'Today is a 7': A Test of Investing using Astrology

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Abstract

Researchers continue to discover, and to try to explain the underlying causes of, market anomalies. Astrology is a system many people use to predict the future, and to guide their choices; it has an ancient pedigree and a wide popular following. Astrological methods have also been applied to stock picking, and there are numerous websites and how-to guides available to plot one's detailed horoscope in order to improve trading, or to apply astrological expertise directly to companies to offer insight into their strategy and future prospects. This paper examines whether there is an economically significant 'astrological' effect for stocks; in particular, does knowing a company's astrological sign lead to better portfolio returns. Findings indicate that a company's sun sign, by itself, does not differentiate the behavior of stock returns in an economically useful way.

Introduction

Financial markets do not always adhere to the efficient markets model, and numerous market anomalies have been discovered and widely demonstrated across a variety of markets. Seasonal patterns are particularly common, and weekend, turn-of-the-month, end-of-December, monthly, daylight savings, full moon, and Halloween and Friday-the-thirteenth effects have been found both in US and foreign stock exchanges. Anomalies related more particularly to mood (pre-holiday periods, sunny days, sports events) have also been reported as economically significant. While apparent regularities can be the result of data-mining and selection bias, researchers continue to discover, and to try to explain the underlying causes of, market anomalies.

Astrology is a system many people use to predict the future, and to guide their choices. It has an ancient pedigree and a wide popular following. Most major newspapers carry a horoscope column, and characterizing an individual's behavior according to their sun sign is commonplace in popular culture. Many horoscopes attempt to advise on optimal choices, indicating when it is a good time to move, shop, make major decisions, and the like. For instance, the Chicago Tribune rates each day on a numerical scale ('today is a 7'), with 10 being the best day for action, a 0 day the most challenging. Astrological methods have also been applied to stock picking, and there are numerous websites and how-to guides available to plot one's detailed horoscope in order to improve trading, or to apply astrological expertise directly to companies to offer insight into their strategy and future prospects.

Is there an economically significant 'astrological' effect for stocks? This paper tests whether knowing a company's astrological sign can lead to better portfolio returns.

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Literature Review

The US stock market has been subjected to numerous tests of the efficient market hypothesis. One particular area of study has been the discovery of regularly occurring anomalies in stock returns, ranging from the day-of-the-week (now, weekend) effect (French, 1980; Gibbons and Hess, 1981; Keim and Stambaugh, 1984), through the turn-of-the-month (Ariel, 1987) and the January effect (Thaler, 1987, Haugen and Lakonishok, 1988). Some of these calendrical anomalies have been linked to other market anomalies, like the small stock phenomenon (Keim, 1983), and to institutional factors like window dressing and tax-loss selling (Ligon, 1997).

Still another class of calendrical anomalies relate to behavioral or psychological phenomena, such as the Friday-the-thirteenth effect (Kolb and Rodriguez, 1987; Dyl and Maberly, 1988; Bouman and Jacobsen, 2002; Lucey, 2000), lunar phases (Dichev and Janes, 2001; Yuan, et al, 2001), and differential sunshine (the daylight savings effect (Kamstra, et al, 2000; Boyle, et al, 2002; Boido and Fasano, 2005), and a mood effect (Hershleifer and Shumway, 2003; Kamstra, et al, 2003)). Equity markets, both US and foreign, have thus exhibited unexpected regularities related to time and to psychological factors (Agrawal, 1994; Boyle, et al, 2002).

Applying a slightly different approach to analyzing stock returns according to time and to personal effects, financial astrologers attempt to use the vast array of literature devoted to divining planetary correspondences to human actions to pick stocks and to time market movements (Williams, 1984; Weingarten, 1996; a few representative websites include: http://www.amanita.at/e.htm; http://www.galacticinvestor.com/; http://astroadvisor.com/). Periodically, the general business press will cover some aspect of astrological investing simply because it is such an amusing concept (Tunick, 2002; Hulburt, 1995). Some astrologers focus on the trader, drawing up charts for the individual to use to guide trading decisions, while others focus on the market itself to predict market turns and direction. Still others attempt to link the individual's chart with particular stocks (in the tradition of "Libras and Virgos don't mix' advice seen in daily horoscopes). There has been surprisingly little examination of the claims by these astrologers that they can, indeed, improve performance and predict market movements.

Business disciplines other than finance have, however, attempted to use astrology and to test its validity in various applications. In a 1973 Journal of Political Economy article, Benett and Barth (1973) use sun sign characteristics to predict success in a military career (albeit with little statistical significance). Similarly, Mitchell and Haggett (1997) find that sun signs may indicate useful differences in individual behaviors that can be used for market segmentation, and Mitchell (1995) applies astrological insights to advertising and consumption patterns. Hardin (1995) cites anecdotal evidence that business managers select personnel based, in part, on astrological sign.

