

SATYRICAN

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

Vol. 1, No. 1

Satyrican.Tripod.com

August 3, 2003

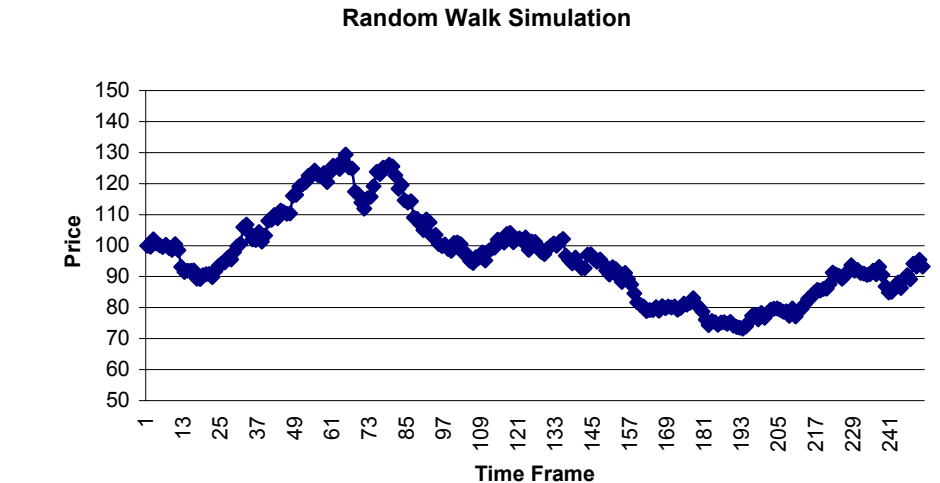
Thoughts Galore

Perhaps no other set of theories (or to be correct, hypotheses) engender more admiration and contempt than does the Efficient Market Hypothesis (EMH) and its interchangeable brethren, random walk model. Those who admire their rationale and implication are of separate camp from those who express contempt. The two camps rarely, if at all, gel together.

Why such dichotomy? Even those who have been marginally exposed to the financial markets would consider this a rather absurd question. On one camp are the befittingly named random walkers, namely economists, whose interest is to *explain* the financial market. To them, the random walk model best *approximated* and *described* the financial engine.

On the other camp, we have the practitioners in the form of stockbrokers, asset managers, traders and their likes. To them, their *job* is to prove their value-added ability to decipher bad investments from good investments. If markets follow a random walk model, their job would be decree unnecessary.

One of the largest coups from the practitioner camp comprises of techies whose investment strategies are based heavily or partially from technical analysis. Technical analysis is the study of historical prices to make future investment decision. This runs counter to the “softest” form of EMH: weak-form EMH. Succinctly stated: the study of historical price time series will not yield excess profit.



We can easily imagine the intense debates and ad hominem repartees between the random walkers and techies. Volumes of work disputing the claim of technical analysis are countered with an equally voluminous volume of work advocating it. It might come to some as a surprise: the random walkers have the upper hand as of this writing. That is not to say, however, that a consensus has been reached. Far from it, the recent bursting of the Nasdaq bubble gives the techies another argument at their disposal.

While the debate rages on, what has hardly been mentioned is the possibility of mutual inclusiveness between technical analysis and random walk. Is the idea of the two *coexisting* something we overlook? How does one go about answering such a perplexing question?

The vogue method is to look at actual data; however, the caveat of this approach is that it would only serve to disprove or approve technical

analysis – a determinant of mutual exclusiveness and not inclusiveness. Moreover, in order to test if random walk and technical analysis can coexist under this approach, we must pinpoint time series that definitively exhibit randomness – a hard request in of itself. Are markets completely random? A consensus has yet to be reached. Some has even postulated that markets dynamically *become* efficient from a previous state of less efficiency. In any case, pinpointing actual randomness is a daunting feat.

What I posit to do instead is to run a simulation “laboratory” that mimicked the workings of the random walk and then to test the desired mutual inclusiveness. This would avoid the aforementioned problem of pinpointing actual randomness, i.e. I would be manufacturing randomness instead. My plan is as follows: First, run tons of random walk simulations; second, test technical analysis profitability on

each simulation; and third, summarize results.

