

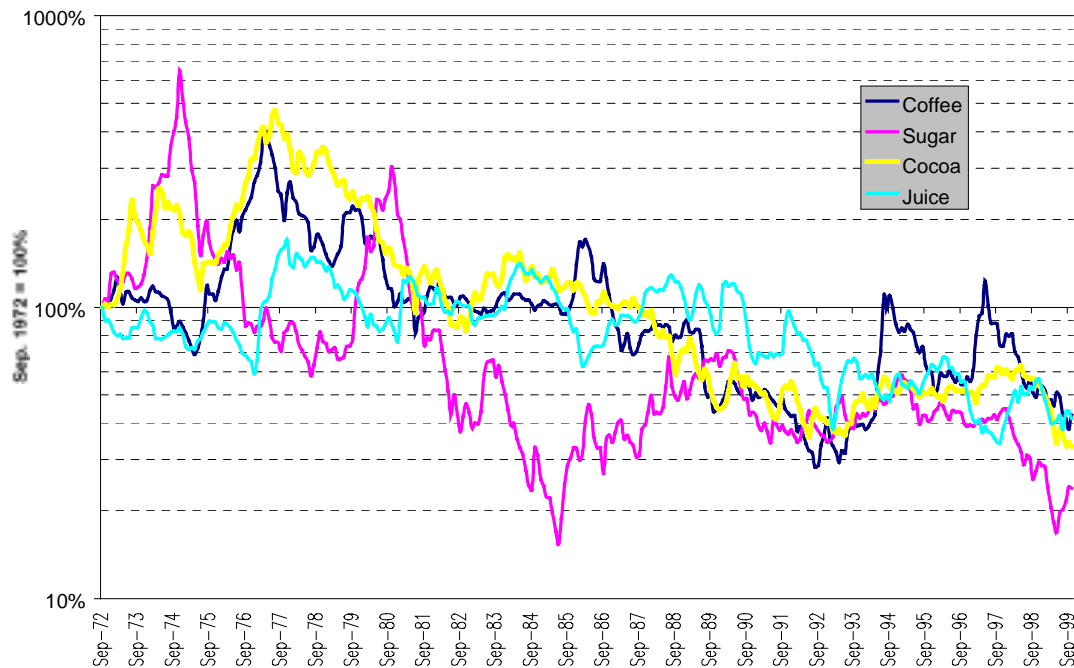
## KC And The Sunshine Band

Napoleon Bonaparte, who was always short, exploded “Damn sugar! Damn coffee! Damn colonies!” in frustration over the Haitian rebellion in the opening days of the nineteenth century. So anxious was he to get out of the commodity business he unloaded the Louisiana Purchase on the U.S. for a scant \$15 million, a better deal for us than anything available on Le Web at the time.

The group of commodities produced in tropical and subtropical climates, coffee (KC), sugar (SB), cocoa (CC), and orange juice (JO) have been busy producing Waterloos ever since. Their huge chart gaps, hairpin reversals, high option volatilities, and often-thin markets have made a mockery of the concept of price changes following a continuous lognormal distribution with stable volatility, the underpinnings of the original Black-Scholes model.

The violent price action also has served to hide a grim reality for the producers of these commodities: The real price of these commodities has been falling, with minor and short-lived exceptions for twenty years, as seen below. Incredibly, during the entire decade of the 1990s, only one of these markets, coffee, ever saw real dollar prices as high as those seen in September 1972, and then only briefly on just two occasions. Why? Producing nations can increase their revenue over time only by increasing their production, and advances in agricultural productivity are likely to increase supply faster than population-linked advances in demand.

