AAPL Stock Investment Value Research

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Abstract. This paper selects AAPL Co., Ltd., which has performed well in the field of artificial intelligence in recent years, as the research object, and analyzes it from both quantitative and qualitative aspects. First of all, this paper makes a theoretical analysis of the investment value of stocks, and proposes that the investment value of stocks has the characteristics of subjectivity, and analyzes financial indicators to determine whether the company's stocks have investment value. Then, the stock investment value is analyzed through stock valuation. Taking the price-earnings ratio model and the price-book ratio valuation model and AAPL as the research object, the AAPL stock is valued and compared with the market value to determine whether it has investment value. Through the analysis of stock investment value, it is judged whether it has investment values, which can be used as a rational investment basis for investors, so as to promote the development of the securities market and the development of the world economy.

Keywords: Industry Analysis; Financial Analysis; Valuation Analysis.

1. Background Introduction

2020 is a crucial year for the decisive victory in building a moderately prosperous society in an all-round way, and it is also the final year. With the vigorous development of the economy and the improvement of people's living standards under the background, more and more people put their idle funds into the stock market, and stock investment in listed companies is no longer the niche investment it used to be. In short, stock investment value analysis is to compare the intrinsic value of the stock with the market price to determine whether the stock value is overvalued or undervalued [2]. Its purpose is to let investors know more about stocks, reflect the company's operating level through stocks, reduce blind investment, avoid certain risks, and make investment more rational. Since undertaking a low point for share price this year, Apple (NASDAQ: AAPL) stock price has started a rebound and has made great progress all the way. After more than a month of recovery, it has rebounded from the low point by more than 20%. The market capitalization reached $2.77 trillion. In September, Apple will usher in the annual new product launch conference, superimposed on the recent optimistic news in the industry chain, and some institutions predict that the price of the new iPhone model will rise by 15%. Professionals have different views on Apple's market outlook. Some overseas institutions believe that "Apple is still the best consumer electronics company in its class, and it can better survive the economic downturn compared to its peers." The company pushed back into "expensive" territory and therefore "is not an attractive buy point.

In the context of the epidemic, companies will cut costs & dividends and limit share repurchases in order to preserve cash. Apple still returned $90.2 billion to shareholders in 2020. The company returned $30.5 billion to investors during the quarter, including $3.6 billion in dividends and $24 billion in share repurchases. Apple has raised its dividend nine times since 2012. The five-year compound growth rate (CAGR) reached 9.73%. For investors, the continuous rise of the stock price and the good company fundamentals will be the reasons for choosing to invest in Apple. For investors who are already Apple investor, whether it is the company's share repurchase behavior or the annual dividend increase will give investors more incentives. But at present, the short-selling momentum of Wall Street bears on technology giants such as Tesla and Apple are still very fierce. According to the latest data from financial data and analysis company S3 Partners, as of September 14, local time, Apple's short position was as high as $18.4 billion (approximately RMB 130 billion), officially surpassing Tesla's short position of $17.4 billion, has become Wall Street's biggest short target. In addition, the third largest short-selling target on Wall Street is Microsoft, followed by Amazon, VISA, and Alphabet, the parent company of Google. The S3 Partners report noted that Tesla has been the

most shorted stock on Wall Street for 864 days since April 2020. The current short positions in Apple and Tesla are far more than the third-ranked Microsoft Corp. As of Wednesday, Microsoft's short position was $11 billion. In fact, the main reason why Apple "overtakes" Tesla is that Wall Street bears cut their short positions on Tesla. S3 Partners data shows that over the past 30 days, both Apple and Tesla have seen a net reduction in their short positions, with Tesla's short positions decreasing by a larger margin: Apple's short positions have decreased by a net $790 million, while Tesla's short positions have decreased by $790 million. A net decrease of $1.864 billion. After months of anticipation, Apple (NASDAQ: AAPL) has finally unveiled a number of new innovations, including a new Watch, Airpods, and now its flagship iPhone. Yesterday, the tech giant showed investors and consumers the new iPhone 14 and what it includes. Specifically, it shows the iPhone 14, 14 Plus, 14 Pro, and 14 Max. As Investor Place contributor William White reports: "Pre-orders for these smartphones will open this Friday for the same price as last year's model." However, the latest model comes with satellite service, allowing users to call from anywhere Telephone. Apple has also done away with the physical SIM card and implemented a new digital option. This long-awaited new product line may be just what AAPL stock needs to finally start rising.