Using excel, I “manufacture” a price series for a hypothetical security. The time frame used is 250; we can interpret each time frame as a year, a week, a day, an hour, or even a minute. The unit of the time frame is irrelevant; this is just a simulation after all. The expected return for each time frame is randomized with mean of 0 and standard deviation of 0.027 (this number is based on S&P standard deviation from a random sample, if we changed this number, the conclusion would remain the same). What I have is a random walk without drift. Thus, in front of me is a price series that should have neither upward bias nor downward bias. Obviously one simulation would be of no use for analysis (small “sample”). Instead I run 1000 simulations (the previous graph depicts only one simulation). Intuitively, I would have 1000 random “samplings” of simulations.

The analysis part is kept simple for argument sake. For each simulation I collect three profit numbers: Buy/Hold Profit, SimpleSignal Profit, and CrossOver Profit. Hence, I have 1000 samples for *each* aforementioned three profits.

Buy/Hold Profit is simply the profit of buying at $T=0$ and selling at $T=250$. It’s the profit that would be garnered if markets follow a random walk model. It will also serve as the benchmark whereby the other two profits would be compared to.

SimpleSignal Profit is the profit derived from buying at $T=t$ if the 20-Day moving average is above the 30-

Day moving average. Short otherwise. Moreover, “portfolio” is rebalanced every time frame. For instance, we would buy at the price of $T=2$ and exit at the price of $T=3$ if the 20-Day moving average is above the 30-Day moving. Note the moving average excludes the price at $T=t$, thus no accusation of forward looking. The lengths of the moving averages were more-or-less arbitrary picked. It happens also to be two of the most commonly used moving averages. We can think of SimpleSignal as a no overnight, entry on yesterday close, exit on today close strategy.

The CrossOver Profit is basically the profit from receiving a long signal at $T=t$ if the 20-Day moving average *crosses* above the 30-Day moving average, and correspondingly a short signal if the 20-Day moving average *crosses* below the 30-Day moving average. However, the “portfolio” is *not* rebalanced at the end of the day; this is equivalent to a moving average crossover strategy. Also note that the “portfolio” is always in the market (equivalently no “cash” position). For example, when a buy signal is triggered we would exit the previous position and go short simultaneously. We can think of this as swing trading.

SimpleSignal Profit and Crossover Profit will serve as indicators of technical analysis profitability.

From a random walk perspective, all three profits

should yield approximately the *same number* – uniformity of profits. They should not be different or we would long on the strong strategy and short the weak strategy – resulting in excess profit.

The result, however, show variant profits across the board. SimpleSignal Profit and CrossOver Profit easily outperform the benchmarked Buy/Hold (See Table). Buy/Hold yields on average -21%, while the aforementioned two technical analysis strategies yield 0.82% and 0.45% respectively. Note that the standard deviations of all three profits are practically identical. Thus the profits from technical analysis did not entail additional risk.

From a birds-eye perspective, commission costs would not adversely affect the results. Note the significant difference between the SimpleSignal and Buy/Hold and that between CrossOver Profit and Buy/Hold. Of course we would have to assume institutional cost structure.

Taking a step back to summarize: running a random walk simulation and applying the most rudimental technical analysis rule (moving average crossover), we would earn excess profits. The results are encouraging for technical analysis. What it says is that in the backdrop of random walk, technical analysis should

Random Walk					
	Buy/Hold	SimpleSignal	CrossOver	(SimpleSignal-Buy/Hold)	(Crossover-Buy/Hold)
Average	-0.21%	0.82%	0.45%	1.03%	0.66%
Deviation	1.00%	0.96%	0.97%	1.32%	1.28%

Random Walk with Drift					
	Buy/Hold	SimpleSignal	CrossOver	(SimpleSignal-Buy/Hold)	(Crossover-Buy/Hold)
Average	15.73%	3.34%	3.68%	-12.39%	-12.06%
Deviation	0.57%	0.49%	0.52%	0.55%	0.56%

still exhibit profitability. You can indeed have random walk and technical analysis, coexisting side by side!

