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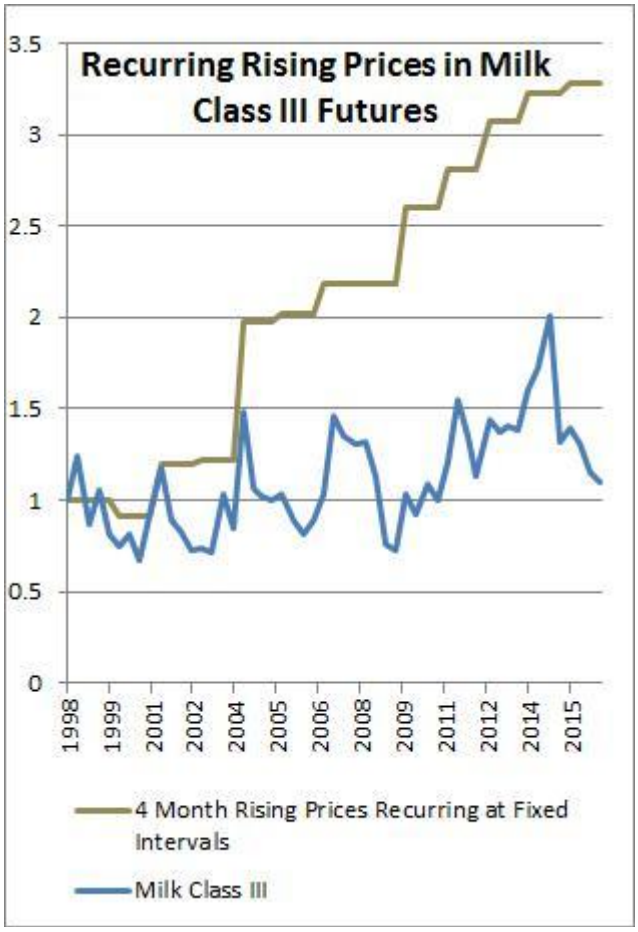
Forecasting Milk Class III Price Action

23 March 2017

Executive Summary



Graph: 4 month periods of rising prices in Milk Class III recurring at fixed intervals

In June 2016 Milk Class III prices hit a seven year low of USD 13.22 cwt. This was followed by an 18% gain over the next four months. This appreciation is part of a recurring pattern of price rises in milk taking place at fixed intervals. Since 1998 there have been 13 of these periods, all but the first successful for an average return of 19%.

No known factor can account for regularity of the pattern. Traditional forecasting of Milk Class III prices relies on the assessment of external factors such as supply and demand expectations and levels of government support. Neither these nor seasonal changes can account for the pattern.

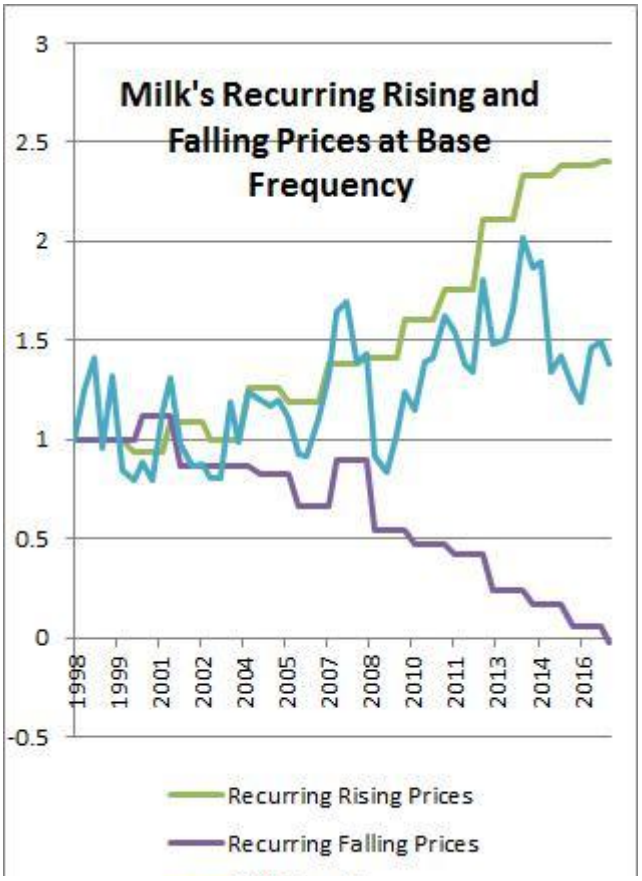
Instead we suggest the fixed recurring periods of price rise are the result of milk's internal structure. We have found that markets, including other commodities, currency and equities are like elements in the Periodic Table in that they all share a common structure and that variations of that structure give rise to the particular qualities of a given market.

Further exploration of Milk's internal structure reveals other fixed patterns of rising and falling prices in harmonic and Golden Mean proportions to each other. This provides a new basis for producers and traders to establish the direction of future prices.

Milk's Base Frequency

A key component of a market's internal structure is the base frequency at which it operates. This frequency is fixed – a market does not deviate from it. It is the stability of the frequency that gives rise to the regularity of periods of rising and falling prices. For Brent Crude the base frequency is around 11 months. Milk III has a longer base frequency of 16 months.

Within this 16 month cycle milk has a back-to-back structure of four months of rising prices immediately followed by a 4 month period of falling prices. This pattern has taken place 12 times since 1998. Simply trading this pattern would have produced an average return of 14% a year with a maximum cumulative drawdown of -24%.



4 month periods of rising and falling prices at Milk's 16 month base frequency.