AAPL is still had the momentum. It rose earlier in the day and then fell, although its current trajectory suggests a late afternoon rebound. As it turns out, investors have reason to be optimistic that AAPL stock will rise again soon. According to a study by AskGamblers, web searches for the phrase "pre-order an iPhone" jumped 1,210% yesterday, according to Google Analytics. That interest bodes well for AAPL stock if it translates into sales in the coming weeks. Let's take a closer look at what investors can expect.

2. Research Methods and Technical Analysis

2.1 Support Line

Support line refers to the fact that in the process of market price decline, the buyer power in the stock market becomes stronger and stronger. When the price drops to a certain price, the buyer power and the seller power balance each other. At this time, the price stopped falling, and the buyer's power continued to increase, and the stock price began to rise [3] .
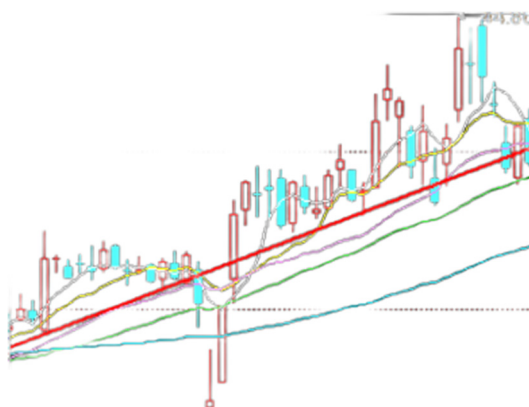

Figure 1. Support line
Data source: official website of straight flush

The daily K -line chart from January 2, 2020 to March 11, 2020 on the flush software, and draw a support line L according to the K - line chart, as shown in Figure 1. It can be clearly seen from the figure that the first support line L crossed the K line from January 23 to February 5. This period was mainly affected by the new coronavirus pneumonia epidemic, and the stock market fluctuated and immediately corrected. The second time the support line L crosses the K line from March 9th to March 11th, if the support line L is broken below and transformed into a pressure line, the bearish

power will increase and the stock price will rise under pressure. At this time, it is a sell signal. Investors should choose short positions and leave the market temporarily. And in the picture on March 11 , there was a big negative line on the K -line. In view of the trading volume, there will be a downward trend in the short term in the later period [4] .

2.2 Moving Parallel (MA)

(MA) is short for moving average, it represents the average price of buying stocks over a period of time , and this indicator is an important indicator that reflects the trend of price movement. The moving average has the characteristics of trend, lag and stability, fueling the decline, and the average cost of the market . Short-period moving averages are more sensitive to stock price changes [5].
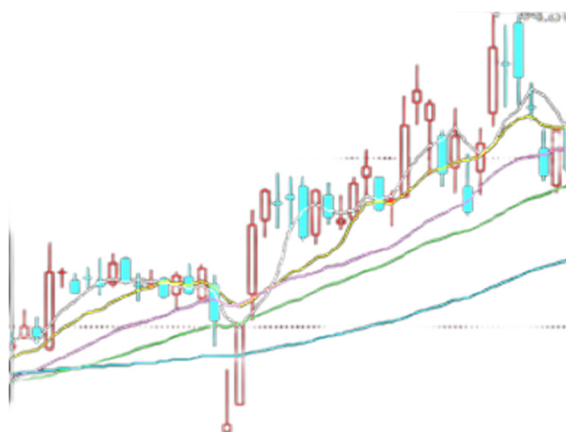

Figure 2. Moving Parallel Lines

Data source: official website of straight flush

As of March 11, 2020, as shown in Figure 2, it is obvious that the MA5 day line crosses below the MA10 day line, and the intersection is the death intersection, indicating that the stock price will decline. At this time, investors should temporarily leave the market., reduce investment losses. Combined with the support line factor, investors can choose to wait and see first and wait for an opportunity to enter.