But hold on you might inject, what about random walk with drift. To those unfamiliar with drift, random walk with drift is the same as random walk except the mean is no longer zero. To address this problem, I rerun the same simulation but instead of using zero as average return, I use 0.000671 as the drift (the number is taken from the S&P daily average, we could pick any number in its place). The results are now reversed. The Buy/Hold significantly outpace the other two strategies (See Table).

So does this preclude the merits of using technical analysis? Hardly. Assume that we are able to replicate two portfolios. One portfolio is the simple Buy/Hold. The other is that of SimpleSignal. If we go long on the portfolio Buy/Hold and short portfolio SimpleSignal, we would earn excess profit to the tune of 12.39%. If we factor in margin and borrowing cost, we would still come out with positive excess profit. The differential between Buy/Hold and Simple Signal is a whopping 12.39%, and that between Buy/Hold and CrossOver is 12.06%.

Thus, even though random

walk with drift implies that the random walk portfolio would outperform technical analysis portfolios, we can still use technical analysis to earn excess profit by replicating portfolios. This is equivalent to “fade” a bad strategy and to long the strong strategy. In this case, technical analysis turns out to be the short candidate.

Keep in mind: we can only conclude that technical analysis does not yield excess profit *if* all three profits are *identical*. If they are not and the differential adjusted for cost is significant, we would have excess profit. In the case of random walk, technical analysis outperforms; and in the case of random walk with drift it underperforms. But the profits are not identical, and that’s the crux of the argument.

Rounding up what we have so far: in either case of random walk without drift and random walk with drift, technical analysis would yield excess profit. Thus the argument that technical analysis and random walk are mutually exclusive should be called into question.

The millionaire dollar question now becomes how do you explain the mutual inclusiveness? Simple, trends.

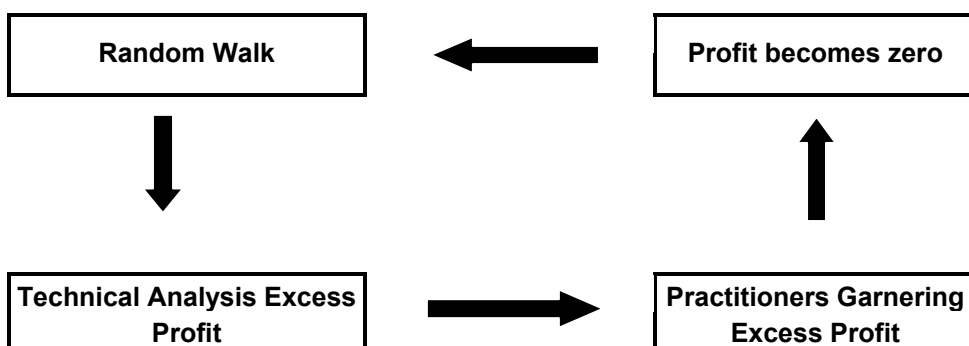
Random walk exhibits trendiness. It’s a foregone

conclusion that random walk models are prone to trendiness. Here’s an illustration: take the game of flipping heads and tails. If we assign heads as negative one and tails as positive one, and graph the time series of the value of the tosses, we are likely to see some trendiness. This is tantamount to saying that we’ll observe more tails than heads at some point and more heads than tails at some other point. On the same note: observing three, four, or five heads in a row would be also expected.

The Efficient Market Hypothesis deals with value and not trendiness. Simply stated: the basic premise of EMH is that security prices reflect available information or value. It, however, does not address the issue of trendiness of a random walk. Tomorrow prices might reflect all relevant information but that does preclude it from some form of trendiness.

Technical analysis is not value-oriented. Its focus is not on the price conditional on information set but rather the price sequence itself. When asked about the basis or the underlying assumption of technical analysis, value is never an answer. *Technical analysis might work simply because of random walk trendiness.*

The ensuing and dangling question, I am pretty sure all readers are asking, is if excess profits are available than wouldn’t practitioners like vultures scoop them up to the point where profits are essentially zero? Perhaps, let go through the argument one at a time. First, according to the simulation result: in the present of random walk, technical analysis



would yield excess profit. This intuitively would lead practitioners to enter the foyer and to wash away the profit until its zero. If excess profit were zero then the market would consequentially follow a random walk. But as the simulation shows, with random walk we could still garner excess profit via technical analysis. Hence, a circular logic flow. How can this be?

