

# **Calendar Effects in the London Stock Market: A menologic perspective.**

Ronald Giles  
Business School,  
South Bank University  
Borough Road  
London SE1 0AA  
England  
e-mail:gilesr@sbu.ac.uk

## **ABSTRACT**

This paper considers lunar calendar effects as an alternative to the solar year. Released from solar time constraint, we are able to offer a new focus on the pattern of human behaviour recorded in stock market charts. The psychology of a recreated monthly effect is pursued. Long-term patterns are reconsidered by constructing a Fibonacci spiral calendar in terms of lunation. The timing of the lunar calendar provides an explanation of when and why solar calendars succeed and fail.

### **1. Introduction**

Calendar effects in stock markets have been a long-standing problem for finance economists. Predictable anomalies become uneasy partners with the efficient market hypothesis. The anomalies are often explained away when any economic significance gained, is lost in the transaction costs and higher risk. The study of calendar anomalies has been widespread, Thaler (1987a&b), Mills et al(1995), including day of the week, the trading month and the holiday effect. Longer term effects are not covered in the academic literature, but is covered in Schwartz (1998). Kindleberger(1989), Mackay(1841), consider the how panics and manias arise. These long term phenomena could also be considered part of a calendar effect if linkage could be established between calendars of different intervals.

The current reasoning behind the short-term effects is extensive Mills et al (2001) but the coverage (Schwartz) is limited. The lack of a general theory to explain such phenomena is the motivation behind this research. A comprehensive theory is explored in this paper based on the menology or lunar perspective. This has been researched by Carolan (1992) in the form of a spiral calendar and Katrzejff(1981). The characteristics of a crowd are unconscious actions and become substitutions for the conscious activity of the individual. It is the unconscious actions that can

cause great change as individuals are required to modify their perceptions. Carolan associated crowd activity especially emotions of the crowd with the lunar effect. A deeper meaning is extracted from the different phases of the moon (Katzeff).

## **2. Solar Calendars**

Unlike the US(December), the strongest month in the UK stock market is January. This is not unique to London, Tokyo has the same effect. On average prices rise 76 per cent of the time. The significant difference in monthly accounting can be contrasted against the average highest and lowest month. Hence only  $2/3^{\text{rd}}$  of the returns can be expected from an average May investment compared with an average January. Statistically significant differences are in direct contrast with the efficient market hypothesis. As logical extension, one would expect some of the average best days of the year to fall in January, but this is not the case. Only one January day is ranked in the top 10 best days, entering at 6<sup>th</sup>. January also has one of the ten worst days of the year. Hence either the variation is so large to dismiss the solar calendar effect or the solar approach is inappropriate. Further investigation in the average best day list illuminates the problem. Five of the average best days occur in December. However, the probability of an average monthly December rise is 17 per cent less than January. The large daily December rises are not randomly spread over the month but occur in the last 9 days. Considering at least 2 days in that nine the market is closed for the Christmas break, this is an important departure from the monthly effect based upon the solar calendar year. The low rises at the beginning of December mar its performance. December 4<sup>th</sup> is the worst performing stock market day in the solar calendar year. The long-term average relationships are not static and in the last 30 years the relative December performance has been improving. Hence knowledge of a probable event can cause changes in investor behaviour to occur. Such behavioural changes can alter the underlying pattern of events. December do events appear to have effects on January outcomes. Rises in the FT non financial Index of over 4 per cent during December have a 93 per cent success rate of continuing during January with an average increase of 3.26%. A 3.75% rise in the FT all-share index in December will have a positive January effect 90 per cent of the time. Taking a wider perspective, a 2% uptrend in the last 3 months of the year combined with any rise in the last 12 months is associated with a 90% probability that January prices will rise. The average January price rise under such conditions was 3%. The "January effect" on the rest of the year is legendary, 'as January goes, so goes the year'. Including January's performance in the yearly total loads the dice. Prices rise on average 64 %

of the time from February to December. If January prices fall by more than 3%, the probability of a rise during the rest of the year falls by 2/3rds. January price changes between -3 to +3% boost the rest of the years' price probability to 74%. Rises beyond the 3% rise have a detrimental affect. The odds are even of a further rise during the rest of the year. A theory to support such phenomena seems problematic. January activity associated with pension-related activity or the cluster of year-ahead forecasts producing such outcomes is unlikely to produce the observed effect on the rest of the year.

