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|  | APPLE INC. |
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|  | Group 2  Financial Analytics Project  4/1/24 |

REPORT

**Business Analysis of Apple Inc.**

Apple Inc., founded in 1976 by Steve Jobs, Steve Wozniak, and Ronald Wayne, is a global technology powerhouse headquartered in Cupertino, California, United States. With a legacy of innovation and iconic products, Apple has revolutionized the consumer electronics industry and redefined the way people interact with technology.

**Current Operations**

Apple's operations encompass a wide range of products and services designed to enrich the lives of consumers worldwide:

1. **Hardware Products:**
   * Apple designs, manufactures, and markets a diverse portfolio of hardware products, including the iPhone, iPad, Mac, Apple Watch, and Apple TV.
   * These devices are known for their sleek design, cutting-edge technology, and seamless integration across the Apple ecosystem.
2. **Services:**
   * In addition to hardware, Apple offers a variety of services, such as iCloud, Apple Music, Apple Arcade, Apple TV+, and AppleCare.
   * These services provide users with access to digital content, cloud storage, and support services, enhancing the overall Apple experience.
3. **Software Ecosystem:**
   * Apple's operating systems, including iOS, macOS, watchOS, and tvOS, form the foundation of its software ecosystem.
   * This ecosystem fosters a seamless user experience and enables interoperability between Apple devices.

**Macroeconomic Environment**

Apple has achieved remarkable growth through a combination of product innovation, strategic partnerships, and global expansion. The company's emphasis on research and development has resulted in groundbreaking technologies and products that have reshaped entire industries.

**Industrial Competitors**

Apple operates in a fiercely competitive landscape, facing competition from both traditional rivals and emerging players:

1. **Smartphone Market:**
   * Key competitors in the smartphone market include Samsung Electronics, Huawei Technologies, and Xiaomi Corporation.
   * Apple competes based on product differentiation, brand loyalty, and ecosystem lock-in.
2. **Personal Computing:**
   * In the personal computing space, Apple competes with companies like Microsoft Corporation and Dell Technologies.
   * Apple's focus on design, performance, and user experience sets it apart in this segment.
3. **Services and Entertainment:**
   * Apple faces competition from companies like Google (with its Android ecosystem), Spotify Technology, and Netflix Inc. in the services and entertainment space.
   * Differentiation through exclusive content, user experience, and ecosystem integration are key competitive strategies.

**Market Share Summary**

Apple commands a significant market share across its key product categories, including smartphones, tablets, and personal computers. The company's strong brand reputation, ecosystem lock-in, and loyal customer base contribute to its market dominance. By continually pushing the boundaries of innovation and delivering products and services that resonate with consumers, Apple maintains its position as a leader in the technology industry.

**Ratio and Valuation Analysis**

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| 1 | Profitability Ratios: |  |  |
|  | Net Profit Margin | (Net Income / Revenue) \* 100 | 25.30% |
|  | Return on Assets  (ROA) | (Net Income / Total Assets) \* 100 | 27.50% |
|  | Return on Equity  (ROE) | (Net Income / Shareholders' Equity) \* 100 | 156.07% |
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| 2 | Liquidity Ratios: |  |  |
|  | Current Ratio | Current Assets / Current Liabilities | 0.98 |
|  | Ǫuick Ratio | (Current Assets - Inventory) / Current Liabilities | 0.94 |
|  |  |  |  |
| 4 | Dividend Payout  Ratio | (Dividends Paid / Net Income) \* 100 | 15.46% |
|  | Sustainability Growth Rate | roe / 100 \* (1 – dividend payout ratio) | 132 % |
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| 5 | Debt-to-Equity Ratio | Total Debt / Shareholders' Equity | 4.67 |
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**Ratio Analysis for Apple Inc.:**

1. **Profitability**:
   * Apple demonstrates strong profitability, with a net profit margin of 25.3%. This indicates effective cost management and healthy profitability relative to revenue.
2. **Asset Utilization**:
   * With a return on assets (ROA) of 27.5%, Apple efficiently utilizes its assets to generate profits, reflecting strong operational performance.
3. **Financial Leverage**:
   * Apple's debt-to-equity ratio of 4.674 suggests a relatively high level of debt compared to equity. While this can amplify returns, it also increases financial risk.
4. **Liquidity**:
   * The current ratio of 0.987 and quick ratio of 0.937 indicate a slightly tight liquidity position for Apple. However, the company's strong cash reserves and stable cash flows mitigate liquidity risks.
5. **Dividend Policy**:
   * Apple maintains a moderate dividend payout ratio of 15.45%, leaving room for reinvestment in growth opportunities while providing returns to shareholders.
6. **Growth Potential**:
   * Apple's sustainable growth rate (SGR) of 132.0% indicates the potential for significant earnings growth without heavy reliance on external financing, reflecting a balanced approach to growth.

**Overall Assessment:**

* Apple demonstrates strong profitability, efficient asset utilization, and moderate financial leverage. While liquidity ratios suggest relatively tight liquidity positions, the company's robust cash reserves and stable cash flows mitigate liquidity risks. Additionally, the moderate dividend payout ratio and high sustainable growth rate underscore Apple's ability to balance shareholder returns with reinvestment for future growth.