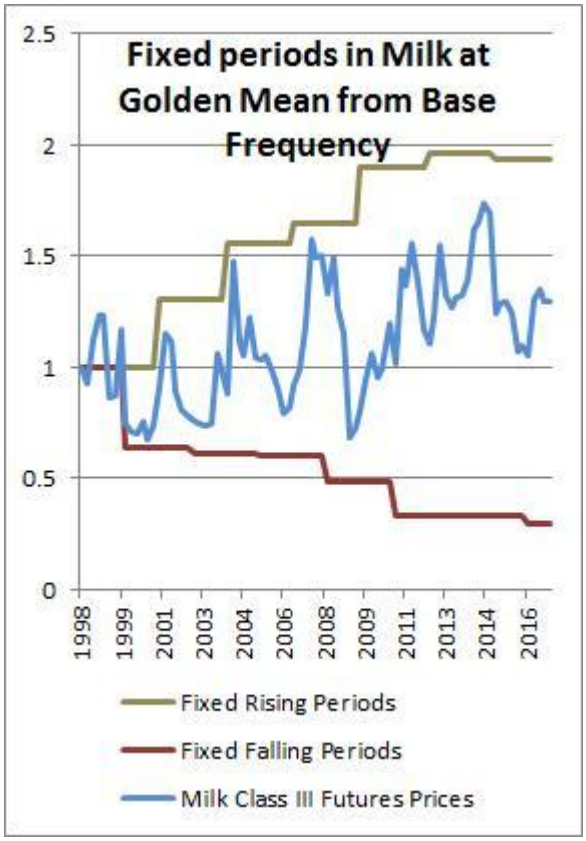
Results of fixed 4 month pattern of rising and falling prices in Class III Milk

	Trades since 98	Wins	Average Return	Drawdown
Rising Periods	13	10	10%	-8.5%
Falling Periods	14	11	9%	-24%

Natural Systems

Other fixed recurring patterns are also visible in milk prices. These occur in harmonic and Golden Mean proportions to the base frequency.

Photo: Examples of the Golden Mean in Nature



Periods of rising and falling prices in Milk III at Golden Mean ratio to the base frequency

The Golden Mean, or 1.618 is the proportion responsible for the evolution of complex systems at every scale in nature from sea shells to galaxies. Its presence as a key feature of recurring price patterns in markets such as milk suggests that markets are structured along similar natural lines.

Milk's base frequency of 16 months divided by the Golden Mean of 1.618 gives a second frequency of 10 months. At this frequency a second set of rising and falling prices occurs. Since 1998 the average gain for the rising periods has been 15% and 11% for the falling periods.

Returns from Fixed Recurring periods in Golden Ratio to the base frequency of Milk III

	Trades since 98	Wins	Average Return	Drawdown
Rising Periods	6	5	15%	-2.9%
Falling Periods	7	7	11%	0%

Fixed Periods at Harmonics of the Base Frequency

Harmonics are frequencies either double or half the base frequency. For milk halving the base frequency to 8 months produces a further fixed pattern.

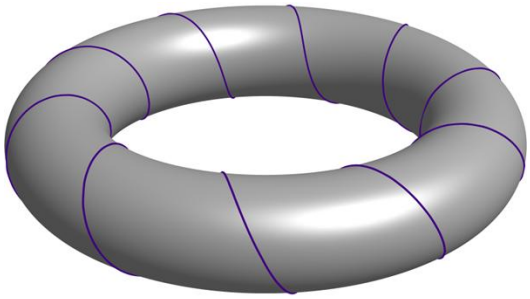
Recurring periods of rising and falling prices at half the base frequency in Milk Class III future prices

	Trades since 98	Wins	Average Return	Drawdown
Rising Periods	13	10	15%	-2.9%
Falling Periods	12	9	7%	-11%

The rising periods of the 8 month frequency occur just prior to the rising periods of the 16 month frequency. When combined they give the recurring pattern of price rises averaging 19% per period outlined in the Executive Summary.

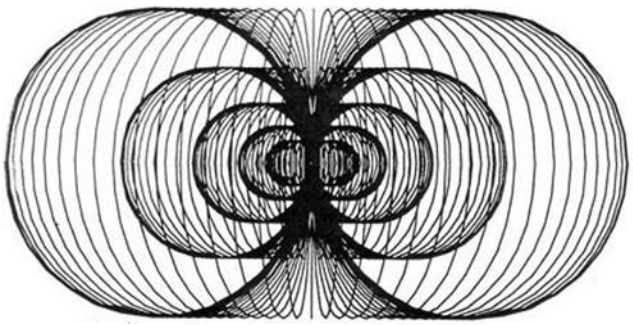
Why Do these Patterns Exist?

The model I have developed suggests the structure of a market is that of a torus or donut. The torus rotates at a constant rate which is seen in price action as the base frequency.



A torus with a single filament winding through the centre multiple times.

The cause of the periods of rising and falling prices is due to the torus being composed of filaments. Like wires these filaments wind themselves around and through the centre of the torus. Some of these filaments are electrically charged. In the case of Milk III a positively charged filament lies next to a negatively charged filament. Hence we see the recurring periods of rising prices followed by falling prices.



Multiple tori. Is this how markets are structured?

The presence of similar patterns to those found at the base frequency at harmonic and Golden Mean intervals I believe is due to the presence of multiple tori in these proportions to each other. This may be similar to the way

atoms have electrons orbiting in different shells around the nucleus.

Summary

Milk Class III futures prices display periods of rising and falling prices that recur at fixed intervals. The next 4 month period of rising prices is set to begin before the end of 2017. There are no known external factors that would create this behaviour. Instead I suggest that the periods are the result of the market's internal structure. This structure, analogous to the atomic structure of elements of the Periodic Table, is shared by all markets. Variations to the structure give rise to a market's unique characteristics. The timing of these fixed periods provides additional information that can assist in forecasting milk prices.

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