A longer-term perspective of calendars is well documented in the literature. However, the motivation behind the differing long cycles has no common thread. The link between any monthly effect and longer-term phenomena is yet to be established. A 4/8/11/20/58 year view of the stock market would appear to have no common micro roots. At best the theories of determination of the solar calendar cycles are intertwined.

### **3.Lunar Calendar.**

Stock market sayings do not only relate to the solar calendar (so as January goes, the rest of the year follows). A number of calendars are based on the moon, especially new and full moons. The moon phases are often benchmarked from solar reference points such as the winter solstice or the equinox. Hence buy on Rosh Hashanah and sell on Yom Kippur is an often used stock market adage. In the Jewish calendar, the new moon near the spring equinox marks the first day of the first moon of the year. The Jewish calendar was borrowed from the Babylonians.

Lunations are often related to emotions and thus are ideally suited to activities in the stock market. A view held by market technicians is that markets and stock prices are not moved by fundamentals, but by market sentiment. Anecdotal evidence from luna effects are wide ranging from sporting contests outcome, to lunacy itself. More compelling evidence from Chronobiologists report that the natural time unit of the human clock is 24 hours and 50 minutes, the same as a lunar day.

The link between the luna year 354 (based on 12 lunations) and the solar year 365.25 on first sight is untenuous. However, the fibonacci numbers resulting in a ratio ( 0.618) = provides a link.

Hence the solar year = 13 - lunations.

If we consider the January price rises and falls for the 1990's decade, we find there were 7 rises and 3 falls. These odds can be improved by starting each period not on January 1<sup>st</sup> but on the first new moon after the winter solstice. Appendix 1 provides a list of new moon to new moon

dates starting after the winter solstice. The earliest starting date in that decade becomes 22<sup>nd</sup> December and the latest 19<sup>th</sup> January. It is no coincidence that two of the three falls in the decade can be corrected by moving to a lunar start after the winter solstice. A more comprehensive study over a longer term based on the available London share index is found in table 1.

Table 1  
Based on Solar Calendar

Decade	Ave January price change %	number up	number down
1920-29	2.19	8	2
1930-39	-0.29	5	5
1940-49	1.85	10	0
1950-59	.91	6	4
1960-69	1.96	8	2
1970-79	5.93	7	3
1980-89	5.69	9	1
1990-99	6.88	7	3
Average change	3.21	75%	25%

Based on Lunar calendar

Decade	Ave cancer lunar month price change %	Ups	Down
1920-29	3.12	8	2
1930-39	0.18	6	4
1940-49	2.35	10	0
1950-59	1.24	7	3
1960-69	2.20	8	2
1970-79	6.11	8	2
1980-89	5.81	9	1
1990-99	7.11	8	2
Average	3.52	80	20

The results in table 1 show the improvement from switching from a solar based to a lunar based system. The out-performance was only the best solar calendar month. A 9.6 per increase in the average January was experienced as well as 5 further January rises compared with the solar

calendar method. The menogolistic approach matched or outperformed the solar approach in every decade.

June and July are weak months in the London stock market calendar. Whilst no fundamental reason can be given for such a performance. Indeed most investors are thinking of vacations. But the lunar approach gives a possible solution. The summer solstice occurs during this period. Taken together with a full moon, the falls in the London market tend to line up. Carolan recommends a new moon for rises and a full moon for falls combined with solar activity.

#### **4. Spiral Calendar**

The long-term view concerning large rises and falls can be continued with the same thematic approach. The FTSE 100 started in 1984. For longer data series, the FT30 index started in 1935. From 1926 to 1962 the London Investors Chronicle compiled an industrial index. Prior to this, The British Banker magazine compiled an index from 1919-1924. Carolan shows that synesty existed between the 1929 and 1987 stock market crashes. The dates do not match up on a solar calendar but they do on a lunar count. This count is part of the fibonacci number series. The Hang Seng crash in 1997 contained the same lunar characteristics. It is the lunar count or spiral calendar that will assist us in a longer-term cyclical analysis. Carolan found that the Fibonacci number system brought a solution to the link between the 1929 and 1987 stock market crashes. The vague notion of a 58 year cycle is replaced with a 717 moon count . The 29<sup>th</sup> Fibonacci number is 514229 and the square root is 717. Upon this basis Carolan built a compelling theory of lunar action. Given that  $\frac{\sqrt{5}-1}{2} = 4/$  , the results have more implications than at first thought. The ratio of the height of a pyramid to half its base is . However it is the spiral calendar that is of interest in this research. Square rooting results in two additive sequences. One spiral turns outward clockwise producing a right-handed spiral. This spiral moves backwards in time from the focus. A left-handed spiral has the units in time spiralling forward. Most arithmetic systems are have a unified sequence ie regular reaping intervals.. However, the spiral calendar moves in a logistic sequence. This is also known as nature's growth function.

