

## A Rooster Market In Chickens - For Now

Americans eat far more chicken than beef, about 82 pounds versus 69 pounds per capita, so it is high time Wall Street updates its idiom and starts referring to an uptrend as a rooster market. And if New Jersey's "shoot-a-bear-today" campaign sweeps across the nation, we will have to revisit that side of the equation as well.

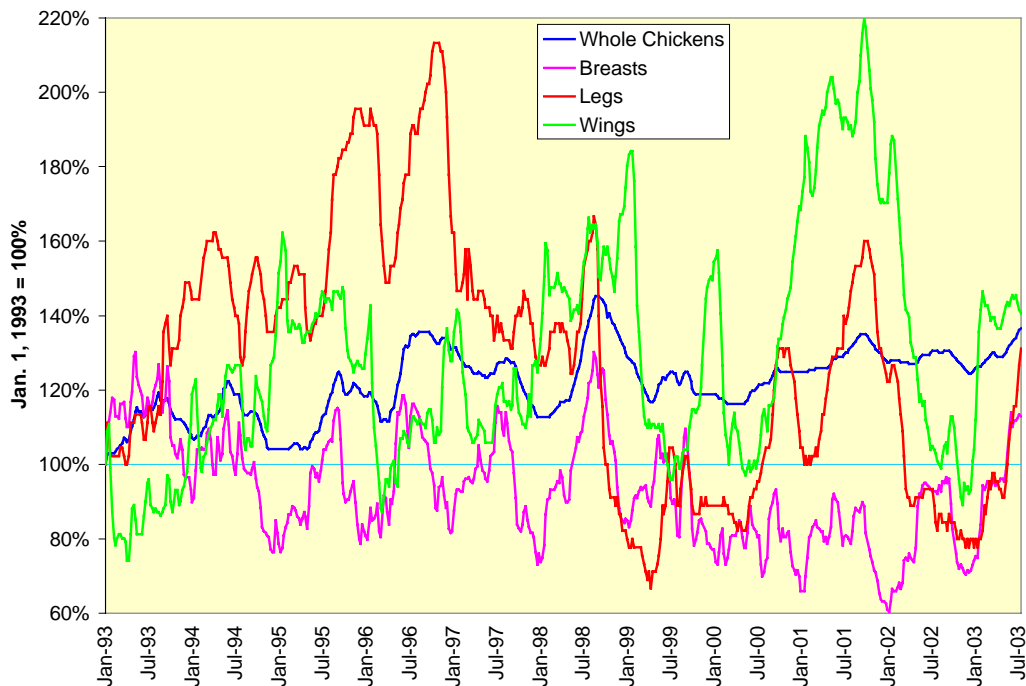
As is always the case in market analysis, the price tells the story. The price of whole birds packed in ice at the Georgia dock (commodities are not pretty) has risen 8.9% so far in the year 2003 AD (*anno deflati*). Let's see which firms are benefiting or being hurt by this trend, and while we are at it, let's take a statistical stab at answering the question as to which moves first in price, the chickens or the eggs.

A word of caution before we begin: It is virtually impossible for an individual to trade either chickens or eggs directly. The Chicago Mercantile Exchange, which began as the Chicago Butter & Egg Exchange, has tried a broiler chicken contract twice with no success and no longer trades eggs at all. That part is too bad: The old-timers always had great stories about getting caught in delivery with 30,000 dozen fresh eggs headed your way.

### All Fowl Is Divided Into Three Parts...

... Which no doubt is what Julius Caesar meant to say at the start of his *Gallic Commentaries*. The price volatility of chicken parts - the breasts, legs and wings - is far greater than the price volatility for the whole birds, with the legs and wings being far more volatile than the breasts and more than three times as volatile as the whole birds. It is common for other process spreads, such as the crude oil crack spread or the soybean crush spread, to have differential volatility, but nothing this extreme. This is due to the perishable nature of the traded commodity - fresh chickens, by definition, cannot be stored for very long - and to the lack of appropriate hedging mechanisms.