Real Dollar Price Index For Softs

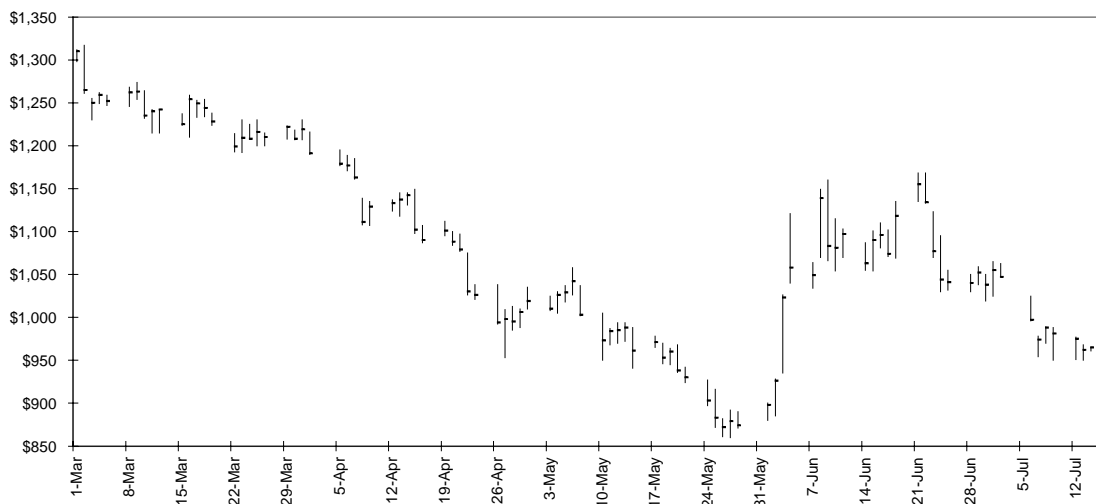


More important, however, the terms of trade for producing nations such as Brazil, the Dominican Republic, or the Ivory Coast simply are destined to deteriorate. This is obvious at the extremes; a computer manufactured in 2000 is orders of magnitude more productive than one produced in 1960, but how has the productivity of sugar changed over this period? We actually could argue sugar's productivity has declined as it has faced substitution pressures from high-fructose corn syrup and artificial sweeteners. We've gone to war over higher oil prices; would we ever do so over higher cocoa prices? Price of orange juice just went up? Don't sit in the mud and cry about it, go find something else to drink.

### One Foot Out The Door

Bear market rallies, much like bears themselves, can be vicious. While grinding bear markets reward short positions over time, we always have to be prepared to not only exit quickly, but to exit and reverse to a long position. This is always a most difficult maneuver to execute, especially if it involves taking a loss on the initial short position. Consider the July 1999 cocoa contract. The market had been sliding continuously to multiple-year lows by the end of May, when suddenly and without warning, Ghana announced that it had completed its cocoa sales for the crop year. A market which had settled at \$878 on May 28 reached \$1,121 on the morning of June 4. Did we mention that the July options expired on that very same June 4, a fact that, fortunately, probably had no bearing on the Ghanaian announcement? Investors who would shudder at the notion of trading bonds against, say, the Federal Reserve are still willing to trade soft commodities against state marketing boards. P.T. Barnum would be proud.