Methodology

Astrological methods attempt to find correspondences between the alignment of the stars and planets at the time of an individual's (or institution's) birth, and their comparative orientation in the present, in order to predict cosmic influences on human actions and to fashion appropriate behavior knowing those influences. The idea that human actions are influenced by outside physical forces, and that human characteristics correspond to planetary characteristics, has a long history dating back to Babylonia. A remarkable amount of legend and lore has attached itself to these basic ideas. Indeed, one of the difficulties in pinning down a testable hypothesis is the multiplicity of influences and countervailing forces that can be brought into the astrological picture. For instance, while most people are familiar with their sun sign (the basic astrological sign/constellation name corresponding to the sun's position for the month of the year in which you were born—Taurus = April 21st to May 21st, etc.), there are also moon signs, Venus and Mercury signs, etc., that, it is argued, also influence an individual's destiny. Given the difficulty in applying a complete version of a person's (or stock's) astrological 'chart' (the full mapping of the planets, etc. at the time of their birth), this paper concentrates on the sun sign alone. This is, after all, the astrological characteristic most used by the general public, including those who may be stock investors. To derive testable, objective hypotheses, this paper ignores the relatively hopeless task of evaluating sun sign effects for countless individual traders, focusing instead on applying astrology to the stocks themselves.

The stocks in the S&P500 index, representing large cap, liquid equity investments, are sorted into portfolios according to their astrological sun sign. The date of the stock's initial public offering on a major stock exchange is used as the definition of a company's 'birth date'. Note that an alternative definition, the company's initial incorporation, is also mentioned in the astrological 'literature'. The application of this definition becomes problematic, however, once a company has merged or otherwise acquired another company. There is no discussion in astrological readings regarding which incorporation date should be used for the merged company. On the other hand, a stock, unless re-listed as part of the merger, keeps its original IPO date throughout such company transformations. Stock returns are taken from CRSP. Stocks without 20 years of trading history were eliminated, as were stocks whose IPO date could not be ascertained from the CRSP tape or alternative sources. Two hundred ninety-five stocks remained. Most portfolios had between 21 and 24 stocks: the Cancer portfolio (sun sign = 6/22 – 7/22) has the most stocks, 35, while the Aries portfolio (3/21 – 4/19) has the least at 15.

Portfolio Results

General Characteristics

Summary statistics are given for the returns for each of the 12 sun sign portfolios over the 20-year period 1986-2005 (Table I). Included are also examples of the particular stocks in the portfolio and descriptives for the particular sun sign (from www.dailyscopes.com).

INSERT TABLE I HERE

We would expect that portfolios that are described as 'risk-takers' (Pisces, Aries) might exhibit larger variance than a portfolio labeled 'stable' (Taurus), but that is not the case. Similarly, it is hard to imagine Sears as 'unconventional', or Coca-Cola as 'avoiding conflict'.

Do sun sign portfolios exhibit differential performance? The answer is no: there appears to be no obvious differential between the various sun sign portfolios in terms of their mean returns for the 20-year period.

Do sun sign portfolios differ in other characteristics? Table II shows the results of tests on the portfolios' skewness and kurtosis. As can be seen from the table, most of the portfolios exhibit significant skewness and kurtosis. However, no particular sun sign portfolio stands out as being different from the others in terms of these characteristics.

INSERT TABLE II HERE

'Monthly' returns

Can an investor use sun signs to capture favorable returns during the trading year? Table III shows the mean return for the sun sign portfolios by horoscope 'month' (Aquarius runs from January 20th through February 18th, etc.). If a stock's sun sign can predict, or influence, behavior, then one might expect that a Taurus portfolio might do better than a Virgo portfolio in particular time periods. As Table III indicates, only the Capricorn 'month', running from December 22nd through January 19th, has consistently significant positive returns for any of the sun sign portfolios, and is consistent with a January effect for large cap stocks (sorted by astrological sign).

INSERT TABLE III HERE

Portfolio performance

Does the performance of a sun sign portfolio improve in its own 'month'? In other words, if sun sign influences stock behavior, a 'Taurus" portfolio's return during the April 21st thru May 21st period should be greater than that portfolio's return for the rest of the (non-Taurus) year; the null hypothesis is that the returns are similar.

INSERT TABLE IV HERE

Table IV shows the portfolio returns for a sun sign portfolio's sun sign month versus the other 10 months of the year (the Capricorn month is excluded to avoid the January effect in this test). As the table shows, a sun sign portfolio's return in its own month differs little from its performance for the rest of the astrological year. It does not appear to be possible to earn excess returns by preferentially investing in sun sign portfolios during their particular astrological period.