The first accusation is that the simulation results are simply wrong. If this accusation were correct, the initial assumption would break down and hence no circular logic flow. I disagree with the accusation, the setup is exactly as if the financial markets followed a random walk. There are no unexpected biases in the simulations. The simulations are completely random and the profitability is present.

We have to look elsewhere to answer the question. The culprit is simply the erroneous assumption that practitioners will drive profit to zero. In order to drive profit to zero, they must somewhat affect the price sequence. But that's not possible considering that markets are already random. There is no state of super randomness. In other word, the practitioners' investment decisions will not affect the price sequence regardless of size if market is already efficient. For example, if John Baker place an huge order to buy security XXX at $T=10$ when the 20 moving average crosses above the 30 moving average, does his investment affect the price at $T=11$? Answer No, if market were random, the return at $T=11$ would be randomized.

Another unsettling question you might be pondering is why does the relationship between the random walk profit and technical analysis profits varies inversely once we introduce drift? As noted above, technical analysis profits under drift are not excess, i.e. Buy/Hold outperforms. This is due to the upward bias by assumption of drift. The price sequence is most likely to go up since the average "daily" return is positive. However, in the midst of upward bias, technical analysis would at least yield *some* sell signals. No matter how strong the upward bias, the 20-Day moving average is bound to cross under the 30-Day moving average *at some point*, thus causing a short position *even* though the price might be going up!

Thus we would expect that *on average* the differentials between Buy/Hold and the other two strategies to be positive. By the same token, technical analysis has to underperform: leading to excess profit by manufacturing a long Buy/Hold portfolio and a short technical analysis portfolio.

Note that in all instances (drift or no drift) technical still yield profits (not necessarily excess profit). Also note that under the drift assumption, technical analysis yields are *better* than under the assumption of no drift.



Weekly Harbor

Last week lackluster performance could be a possible harbinger, as markets showed little willingness to adhere to the bull side.

The equity markets are again showing two facets. On one facet,

economic reports have been quite favorable. The most prominent of which were the strong GDP numbers that outpaced even the some of the most optimistic expectation. The other facet, however, reared its ominous head, as the market failed to respond as expected: A late Thursday sell-off set a tone of caution rather than optimism. Even if we allow for the fact that markets have already discounted the impact of GDP, I find it hard to believe that the discount was *that* engraved. The GDP numbers, simply put, were outstanding. Business investment grew 6.9% in the second quarter, an impressive leapfrog from negative to positive territory.

But the market simply did not respond.

On Friday, caution gave way to pessimism as mixed employment numbers knocked the indices down – easily eclipsing Thursday gains. Although better-than-expected unemployment rate was a relief, the decline in nonfarm payrolls caught the markets attention more so than the former. In the backdrop, the ISM index, despite gapping pass the 50 threshold, edged lower than consensus number. The workings of market discounting are apparent.

Looking at the bond market, it's a forgone conclusion: the bond market is in a midst of turmoil. In particular, the higher end of the yield curve had been hit hard. In addition, on Thursday, we witnessed one of the sharpest widening of swap spreads – a big omen of disaster to come. Like the old say: if it widens it can't be good. Following suit: mortgage rate jumped a quarter point in the last week alone.

Coupled with the recent strengthening of the dollar, talks are beginning to center on inflation and even the unspeakable possibility of stagflation.

The market perverse reaction is indicating possibly a point of inflection. There is no longer the lingering doubt of a recovery; the topic at hand is the possible *halt* of the recovery. The object of concern is consumer spending. Although consumer spending had been vigorous for the past several years, people are questioning its sustainability.

With long-term bonds in the beginning of perhaps a bear market, mortgage rates are likely to shoot upward. Undoubtedly, this would lead to reduced housing-linked consumption. This could be a possible trigger to a recession if other areas do not pick up.

The wild card as usual are the Fed, who have stated that they're willing to do what is necessary to bring long-term rates down until the economy is *definitively* on its strong side. The credibility of the Fed and Greenspan, however, is a problem. Traders' reaction to Greenspan's recent speech attests to this fact. The question being

asked is how and more importantly *when* will the Fed jump in? Seems to me that the Fed is playing the waiting game. Until then, long-term rates are poised to shoot up.