2.3 Relative Strength Index (RSI)

The RSI indicator, that is, the relative strength indicator, usually uses the results of the closing index in a certain period as the calculation object, infers the future direction of price changes according to its value changes, and shows the strength of the market's long and short power according to the price fluctuations.
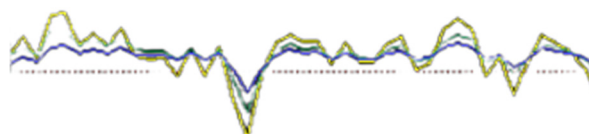
Figure 3. Relative Strength Indicator

Data source: official website of straight flush

Table 1. RSI and Stochastic

RSI6	RSI12	RSI24	K	D	J
42.53↓	49.01↓	52.48↓	37.7↓	47.71↓	17.68↓

Data source: Straight Flush website

As of March 13, 2020, as shown in Table 1, it is obvious that RSI6, RSI12 and RSI24 are between 40-60. At this time, the relative strength indicator is more sensitive and the market is not weak. As can be seen from Figure 3, short - term RSI > long-term RSI, which belongs to the bull market and is a buy signal. At this time, investors should pay attention to price changes in a timely manner and conduct stock trading operations.

2.4 Stochastic Indicator (KDJ)

KDJ is a short-term technical indicator analysis tool. It combines the advantages of relative strength indicators and moving averages, fully considers the random amplitude of price fluctuations, and predicts that the market is more sensitive to short-term overbought and oversold, but the calculation method is cumbersome and suitable for short-term invest.

Figure 4. Stochastic _
Data source: official website of straight flush

According to Table 1, KD values are all in [20, 80], and J is in [0, 100], indicating that KDJ is not overbought or oversold. According to Figure 4, the intersection of the KD indicator shows that K crosses D from top to bottom, and this intersection is the death intersection, which is a sell signal. K is low and has an uptrend, and D has a downtrend. Investors can wait for the golden cross to appear again to enter.

2.5 Technical Analysis Conclusion

Since the beginning of 2020, due to the impact of the new coronavirus, the stock market economy has been in a downturn, the Shanghai Composite Index has shown a downward trend as a whole, and the macro economy has been sluggish. According to the analysis of support line, moving average line, relative strength indicator and stochastic indicator, it is concluded that the AAPL stock moving average indicator and stochastic indicator suggest selling, and the relative strength indicator suggests buying. Combined with the support line, the author believes that investors can wait for the right time to buy. The technical analysis only uses part of the transaction information. The author only analyzes the technical indicators in combination with the price and volume transactions. The accuracy of the technical indicator analysis cannot be guaranteed. For long-term investment, it is necessary to combine the basic analysis to give a conclusion. "Apple remains a best-in-class consumer electronics company, and with strong product strength, customer loyalty, and continued product and service innovation, we believe it is better positioned to weather the downturn relative to its peers." Morgans Danley's Huberty wrote.

One of the reasons why Apple's sales have not been affected is that "Apple's customers are a fairly wealthy group, and there is no evidence that this group of people is delaying Mac and iPhone purchases due to inflation or recession fears."

In addition, during the overall downturn in the mobile phone industry, the key to Apple's revenue growth is the growth of its services business, "which makes overall hardware sales growth less important." Apple services, referring to monthly subscriptions, Apple Pay, warranty fees , Google's search licensing fees and iPhone Store revenue, which also have higher profit margins than its core hardware business.