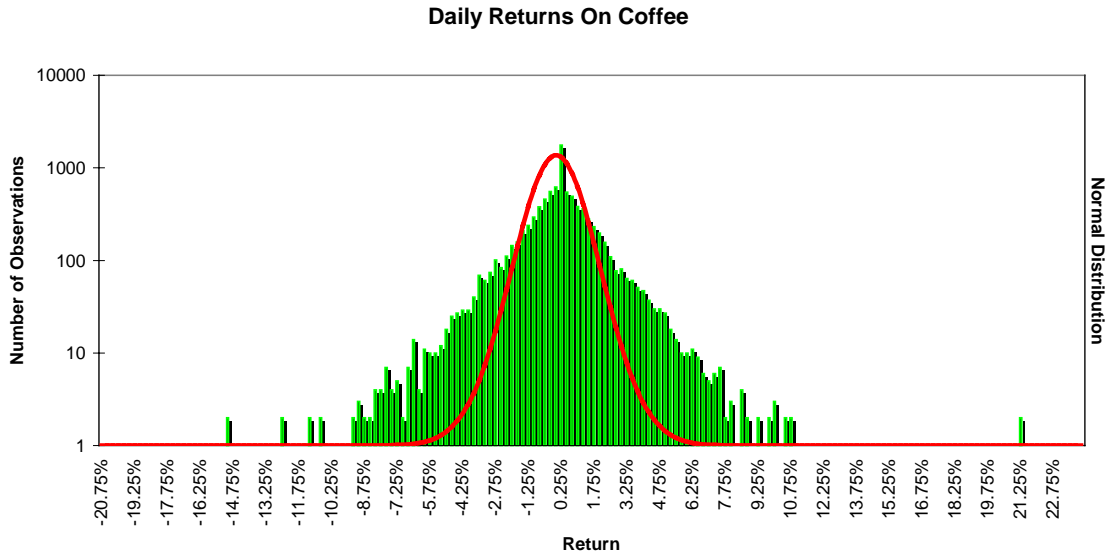
July 1999 Cocoa



### Espresso, Double Grande

Moves of this magnitude are common in soft commodities. We can take a very long history of price returns on coffee and compare them to an expected normal distribution. Coffee has a much greater than expected number of daily returns, both higher and lower, in excess of normal. The reputation of coffee as a commodity with strong “trend” days in which momentum just keeps building in one direction, is well-justified.

Trend days, large ranges, and high volatility are characteristic of a market with both inelastic supply and demand curves. Money may not grow on trees, but coffee does, and this restricts the potential supply response to any crop shortfall, real or perceived. If coffee demand was price-elastic at all, would we be as plagued by yuppie-infested, overpriced java joints as we are?



### Two Lumps, Many Bumps

While we're on the issue of markets living up to their reputation, we should test whether the sugar market is as choppy as it often seems. Judging from the inflation-adjusted price data displayed in "Real Dollar Index," sugar must be capable of putting some moves together in a long trend, but we have not seen an actual trend in this market for years. A trend can be defined as a greater than expected probability of a positive price change being followed by another positive price change, or a negative change followed by another negative change. We can calculate the expected number of "runs," or changes in sign, by the following procedure for a sample with N observations:

1. Calculate the sample's expectation, E, for runs, R:  $E = (N/2)+1$
2. Calculate the variance in the sample's expectation for runs:  $Var = (N-1)/4$
3. Calculate the actual number runs; unchanged days in the middle of two identical price changes should not be counted as a run.

Now, calculate a Z-statistic:

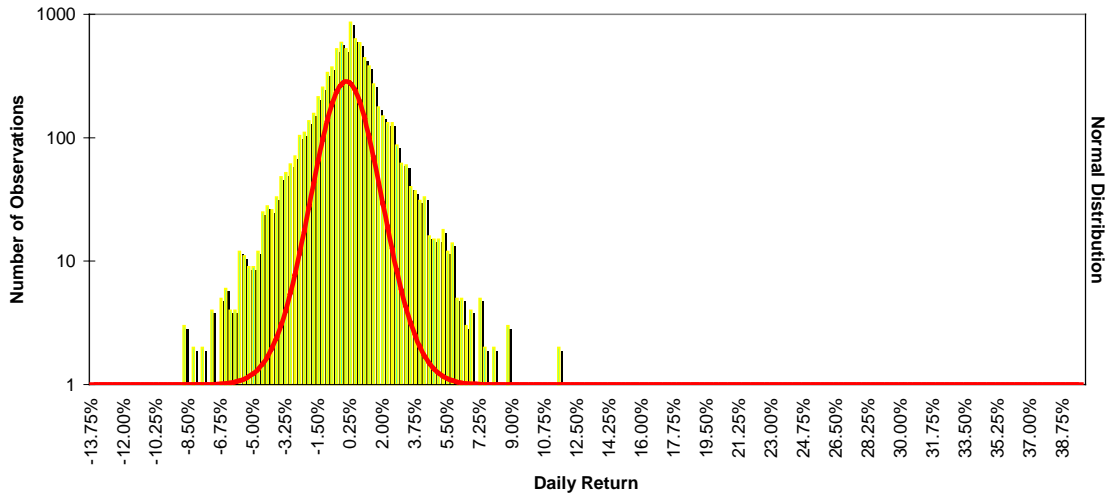
$$Z = \frac{R - E}{\sqrt{Var}}$$

For sugar, we had 4,664 runs out of a sample of 9,547 daily changes. The resulting Z-statistic, -2.26, means there is less than a 1.19% chance price changes in sugar are not randomly distributed. While this does not dictate the floor will always run stops in the opposite direction after a big price move in sugar, it is consistent with the hypothesis.