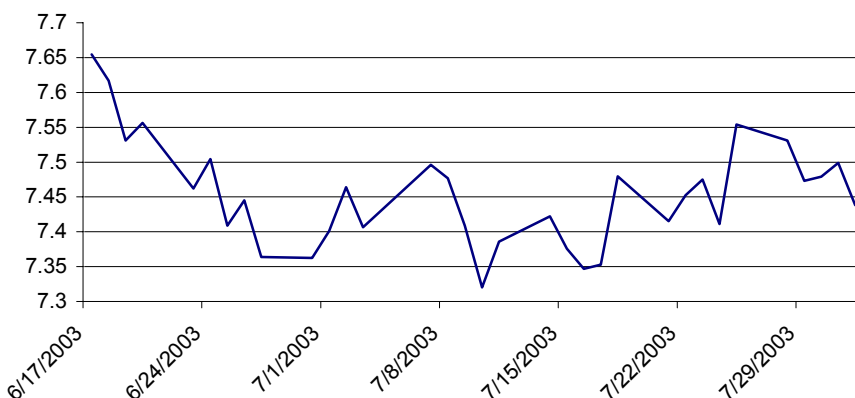
Unemployment numbers also called into question the sustainability of consumer spending and hence the recovery. Employment numbers are notorious lagging indicators, but "mixed" results – as we witnessed on Friday – is an indication that the recovery might be short lived. Housing-linked consumption, depreciating dollar, and favorable fiscal policy have jumpstarted the recovery. The depreciating dollar and fiscal policy are fleeting stimuli. And with housing market

possibly retracting, the economy must have *other* stimulus to fall back on. Investors are hoping the revival of the job market would fuel consumer spending to weather the other two fleeting stimuli. So far that hasn't been the case. Mixed is not what we're looking for.

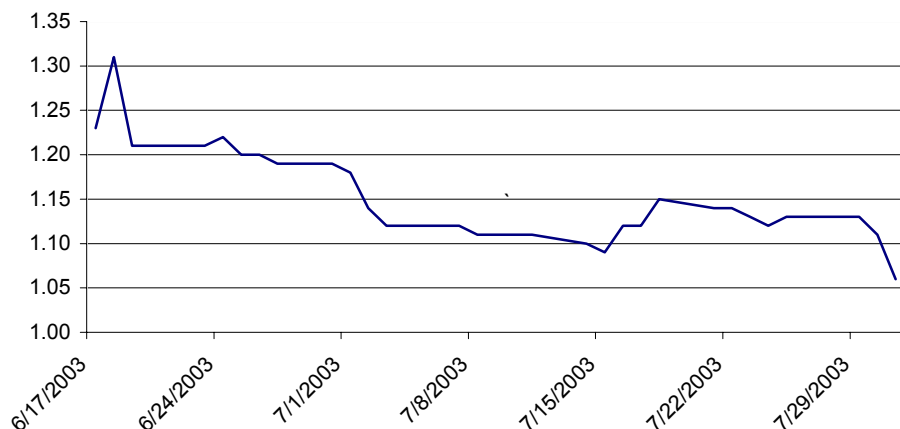
Despite corporate spending picking up, the concerns for the weakened job market is justified. More and more companies are opting to outsource employment. Thus although expenditure has picked up, labor has not. Undoubtedly, one of the harps from the bear camp is that favorable earnings have been the result of favorable fiscal and monetary policy more so than demand. In other words, earnings are profit margin focused and not revenue focused. In sum, unless the job market picks up, consumer spending (and the duration of the recovery) is destined one way or another to take a hit.