For Apple, however, the rising stock price has pushed its stock back into expensive territory. It's now priced at 27 times earnings forecasts for the coming year and 17 times the average over the past decade. That makes investors like Benson Group chief investment officer David Bahnsen cautious

about buying shares at current levels. "Apple may be the safest of the FAANGs, but it's not an attractive buy point."

Futu Stock Research Report believes that supply chain problems are expected to improve in the fourth quarter, demand in China will pick up, revenue growth is expected to accelerate compared with the third quarter, foreign exchange fluctuations will lead to a year-on-year loss of 600bp in revenue, and it is expected to hedge the revenue in the fourth quarter. The growth rate is about 5%, and the current market forecast is 7%-8%. The gross profit margin is expected to be between 41.5% and 42.5%, a slight decline. This quarterly report shows the company's ability to resist risks, and the release of new products such as the iPhone 14 in the fall is expected to drive the growth of the industry chain. In the long run, the company's software and hardware integration, closed-loop iOS ecosystem builds a strong moat, strong product strength, and high-end market dominance make the company's business more visible and stable. Therefore, it is believed that the demand in the smartphone industry will be weak in 2022, and product competitiveness will become the magic weapon for mobile phone manufacturers.

2.6 Relative Valuation Method

The relative valuation method is mainly analyzed from the price-earnings ratio model and the price-to-book ratio model .

2.7 P/E Ratio Model

price-earnings ratio (*P/E*) is the price per share divided by the earnings per share, and is calculated as:

$$\text{Share price} = \text{price-earnings ratio} \times \text{earnings per share} \qquad (1)$$

Table 2. The price-earnings ratio of 6 companies in the computer industry (Unit: 100 million yuan)

name	P/E ratio	The total market capitalization
contact interaction	334.95	123
Changshan Beiming	58.95	134
Qianfang Technology	39.26	143
Donghua Software	44.89	170
UF network	126.19	152
Neusoft Group	136.4	144
Average price-earnings ratio	123.44	/

Data source: Straight Flush website

As shown in Table 2, this paper selects 6 companies that are closest to the total market value of AAPL among the 182 companies in the computer industry, and uses Flush software to derive the data as of January 10, 2020, and calculate the stock prices of the 6 companies. The average price-earnings ratio is 123.44 times, and the average price-earnings ratio is used as the benchmark price-earnings ratio for AAPL stock.

Table 3. 2017-2021 AAPL Stock Earnings Per Share (unit: yuan)

years	2017 _	2018 _	2019 _	2020 _	2021 _
EPS	0.34	0.37	0.33	0.27	0.38
average earnings per share	0.34				

Data source: AAPL Financial Statements

According to Table 3 2017-2021 AAPL stock earnings per share, the five-year average earnings per share are calculated, and the five-year average earnings per share are 0.34 yuan. The benchmark

price-earnings ratio of AAPL stock is 123.44 times. According to formula 1, the intrinsic value of each share of the stock can be calculated to be 41 yuan.

P/B model

Price -to-book ratio (*P/B*), also known as the net asset ratio, is the ratio of the market price per share to the net asset per share. Its formula is:

$$\text{Share price} = \text{price-to-book ratio} \times \text{net assets per share} \tag{2}$$

Table 4. The price-to-book ratio of 6 companies in the computer industry (unit: yuan)

name	P/B ratio	net assets per share
contact interaction	3.21	1.04
Changshan Beiming	3.66	3.58
Qianfang Technology	4.25	6.03
Donghua Software	5.25	3.05
UF network	18.55	2.51
Neusoft Group	2.05	7.01
average price-to-book ratio	6.16	/

Data source: Straight Flush website

Table 5. 2017-2021 AAPL Net Assets Per Share (unit: yuan)

years	2017 _	2018 _	2019 _	2020 _	2021 _
net assets per share	4.87	5.37	5.56	3.81	4.37
Average net assets per share	4.8				

Data source: AAPL Financial Statements

According to the data in Tables 4, the average price-book ratio of the stocks of the six companies is calculated to be 3.64 times, and it can be considered that the benchmark price-to -book ratio of AAPL stocks is 6.16 times. From Table 5, it can be concluded that the average net asset per share of AAPL stock from 2017 to 2021 is 4.8 yuan. According to formula 2, the intrinsic value per share of the stock at this time is calculated to be 29.58 yuan.