Summary

Can an investor hope to use astrology to obtain better returns on a stock portfolio? This paper looks at classifying stocks according to the sun sign of their initial public offering date, and using this astrological classification to pick stocks, or to time stock purchases. Overall, a stock portfolio constructed on the basis of sun sign does not differ significantly from a randomly selected portfolio, nor does the sun sign give any indication of when to invest in these stocks for a superior return. While it is true that very few horoscopes give a clear signal, it is doubtful whether a more detailed horoscope, or constructing horoscope charts for individual companies, would be easier to implement or yield more significant returns.

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Table I

Summary Statistics for Sun Sign Portfolios. 1985 - 2005

	Aquarius	*Pisces*	*Aries*	*Taurus*	*Gemini*	*Cancer*
Mean	0.0112764	0.0124916	0.0077471	0.0119192	0.0112314	0.0101038
Standard Error	0.0039621	0.0044578	0.0044025	0.0048497	0.0035223	0.0038825
Median	0.009907	0.0116942	0.0115588	0.0119971	0.0108342	0.0105544
Standard Deviation	0.0613803	0.0690602	0.0682026	0.0751305	0.0545678	0.0601472
Range	0.6095713	0.6963998	0.5651492	0.9401101	0.5495009	0.5549866
Minimum	-0.2594406	-0.2260108	-0.3094905	-0.2524376	-0.2431118	-0.2253083
Maximum	0.3501307	0.470389	0.2556587	0.6876725	0.3063891	0.3296783
Largest(1)	0.3501307	0.470389	0.2556587	0.6876725	0.3063891	0.3296783
Smallest(1)	-0.2594406	-0.2260108	-0.3094905	-0.2524376	-0.2431118	-0.2253083
Confidence (95.0%)	0.0078051	0.0087816	0.0086726	0.0095535	0.0069388	0.0076483
Key	stubborn	vulnerable	daring	stubborn	alert	moody
descriptives	societal	shy	Risk-taker	stable	adaptable	nurturing
	mental poise	unrealistic	energetic	cautious	friendly	sensitive
	opinionated	compassionate	friendly	comfort-seeker	superficial	shy
	unconventional	unstable	careless	deliberate	curious	possessive
	musical	theatrical	impulsive	slow	restless	family-oriented
	rebellious	risk-taker	childish		talkative	
		self-pitying				
Companies	Sears	Snap-On Tools	Eastman-Kodak	TysonFoods	DuPont	Chevron
	Schlumberger	Chubb	ExxonMobil		ConEd	Rubbermaid
	ATT					GE

Table I, continued

	Leo	*Virgo*	*Libra*	*Scorpio*	*Sagittarius*	*Capricorn*
Mean	0.0120137	0.0100576	0.0167565	0.0092807	0.0108827	0.0098746
Standard Error	0.0043945	0.0039625	0.0054049	0.0039629	0.0033794	0.0041514
Median	0.012786	0.0121088	0.0089481	0.0122956	0.0118469	0.0097117
Standard Deviation	0.0680798	0.0613863	0.0837326	0.0613936	0.0523532	0.0643136
Range	0.7284002	0.5780304	0.7630176	0.5468084	0.5020732	0.6460678
Minimum	-0.2538761	-0.2454351	-0.3010777	-0.268667	-0.2561079	-0.291487
Maximum	0.4745241	0.3325953	0.4619399	0.2781414	0.2459653	0.3545808
Largest(1)	0.4745241	0.3325953	0.4619399	0.2781414	0.2459653	0.3545808
Smallest(1)	-0.2538761	-0.2454351	-0.3010777	-0.268667	-0.2561079	-0.291487
Confidence (95.0%)	0.008657	0.0078058	0.0106474	0.0078067	0.0066572	0.0081781
	creative	Helpful	tactful	strong-willed	independent	mature
	generous	practical	objective	secretive	truth-seeker	ambitious
	flamboyant	analytical	lazy	possessive	traveller	responsible
	egotistical	Timid	avoids conflict	vengeful	talkative	designing
	selfish	skeptical	indecisive	investigator	theatrical	patient
	attention-seeker	Finicky	cultural	passionate	athletic	goal-seeker
	optimist	hypocritical	strategist		tactless	traditional
					over-confident	
Companies	PacificGas&Elec	Goodrich	Ingersoll-Rand	IBM	GM	ADM
	Eaton	ThermoElectron	Navistar	Wrigley	Pepsico	Brunswick
			Coca-Cola		Marathon Oil	
			Advanced Micro Devices		Ball Corp.	
					Lowes	

Table II

Skewness and Kurtosis of Sun Sign Portfolio Returns. 1985 - 2005

	Aquarius	*Pisces*	*Aries*	*Taurus*	*Gemini*	*Cancer*
Kurtosis	**7.973747**	**13.184907**	4.4676396	**28.697528**	**7.7003989**	**6.20603**
Skewness	**0.3583264**	**2.0687078**	**-0.353751**	**3.0079737**	**0.4770079**	**0.3819541**