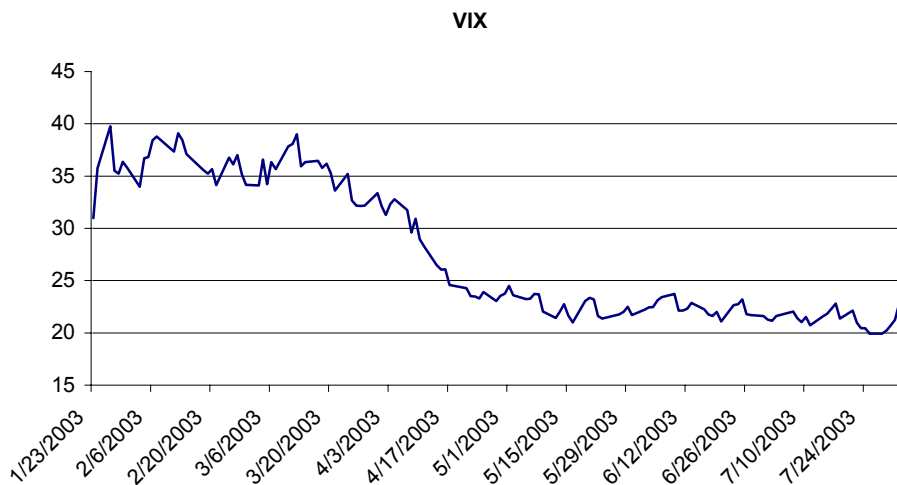
Despite this ominous outlook, it will take *awhile* to manifest itself. To me, awhile means two to six months. In the meantime, the next two weeks doesn't seem too shabby. Beginning of the month is usually very favorable –

(Nasdaq-Dow) Spread



(BAA-AAA) Spread





even with August infamous tag of being a “bummer month.”

Looking towards next week: I see the indices edging *higher*. The Nasdaq-Dow spread was in an uptrend last week signaling some speculative appetite albeit modest. Cisco’s earnings if favorable would jumpstart this week off on the bull track; considering the plethora of better than earnings release, this scenario is probable not possible. The continual drop in the seasoned BAA-AAA spread, however, is a signal of lessening speculative appetite. But the BAA-AAA spread is more indicative of next *month* trends than next week trends. Lastly, the VIX is bounded in a range. A possible outbreak to the upside would be deadly (threshold: 25). I am betting that it would not. VIX will probably edge lower this week.

I am expecting the market to continue to be two-faced in upcoming months. The economy will continue to show sign of recovery. But the market would not respond as favorable; moderate gains will give way to a possible correction. As noted above this is contingent on the labor market. My gut feeling says

we’re due for some bad times ahead.

● Cash City

SBC Communications made headline last week as it filed suit to stop court orders that seek to track down Internet users who might be involved in illegal distribution and acquisition of music. What went mostly unnoticed was SBC edging up on Friday, closing up 0.17% as the broad sector tanked hard on the nose of employment numbers and the possibility of a workers’ strike at Verizon Communication.

This divergence begets a couple of questions. Is SBC in midst of a bounce back after second quarter earnings drew more grunts than glee? And on the same page: will SBC be the next Dog of the Dow? My gut feeling is that it will not pan out this way, at least not in the long run. Intuitively, pricing war and open competition will be the norm in the communication service arena, not only in the near future but also further down the line. Translation: poor profit margin and low revenue growth.

Of course intuition does no good (or harm for that matter) unless backed by solid numbers. Running a seven-year forward-looking cash flow analysis coupled with some *very* generous assumptions, we would find SBC’s upside very limited.

Going back to 2002 fiscal year, we’ll jot down revenues of \$43,138 million and operating profit of \$8,623 million as starting points. Let’s assume that SBC’s revenue grows at a *constant* 7.11% clip over the seven-year span – the same growth rate from 1999. It’s relatively safe to say that SBC future projections does not justify this assumed growth rate; in other word, SBC is not forecasting PreBubble conditions any time soon. SBC’s recent increasing of dividend payout further confirms this view. Free dividend usually acts as a weak buffer and / or as a silent overture of stabilizing projection.

Profit margin will be slated as a constant percentage of 19%. Recent June earning release actually suggests a declining profit margin without any hint of a reversal. But we’ll take the optimistic road. In addition, tax rate will tune in at the rate of 30% (historically it had typically ranged from 32.2% to 34.6%). Again we’re taking the optimistic road.