2.8 Absolute Valuation

The absolute valuation method mainly uses the fixed dividend growth rate model for analysis, and first calculates the expected rate of return of the stock through the capital asset pricing model.

2.9 Capital Asset Pricing Model

Capital asset pricing model is referred to as CAPM, and its formula is as follows:

$$E(r_i) = r_f + \beta_i\left[E(r_m) - r_f\right] \tag{3}$$

where $E(r_i)$- the expected return on the stock

r_f- risk free rate

β_i—The extent to which systematic risk reflects changes in market portfolios

$E(r_m)$- market average return

According to the information, the 5 -year treasury bond interest rate in 2021 is 4.27%, and the risk-free interest rate r_f is considered to be 4.27%. Use the Flush software to export the closing prices of the CSI 300 Index from 2014 to 2021, as shown in Table 6. Calculate the average annual growth rate for 2017-2021 and replace the market average yield $E(r_m)$ with the 5 -year average growth rate.

Table 6. 2017-2021 Annual Growth Rate of CSI 300 Index (Unit: Yuan/ %)

time	2014 _	2017 _	2018 _	2019 _	2020 _	2021 _
Closing price	3533.71	3731	3310.08	4030.85	3010.65	4096.58
annual growth rate	/	5.58	-11.28	21.78	-25.31	36.07
average annual growth rate	5.37					

Data source: Straight Flush website

$$\beta_i = \sigma_{im}/\sigma_m^2 \tag{4}$$

In the formula β_i- the degree of systematic risk reflecting the changes in the market portfolio
σ_{im}— Covariance of returns of individual stocks and market portfolios
σ_m^2—Variance of market portfolio returns
Use Flush software to derive the closing prices of the CSI 300 Index and AAPL company stocks from January 2, 2020 to January 10, 2020, respectively, and use the VAR function and COVAR function to calculate the return variance, CSI 300 Index and AAPL company stocks respectively. The covariance of, calculated according to Equation β_i4, is 0.88. Substituting the data into Equation 4 yields an expected return of 5.21% for $E(r_i)$AAPL 's stock.
    Fixed dividend growth rate model

$$g = (1-r_p)*[(ROA-r_d)*(d/e)+ROA] \tag{5}$$

where r_p - dividend payout ratio

ROA - Return on assets
g — dividend growth rate
r_d - Debt interest rate
d/e — debt to equity ratio

Table 7. 2017-2021 AAPL Stock Average Dividend Growth Rate(Unit: %)

years	2017 _	2018 _	2019 _	2020 _	2021 _
dividend payout ratio	51.40	50.70	52.50	49.97	50.32
Return on Assets	7.17	7.5	5.74	5.94	6.86
Equity debt ratio	28.68	44.44	86.14	86.36	55.04
Debt interest rate	0.04	0.05	0.03	0.03	1.47
fixed growth rate	4.48	5.33	5.06	5.53	4.88
Average fixed growth rate	5.06				

Data source: AAPL Financial Statements

$$V =[D_0 *(1+\bar{g})]/(r-\bar{g})=D_1/(r-\bar{g}) \tag{6}$$

where *V is the intrinsic value* of each share

D_1 - Future dividends per share
$\bar{g}$ - Average dividend growth rate
r — the expected return on the stock
    AAPL Co., Ltd. has been established for a long time and has a lot of historical data. The dividend growth rate is stable, and I expect the dividend to continue. Currently, the company is in a two-stage growth model that applies a fixed dividend growth rate model.