Hence a sequence of 717 moons (57.9 solar years) would be preceded by 563.75 moons (45.6 years) and succeeded by 912 moons (73.7 years) in a left hand spiral. The back ward spiral, more common in nature has a difficult concept to accept. The future concept focus determines the present events. Hence we are observing stock market history backwards

However, for certain events to occur in the future building blocks are in place before hand. The base point for starting a spiral has similar problems to that of index numbers. Is the base is wrong the whole series that follows will be affected. The 1929 stock market fall seems an appropriate base. The story of the fall for our purposes is different from the evidence in stock market history. The October crash started with a small correction on May 31<sup>st</sup> 1929 and finished in 1932. We have therefore chosen the former as our base point. Adding F22(see appendix 2) brings forward the time to May 1940. The stock market low was caused by the imminent expectation of a German invasion of the UK. Caradon mentions the Spiral calendar "skipping beats" and the next coincident low is F24. This is the October low of 1946 when the post war austerity programme was fully realised. Rationing was more severe than during World War II. A slight fall occurred in June 1957, aligning with the F25 spiral. The memorable falls in the UK is the 1970 stock crash that finished in late December 1974. The F28 spiral coincides exactly with this major low, as does the F29 coincide exactly with the 1987 fall. As the spiral unwinds the time interval increases. The F30 low has yet to come. Technical analysts are setting out their strategies in terms of falling levels to penetrate. What they lack is the timing. Adding the 73.7 years or 912 moons to May 31<sup>st</sup> 1929 base gives a predicted low on February 10<sup>th</sup> 2003.

If this is an appropriate target then a backward spiral might explain some of the recent lows. Subtracting F14 from this target centres on the September 11th fall. However, the forecast is one month too early but this is when the fall in London started. The September 1998 low is missed by this method, but the September 1997 low, the first consolidation since 1992 is captured exactly with F19. The testimonies bear out that the spiral calendar based on logarithmic growth play an important role in stock market forecasting.

## **5. Conclusion**

The justification for a reassessment of the calendar effect based on solar activity is overwhelming. Unequal days in the month, holidays and other factors will affect the recorded performance. The literature has spent considerable time on certain months such as January because of its inconsistency with efficient markets. Justification has been found for such anomalies considered. For other months that have other anomalies, there has been a deafening silence. The link between the monthly effect and long term effects has not been considered. The notion that they are not linked seems extraordinary. We have presented a basis for linking all periods with a constant theme based on lunations. The idea of forward and backward forecasts is not palatable to most forecasters. However.

future outcomes resulting from current decisions is quite plausible. Future work on this spiral calendar will be to generate spirals from each low or high and from technical buy and sell signals that are produced in technical trading systems.

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## Appendix 1

First new moon after the winter solstice, 1990-1999. The new moon is always in the constellation of Capricorn.

15<sup>th</sup> January 1990- 14<sup>th</sup> February 1991  
4<sup>th</sup> January 1992 - 3<sup>rd</sup> February 1992  
4<sup>th</sup> January 1992- 22<sup>nd</sup> January 1993  
24<sup>th</sup> December 1993 - 22<sup>nd</sup> January 1994  
1<sup>st</sup> January 1995 - 30<sup>th</sup> January 1995  
20<sup>th</sup> January 1996 - 18<sup>th</sup> February 1996  
9<sup>th</sup> January 1997- 7<sup>th</sup> February 1997  
29<sup>th</sup> December 1998- 28<sup>th</sup> January 1999  
17<sup>th</sup> January 1999 - 16<sup>th</sup> February 1999

## Appendix 2

Extracts from the Spiral Calendar

F <sub>n</sub>	Moons	Years
F14	19.4	1.6
F15	24.7	2.0
F16	31.4	2.5
F17	40.0	3.2
F18	50.8	4.1
F19	64.7	5.2
F22	133	10.8
F23	169	13.7
F24	215	17.4
F25	273	22.1
F26	384	28.2
F27	443	35.8
F28	564	45.6
F29	717	58.0
F30	912	73.7