### Waiting For The Wrecks

Oh, sure you can watch an auto race and claim you're not there for the crashes, but isn't that like claiming to appreciate pro wrestling for its droll humor? The all-time commodity market champion in this regard is orange juice, which often trades as if it were the original weather derivative (see "A Matter Of Degrees," *Futures*, June 1999).

### Distribution Of Orange Juice Returns



The distribution of returns is not only skewed heavily to the right – a coefficient of 1.91 -- but it is also bunched very heavily to the middle: Either there's a buying panic, or nothing happens. Since the market recognizes this lopsided distribution of outcomes, volatility is both very high and skewed toward higher strikes in the winter months, as seen below:

March 2000 FCOJ

Settlement Price: \$0.9255

Strike	Volatility
\$ 0.70	38.71%
\$ 0.75	37.30%
\$ 0.80	37.93%
\$ 0.85	38.69%
\$ 0.90	38.41%
\$ 0.95	41.64%
\$ 1.00	45.26%
\$ 1.05	49.43%
\$ 1.10	52.55%
\$ 1.15	54.56%
\$ 1.20	56.07%
\$ 1.25	58.96%

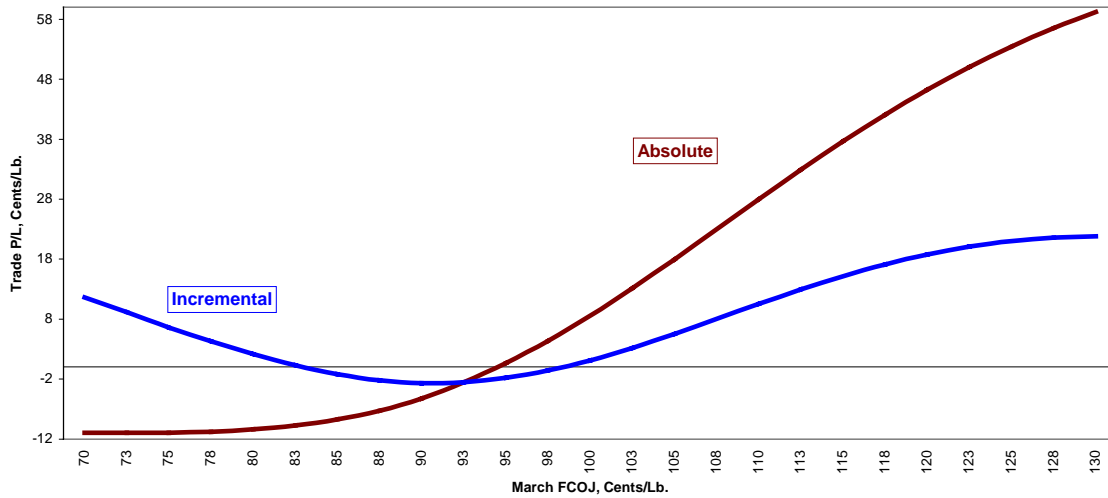
If you want to take a crack at buying out-of-the-money call options, get in line and be prepared to pay, because no one in his right mind is willing to sell them at a normal volatility. We can defeat this, however, by employing the following Dynamic Option Selection System trade for the equivalent of buying ten March 2000 futures(DOSS, see "In The Library," below):

**Buy 28 March \$0.95 puts at \$0.08 and sell 28 March \$1.25 puts at \$0.341**

This bull put spread has several advantages over its competitors, not the least of which is it allows us to sell the high in-the-money volatility and buy the lower at-the-money volatility. It is leveraged to the upside, and while its gains are capped at the \$1.25 level, the orange juice market rarely has punched through this level since 1992. And, of course, its risk is limited on the downside. The expected profit profile of this trade and its incremental advantage to the base

case of simply buying ten futures contracts are shown below for January 24, 2000, near the end of the freeze season.

DOSS Trade: Expected Absolute & Incremental Returns



### The Shape Of Things To Come

Exchange-traded futures and options are becoming less important in the world of risk management; this has long been true in currencies and interest rates, and it will become even truer in the smaller and simpler soft commodity markets as well. As commercial players shift their trading toward so-called exotic options, the role of futures will change toward residual risk management. It will be incumbent upon all futures traders, small speculators included, to understand how these OTC instruments operate and how they will affect the pricing of futures. To that end, we will explore that world over the next few months.