According to the data in Table 7, the dividend growth ratios g from 2017 to 2021 are calculated using Formula 5 to be 4.48 %, 5.33%, 5.06%, 5.53%, and 4.88%, respectively. The average dividend growth rate $\bar{g}$ for AAPL stock is calculated to be 5.06% . Looking at the 2021 annual report of D_1 AAPL, the value is 0.18. According to Formula 6, it can be calculated that the intrinsic value per share of AAPL at this time is V=0.18 / (5.37%-5.06%) =58.06 yuan.

3. The Study Found

3.1 Find the Right Entry Point, Portfolio Investment

On the one hand, stock prices in the stock market are changing rapidly. It is extremely important for investors to choose a portfolio investment model to identify buying opportunities, which can reduce blind investment and reduce investment risks. On the other hand, by comparing the relationship between the stock value of a listed company and the company's latest market price, judging whether the stock is overvalued or undervalued can provide a basis for investment. After analyzing the valuation of AAPL , we know that the intrinsic value of the company's stock is [29.58, 58.06]. When the market price is less than 29.58 yuan per share, the company's stock is undervalued and should be bought; when the market price is greater than 58.06 yuan per share, the company's stock is overvalued and should be sold [6] .

In order to diversify risks, investors can choose industry stocks that have little correlation with AAPL stocks and are highly inclusive to invest, and ultimately maximize benefits.

3.2 Raise Risk Awareness and Explore Multiple Exit Mechanisms

As we all know, stocks have the characteristics of taking high risks and obtaining high returns. As stock prices fluctuate significantly, investors need to increase their risk awareness and consider individual stocks and the entire stock market according to their own tolerance. Use scientific and effective methods to evaluate the intrinsic value of the target company, determine investment risks based on intrinsic value, and find effective solutions to avoid losses. For AAPL, it is worth noting that the operating income of the computer software application sector has declined, and the gross profit margin of software development has declined.

As an investor who does not blindly follow the trend, you should always pay attention to the management and operation of the target company, conduct fundamental analysis when evaluating the stock value, consider the many factors that affect the stock market value, and reduce or even eliminate the loss of investment caused by unsystematic risks. Combined with technical analysis, select carefully evaluated stocks and actively explore various exit mechanisms [7] .

Calculated by the relative valuation method and the absolute valuation method, the intrinsic value range of AAPL stock is [29.58 , 58.06] . As far as the current average market price per share is 36.13 yuan, the company's stock is within the intrinsic value range, and the stock has a certain investment space. Investors can find a suitable entry point for stock trading operations.

4. Conclusion

The Apple Index has a total of 47 constituent stocks, including Desay Battery, Luxshare, and Fii. Affected by changes in the international trade environment and repeated global epidemics, there are not a few companies that lost money in the first half of the year. But at the same time, there are also companies with doubled profits, such as Fenda Technology and Pengding Holdings, which increased their profits by 166% and 130% respectively, and Zhaoyi Innovation increased by 93.46%. Through the price-earnings ratio model, the price-to-book ratio model, and the dividend growth rate fixed dividend model, the range of AAPL's intrinsic value per share is [29.58, 58.06]. Use Flush software to derive the closing price from December 2, 2021 to February 28, 2020, and calculate the average price per share to be 36.13 yuan. The average price during this period was used to replace the market

price, and the company's stock market price was estimated. Within the value range, the company has long-term investment value. Therefore, investors can choose the right time to buy and sell stocks.

In addition, the overall valuation of "fruit chain" also fell to a low level. At present, the overall price-earnings ratio of the sector is about 28.55 times, which is at the 12.11% quantile of the data in the past ten years, while the historical median is 43.24 times, and the upside is relatively broad.

The analysis shows that in August, it is recommended to focus on the release of new folding screen phones and the catalysis of the peak season of the Apple industry chain. With the advent of the traditional peak season for consumer electronics, we will continue to recommend the Apple industry chain that has less downside risk in consumption power of its own user groups and benefits from the conversion cycle of Huawei's high-end computer users. Although the epidemic prevention and control has a certain impact on the short-term material supply of Apple Chain in Q2, Apple's demand side is relatively good. Judging from the better-than-expected second-quarter performance forecasts of many Apple Chain companies recently and Apple's CQ2 quarterly report, it is also continuously confirmed earlier judgments.