### The Whole Is Flatter Than The Parts



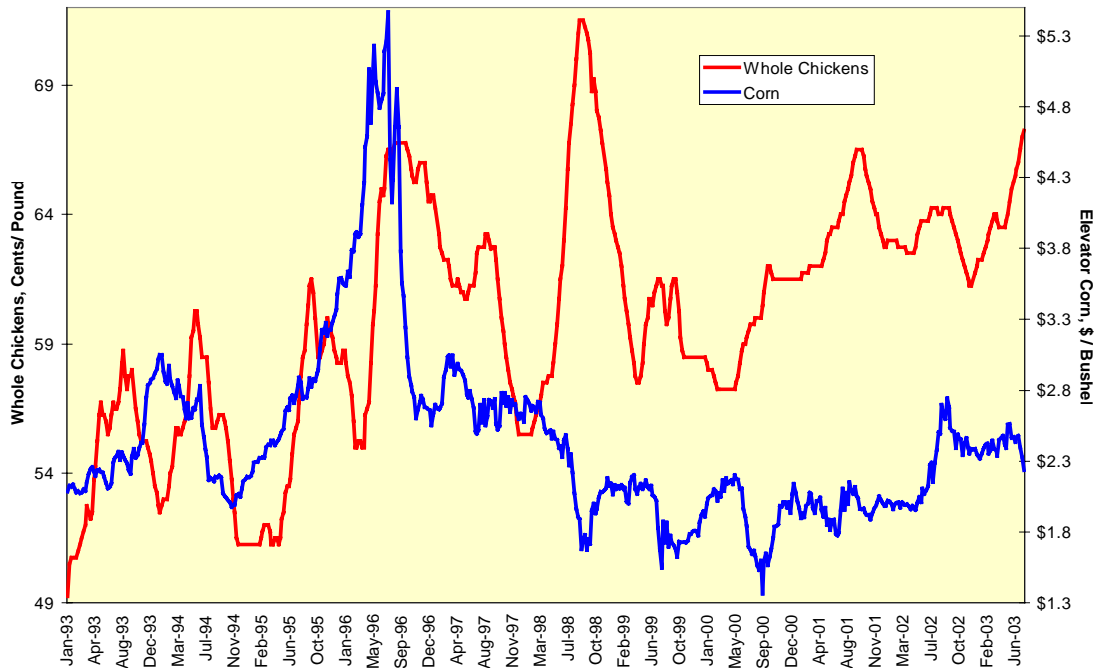
The volatility is evidence of very inelastic supply and demand curves. If Yum! Brands' KFC division needs legs for its various buckets, they need to bid the price higher. On the other side, every chicken is going to yield two wings, and if Buffalo wings fall out of favor at happy hour, what are you going to do with them?

Poultry producers face a problem not seen by their counterparts in, say, the petroleum refining business. The price of heating oil or gasoline can surge and yield call option-like profits for the refiner. If the price of one of those products starts to collapse, however, the refiner can cut back on production without affecting later production. A

poultry producer cannot cut back on production without affecting either the existing flocks or the quantities of eggs and chicks.