Fixed capital as a percentage of revenue is assumed to be at 13%, well below the standard normal. For kicks, working capital as a percentage of additional revenue will chime in at the rate –13.3%. Let nonoperating assets and nonoperating debt cancel out each other. Note: pension costs and employee stock

options are effectively on the sideline.

An inflation rate of 2% is assumed in our forecast. The perpetuity-inflation model, which we're using, assumes implicitly that SBC has pricing flexibility at the level of inflation. However, SBC has yet to show sign of pricing flexibility in the midst of current low inflation ambience. I don't expect that to change in the future – heavy competition should keep this assertion in tact. Thus the inflation rate assumption is also a favorable one.

In terms of cost of capital, we'll assume 8%. The ballpark figure for telecom services is around 11%. The use of the more optimistic 8% is for emphasis. Additional note: implicit in this assumption is a relatively low inflation expectation as reflected in the low cost of capital.

As you can see from the accommodating table, the calculated "fair" value of SBC on

a cash flow basis is \$27.46. As of this writing the stock is quoted at \$23.40, a paltry 13% discount from our optimistic calculation. Fiddling with the numbers to reflect more reasonable assumption (ex. revenue growth at 3%) would yield a fair value well below \$23.40. The stock, based on cash, has little upside.

Short is in order.

● Author's Note

In Thoughts Galore, I intentionally use random walk model and EMH interchangeably for the sake of simplicity. The difference between the two is small and for the most part trivial.

Readers wishing to replicate the simulation results or just to fiddle around are more than welcome to do so. The two files are randomwalk.xls & randomwalkdrift.xls and can be downloaded in the Download

Section.

Likewise, the SBC cash flow analysis worksheet is located in the Download Section: SBC.xls.

And lastly, feel free to drop me a line at Satyrican@lycos.com.

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Revenues	\$43,138	\$46,205	\$49,490	\$53,009	\$56,778	\$60,815	\$65,139	\$69,770	\$74,731
Operating Profit	\$8,623	\$8,779	\$9,403	\$10,072	\$10,788	\$11,555	\$12,376	\$13,256	\$14,199
Less: Cash Taxes on Profit		\$2,634	\$2,821	\$3,022	\$3,236	\$3,466	\$3,713	\$3,977	\$4,260
Net Operating Profit After Tax		\$6,145	\$6,582	\$7,050	\$7,551	\$8,088	\$8,663	\$9,279	\$9,939
Fixed-capital investment		\$6,007	\$6,434	\$6,891	\$7,381	\$7,906	\$8,468	\$9,070	\$9,715
Working-capital investment		<u>-\$399</u>	<u>-\$427</u>	<u>-\$457</u>	<u>-\$490</u>	<u>-\$525</u>	<u>-\$562</u>	<u>-\$602</u>	<u>-\$645</u>
		\$5,607.94	\$6,006.66	\$6,433.74	\$6,891.18	\$7,381.14	\$7,905.94	\$8,468.05	\$9,070.13
Free Cash Flow		\$537	\$576	\$616	\$660	\$707	\$758	\$811	\$869
Present Value of Free Cash Flow		\$497	\$493	\$489	\$485	\$480	\$476	\$472	\$468
Cumulative Value of Residual Value		\$497	\$990	\$1,479	\$1,964	\$2,444	\$2,921	\$3,393	\$3,861
Present Value of Residual Value		\$96,055	\$95,228	\$94,409	\$93,596	\$92,790	\$91,991	\$91,200	\$90,415
Corporate Value		\$96,552	\$96,219	\$95,888	\$95,560	\$95,235	\$94,912	\$94,592	\$94,276
Add: Nonoperating Assets		\$3,567	\$3,567	\$3,567	\$3,567	\$3,567	\$3,567	\$3,567	\$3,567
Less: Debt and other Liabilities		-\$3,567	-\$3,567	-\$3,567	-\$3,567	-\$3,567	-\$3,567	-\$3,567	-\$3,567
Shareholder Value		\$96,552	\$96,219	\$95,888	\$95,560	\$95,235	\$94,912	\$94,592	\$94,276
Shareholder Value Per Share		\$28.12	\$28.03	\$27.93	\$27.84	\$27.74	\$27.65	\$27.55	\$27.46

Figures in million