	Leo	*Virgo*	*Libra*	*Scorpio*	*Sagittarius*	*Capricorn*
Kurtosis	**12.164593**	**7.0968419**	**9.6527557**	4.5873826	**5.1606924**	**8.9060628**
Skewness	**1.3828261**	**0.451268**	**1.6284234**	**-0.316864**	-0.171896	**0.6314036**

Skewness and kurtosis significantly different from zero (at 99% level) indicated in **bold**

Table III
Mean returns of Sun Sign Portfolios versus Sun Sign Months

Month

Portfolio	1/20-2/18	2/19-3/20	3/21-4/19	4/20-5/20	5/21-6/21	6/22-7/22
Aquarius	1.81%	1.68%	0.22%	2.11%	0.89%	-1.09%
Pisces	0.87%	1.72%	-0.15%	3.74%	-0.06%	-1.09%
Aries	2.28%	1.66%	1.49%	1.24%	-0.66%	-1.06%
Taurus	0.92%	2.30%	0.65%	1.45%	1.35%	-0.57%
Gemini	1.99%	1.61%	0.77%	1.49%	0.78%	-1.12%
Cancer	1.17%	2.68%	0.73%	1.45%	-0.48%	-1.24%
Leo	1.60%	2.26%	0.74%	1.40%	1.03%	-0.58%
Virgo	1.66%	1.24%	0.87%	1.54%	0.59%	-1.61%
Libra	3.34%	1.76%	1.38%	1.85%	-0.63%	**0.73%**
Scorpio	1.91%	1.75%	0.38%	1.45%	0.97%	-0.72%
Sagittarius	1.40%	1.77%	1.01%	1.55%	0.36%	-0.81%
Capricorn	1.22%	1.49%	1.09%	0.94%	0.88%	-1.41%

Portfolio	7/23-8/22	8/23-9/22	9/23-10/22	10/23-11/21	11/22-12/21	12/22-1/19
Aquarius	1.75%	-0.64%	-1.22%	2.20%	1.15%	**4.67%**
Pisces	0.91%	-1.17%	0.21%	2.43%	1.39%	**6.18%**
Aries	1.81%	-2.32%	0.27%	1.73%	-0.29%	**3.13%**
Taurus	1.20%	-2.33%	-0.10%	2.25%	1.12%	**6.08%**
Gemini	1.70%	-1.46%	-0.47%	1.93%	1.59%	**4.67%**
Cancer	1.66%	-1.70%	-0.03%	2.43%	1.43%	**4.02%**
Leo	1.52%	-1.53%	-0.27%	2.33%	-0.06%	**5.97%**
Virgo	1.89%	-1.28%	-0.35%	1.08%	1.95%	**4.48%**
Libra	1.61%	-1.97%	-1.03%	2.89%	2.45%	**7.71%**
Scorpio	1.59%	-2.45%	-0.09%	2.41%	0.70%	**3.24%**
Sagittarius	1.79%	-1.59%	0.04%	1.19%	1.53%	4.82%
Capricorn	1.48%	-1.79%	-0.09%	2.29%	0.95%	**4.80%**

Significance at the 99% level indicated in bold

Table IV
Portfolio Returns for Sun Sign Month
versus the Other 10 Months of the Year

	Aquarius		*Pisces*		*Aries*		*Taurus*		*Gemini*	
	Sunmonth	Other10	Sunmonth	Other10	Sunmonth	Other10	Sunmonth	Other10	Sunmonth	Other10
Mean	0.0181	0.0071	0.0172	0.0071	0.0149	0.0047	0.0145	0.0068	0.0078	0.0080
Known Variance	0.0019	0.0038	0.0014	0.0048	0.0021	0.0046	0.0026	0.0056	0.0016	0.0030
Observations	20	200	20	200	20	200	20	200	20	200
z	1.0298		1.0488		0.9002		0.6142		-0.0278	

	Cancer		*Leo*		*Virgo*		*Libra*		*Scorpio*	
	Sunmonth	Other10	Sunmonth	Other10	Sunmonth	Other10	Sunmonth	Other10	Sunmonth	Other10
Mean	-0.0124	0.0093	0.0152	0.0069	-0.0128	0.0089	-0.0103	0.0134	0.0241	0.0055
Known Variance	0.0036	0.0036	0.0042	0.0046	0.0036	0.0038	0.0064	0.0070	0.0014	0.0038
Observations	20	200	20	200	20	200	20	200	20	200
z	-1.5385		0.5405		-1.5404		-1.2539		**1.9923**	

	Sagittarius	
	Sunmonth	Other10
Mean	0.0153	0.0067
Known Variance	0.0011	0.0027
Observations	20	200
z	1.0287	