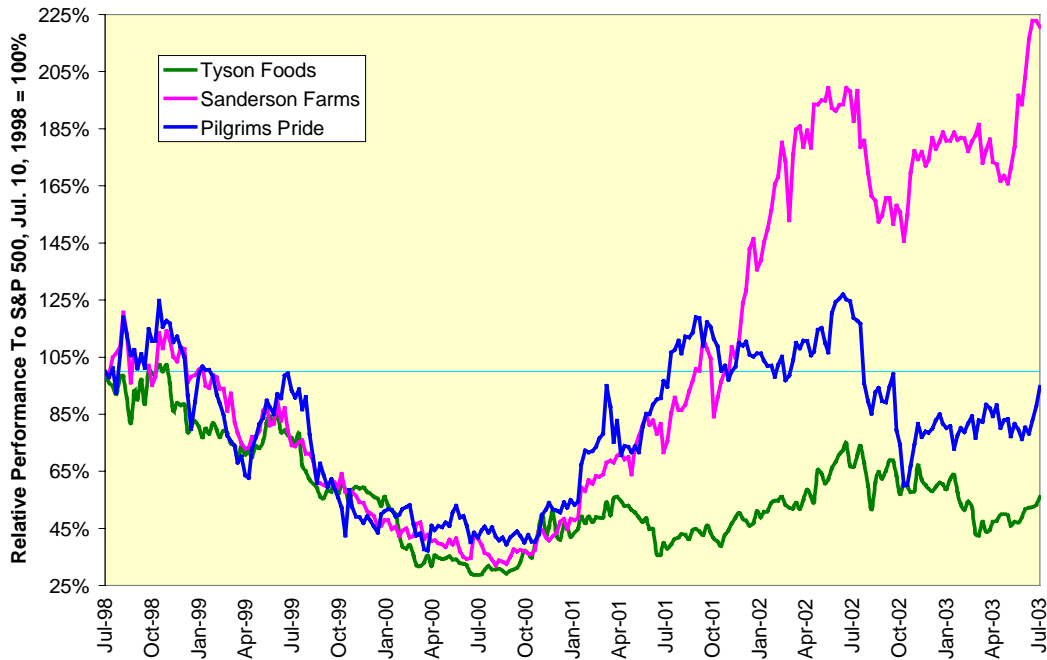
This phenomenon can be illustrated with the one bull market in corn over the past decade, that of early 1996. As the cost of feeding chickens rose to an uneconomic level, flocks were liquidated once existing corn inventories were drawn down. The price of chickens fell into 1998 - yes, the Asian crisis reduced export demand - as did demand for corn. Predictably, the price of chickens shot higher in late 1998, while the price of corn fell. The present low and falling price for corn, soymeal and other feed components should lead to lower chicken prices within two years.

The Corn Cycle



Their profit profile, therefore, contains an embedded put option as they are subject to the big product price drops, and this makes them a surprisingly risky asset with highly variable outcomes within the industry. Over the past five years both Tyson Foods and Pilgrims Pride have underperformed the S&P 500, while Sanderson Farms has outperformed the S&P 500 by more than 120%. If you like the idea of buying the strong and selling the weak, a matched pair trade between Sanderson and Tyson could be just the thing for you.

## Not Birds Of A Feather



### The Big Question

The answer is and always has been the egg preceded the chicken. How can I be so definite? The new and successful genetic mix that constituted the chicken had to exist first within the egg, and not in either the male or female progenitor. Two non-chickens passed on the code for the proto-chicken, which then existed first in the fertilized egg from that union. The opposite course could not be, as it would imply a new species arising from the egg of a different species.

That was easy; now on to the statistical test. Egg prices are really pretty volatile compared to whole chicken prices for all of the reasons noted above regarding chicken parts, and the two markets do bear some vague correlation to each other. But which causes - using the same Granger causation test used to decide whether [stocks or bonds](#) are the "smarter" market. We can say X causes Y if the past values of X can be used to predict Y more accurately than simply using the past values of Y will be used. In other words, if past values of X statistically improve the prediction of Y, then we can conclude that X "Granger-causes" Y.

The data explain the confusion. While lagged values of chicken prices explain 99.1% of their current values, and a similar "autoregressive" model for eggs explains 81.8% of current egg prices, neither market explains the other very well. Lagged chicken prices explain only 0.5% of current egg prices, and lagged egg prices only 1.2% of current chicken prices.

#### Autoregressive

Chicken	Eggs
99.1%	81.8%

#### Cross

Independent	Dependent	
	Chicken	Eggs
Chicken	1.2%	0.5%
Eggs		

So, here's a case where a philosophical response is clearer than a statistical response. Now if we could just get a handle on that whole chicken crossing the road thing, we could all live in peace at last.