value of Residual Value		\$93,246	\$88,929	\$84,812	\$80,886	\$77,141
Corporate Value		\$100,574	\$101,964	\$103,289	\$104,553	\$105,759
Add: Nonoperating Assets		\$0	\$0	\$0	\$0	\$0
Less: Debt and other Liabilities		-\$507	-\$507	-\$507	-\$507	-\$507
Shareholder Value		\$100,067	\$101,457	\$102,782	\$104,046	\$105,252
Shareholder Value Per Share		\$12.04	\$12.21	\$12.37	\$12.52	\$12.67

Figures in thousand

this does not preclude trendiness.

I want to also apologize for not being clearer in terms of transaction costs. If we assume 0.2% commission structure, differential would be different but still positive.

On a lighter note, I also received emails questioning my spelling ability. The site is entitled "Satyrican" and not "Satyricon" for reasons I don't want to delve into. Laziness more than anything.