**Simple Moving Average (SMA)**

**A graph with red and green triangles

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**Exponential Moving Average (EMA)**

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**CAPM (Capital Asset Pricing Model) Analysis**

* + The higher-than-expected return on equity (E(R\_i)) of approximately 15.58% indicates that investors require a premium for holding the stock, reflecting its higher risk compared to the market.
  + This suggests that the stock exhibits higher-than-average volatility, as indicated by its beta of 1.28, which contributes to the elevated expected return.
  + Investors should carefully assess their risk tolerance and investment objectives before considering the stock, considering factors such as investment horizon, diversification, and overall portfolio risk.

**WACC (Weighted Average Cost of Capital) Analysis**

* The calculated WACC of approximately 15.05% serves as the weighted average cost of capital for the company, representing the blended cost of equity and debt financing.
* This rate is utilized as the discount rate for evaluating the company's investment opportunities, guiding decisions on capital allocation and project viability.
* While the calculated value provides a theoretical reference point, further analysis is necessary to understand any discrepancies between the calculated WACC and the market price, considering factors such as market conditions, industry dynamics, and company-specific risks.

**Monte Carlo Simulation**

A graph of different colored lines

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1. **Simulation Parameters:** The simulation was run with an initial stock price (S0) of $168.79, an annualized volatility (sigma) of 20.69%, and a net profit margin of 25.31%. The drift (mu) was calculated using the net profit margin adjusted for a simple risk-free rate of 2%, divided by the typical number of trading days in a year (252). The forecast time frame was 30 days, and the number of simulations run was 100.
2. **Findings:** The plot shows a wide range of possible paths for the stock price, reflecting the uncertainty and volatility inherent in stock markets. Some paths show a significant increase in the stock price, while others show a decrease. This highlights the risk and potential reward of investing in stocks. The average trend of the paths could be interpreted as the expected stock price movement, but it’s important to note that actual future prices can deviate significantly from this average due to the randomness and unpredictability of stock markets.

**Facebook Prophet Forecasting:**

Facebook Prophet is a forecasting tool that is particularly adept at handling time series data with multiple seasonality patterns, non-linear trends with saturation growth, and holidays or event-based irregularities. In the case of Apple Inc. (AAPL), a company with dynamic growth and diverse business cycles, Prophet can provide valuable insights for stock price forecasting.

**Overview of Graphs:**

A graph with a line going up

Description automatically generated

The first graph represents the historical stock prices and the projected future prices of Apple Inc., using the Facebook Prophet model. The black dots indicate the actual past stock prices, the blue line represents the model's fit to this historical data, and the light blue shaded area illustrates the uncertainty interval for the forecast. The trend shows a significant increase over the years, with an acceleration around 2017.

A graph of a number of days and months

Description automatically generated with medium confidence

The second graph displays the decomposition of the forecast into different components:

* The first subplot shows the overall trend component of the stock price, reflecting a long-term increase.
* The second subplot indicates the weekly seasonality component, revealing how stock prices tend to behave differently on different weekdays.
* The third subplot details the yearly seasonality, showing fluctuations that likely correspond to annual events and cycles in the company’s business operations.
* The bottom subplot highlights the daily seasonality, which appears to show the intraday variation in stock prices, although such granularity is not typically the focus of long-term investors.

**Analysis and Interpretation:**

**Trend Component:**

The trend component confirms a consistent growth in Apple's stock value, suggesting that the company is expanding and remains a dominant player in the tech industry. The projection also indicates that the growth trend is expected to continue.

**Weekly Seasonality:**

Weekly patterns demonstrate that prices might dip mid-week and then peak towards the end of the week. This could be due to various market factors, such as trading volumes and investor sentiment fluctuations.

**Yearly Seasonality:**

The yearly seasonality shows a more complex pattern, with peaks and troughs possibly aligning with Apple's product launch events, holiday sales cycles, or financial reporting periods.

**Daily Seasonality:**

Daily fluctuations are evident, with certain times showing higher variability. These patterns might be useful for day traders or those interested in short-term market movements.

**Application for Apple Inc.:**

For Apple Inc., Prophet's forecasting can be instrumental in planning investment strategies. The model's ability to account for the company's specific growth cap and market saturation levels allows it to adapt to the upper limits of Apple's stock growth potential. The inclusion of product release cycles and the significant effect of holiday shopping seasons are uniquely addressed within Prophet's flexible modeling environment.

By leveraging this tool, analysts and investors can gain a nuanced understanding of Apple's stock price trajectory, backed by a data-driven, robust forecasting model that simplifies complex time series data into actionable insights.

**Recommendations:**

**Investment Potential:**

Given the strong upward trend, investing in Apple Inc. seems promising for those seeking long-term capital growth. The company's stock is projected to continue its growth, albeit with natural fluctuations.

**Timing for Transactions:**

Investors may find opportunities to buy or sell based on weekly seasonality. For example, buying during mid-week dips and selling during end-of-week highs could be a strategy if supported by further analysis.

**Strategic Decisions:**

Awareness of yearly seasonality patterns can inform strategic decisions, such as anticipating stock movements around key events like product launches or earnings reports.

**Risk Management:**

The model's confidence intervals grow wider in the future, reflecting the increasing uncertainty. Investors should maintain a diversified portfolio and keep up-to-date with Apple's business and the broader market to manage risks effectively.

**Conclusion:**

This forecasting suggests optimism for Apple Inc.'s future stock performance. However, it's crucial to remember that forecasts are not guarantees and should be one of many tools used in making informed investment decisions. Monitoring market trends, staying informed about Apple's business strategies, and understanding broader economic factors are all essential practices for investors.

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