Looking forward to the second half of the year to next year, Apple's new product innovation will be better than last year. Mobile phones, watches, earphones and other products are all in a growth trend. The new product stocking is expected to be better, and the supply chain inventory is healthy. The downstream demand is significantly better than the Android chain. It is believed that the continued growth or acceleration in the second half of the year is worth looking forward to, and the market's expectations for Apple's MR and longer-term smart cars in the next year and the following year are increasing. After a major adjustment since the beginning of the year, the domestic apple chain is currently in a relatively low position with a dynamic valuation of 15-20 times, and the fundamentals still have alpha in consumer electronics, especially those involved in future innovation and The share and category are still expanding, and there are high-quality companies that cross-border to automotive electronics and other booming tracks, and the value of low-level layout is prominent.

Apple shares posted their biggest gain since May as pre-sales data showed the iPhone 14 Pro Max was the best-selling model, outperforming older models.

The tech giant's shares rose as much as 4.4% on Monday, their biggest intraday gain in four months, as analysts from JPMorgan to Barclays pointed to demand for the latest line of phones unveiled at last week's product launch. strong.

"Pre-sale data shows that the iPhone 14 Pro Max is the best-selling model, outperforming the iPhone 13 Pro Max over the same period," KGI analyst Christine Wang said in a note. She also said that the pricing of the iPhone 14 series is good for its future sales.

Apple unveiled the iPhone 14, new AirPods Pro earbuds and a new version of the Apple Watch at its biggest product launch of the year. The new version of the iPhone retains the overall appearance of the old version, while upgrading the camera and adding emergency satellite communication rescue functions. Most of the iPhone upgrade features appear in the high-end Pro line. Phones in the series will feature a 48-megapixel camera and a screen that can stay in a low-power mode at all times, similar to the latest version of the Apple Watch.

Apple (NASDAQ: AAPL) is the best-performing big tech stock this year as investors believe it has the ability to generate more revenue from its more than 1 billion users across services such as apps, video, fitness and game subscriptions. The next driver for the stock's share price will be its September quarter results, which are expected to be released in late October.

The stock is down about 8% this year, while the Nasdaq 100 is down about 22%. About 96% of 50 analysts recommend buying or holding Apple stock, with only two recommending a sell, the data showed.

As CNBC points out, Apple's stock has not historically outperformed the S&P 500 by a large margin following the release of a new iPhone. "Despite the usual hype, [AAPL]'s stock typically performs largely in line with the market a month after the iPhone launch," according to Bernstein's data. Analyst Toni Sacconaghi said the company doesn't expect Apple to be any different this year.

But that doesn't mean AAPL stock can't pick up, especially with consumer interest in the iPhone 14 series clearly high. A spokesperson for AskGamblers said:

The iPhone is a staple of modern culture, and Apple's events grab global headlines every time a new model or feature is released. The launch of the iPhone 14 was no exception, and these findings underscore the importance of consumers being aware of the latest technology. The new product will also focus on helping consumers when they are in distress, such as texting and sending emergency calls for help when offline.

Investors need to take note that the new iPhone simply gives consumers more reason to use it. It's only improved, keeping its starting price at $799 even in times of inflation. Consumers can now make calls outside the range of cell towers, an important feature in emergencies. While search interest did drop today, it's still enough to give investor confidence that AAPL stock will soar. The company could also usher in another growth catalyst. Elon Musk has said that SpaceX is discussing the possibility of a satellite technology partnership with Apple. Given the recent addition of satellites to the new iPhones, this seems like a great opportunity for both companies to grow.

Even if it doesn't top the S&P 500, AAPL's stock is start rising as high search interest translates into sales. It may not be as fast as investors hoped, but data from AskGamblers suggests it is likely.

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