Czech University of Life Sciences Prague

Faculty of Economics and Management

Department of Management

Diploma Thesis

Analysis of chosen NASDAQ stocks

Gleb Kleptsov

CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE

Faculty of Economics and Management

DIPLOMA THESIS ASSIGNMENT

Bc. Gleb Kleptsov

World Economy

Thesis title

Analysis of chosen NASDAQ stocks

Objectives of thesis

The theoretical part of this thesis introduces the concept of chosen companies. Also, it introduces general concepts of stocks and factors of its profitability and price by evaluating the efficiency market position of the company and industry factors that affect the position as well as the short and long run economic factors determining competitiveness production. The objective of analytical part is to analyze if this companies were a good investment in past and if they currently are a good investment.

Methodology

Initially, in the theoretical part definitions and concepts were explained to give the reader a better understanding of the companies as well as the economics behind it and its stocks. Accordingly, principles of stock and influencing factors on the stock price and profitability of stock, with examples of stock market given, as well as basic concepts and general historical information and influencing factors that make that companies valuable.

In the analytical part, methodology consists of the objective being evaluated by fundamental and technical analysis methods. This part of the analysis will be show data over a period of time, for visualization of theresults.

The proposed extent of the thesis

60 pages

Keywords

NVIDIA, Intel, AMD, Investing, Stock, Economics, Fundamental analysis, Technical analysis, Techs, Innovation, Stock market

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Recommended information sources

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The Diploma Thesis Supervisor
doc. Ing. Petr Procházka, MSc, Ph.D.

Supervising department
Department of Economics

Electronic approval: 24. 3. 2022

prof. Ing. Miroslav Svatoš, CSc.

Head of department

Electronic approval: 25. 3. 2022

doc. Ing. Tomáš Šubrt, Ph.D.

Dean

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Declaration

I declare that I have worked on my diploma thesis titled "Analysis of chosen NASDAQ stocks" by myself and I have used only the sources mentioned at the end of the thesis. As the authorof the diploma thesis, I declare that the thesis does not break copyrights of any their person.

In Prague on 30th of March 2023 _____

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Analysis of chosen NASDAQ stocks

Abstract

The purpose of this work is to analyse the shares of three representatives of the NASDAQ technology sector.
The structure of this work consists of two interrelated sections. In the theoretical part, the author provides basic information about the chosen industry, investment features, stocks, and their varieties, as well as additional information about the selected companies.
The practical part is based on conducting a technical and fundamental analysis of the shares of selected companies to make short-term and long-term decisions aimed at reducing risks and maximizing profits when investing in one or more of these companies.

Keywords: NVIDIA, Intel, AMD, Investing, Stock, Economics, Fundamental analysis, Technical analysis, Techs, Innovation, Stock market

Analýza biotechnologických akcií

Abstrakt

Účelem této práce je analyzovat akcie tří zástupců technologického sektoru NASDAQ. Struktura práce se skládá ze dvou vzájemně propojených částí. V teoretické části autor poskytuje základní informace o zvoleném průmyslu, investičních funkcích, akciích a jejich variantách, stejně jako další informace o vybraných společnostech.
Praktická část je založena na provedení technické a fundamentální analýzy akcií vybraných společností s cílem uskutečnit krátkodobá a dlouhodobá rozhodnutí zaměřená na snížení rizik a maximalizaci zisku při investování do jedné nebo více těchto společností.

Klíčová slova: NVIDIA, Intel, AMD, Investování, Akcie, Ekonomie, Fundamentální analýza, Technická analýza, Technologie, Inovace, Akciový trh.

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1 Introduction

Philip Fischer once said: "The stock market is filled with individuals who know the price of everything, but the value of nothing". That is why the determination of the value or cost of shares at the present time is a procedure necessary for every participant in the stock market.

Like other freely traded commodities, shares have a certain value that varies depending on the current market situation.

Knowledge of the fair value of shares is a necessary knowledge to understand the level of development of the company and assess the profitability and risks of investing by investors in any industry or company.

Over the past decades, technological progress has intensified, which of course is reflected in the value of companies in this sector. The giants of the sector show us more and more innovative solutions for the consumer sector and for business.

The high-tech industry represents one of the most promising and rapidly developing sectors in the global market. The number of companies in this industry is increasing every year, thanks to the rapid development of IT technologies and their widespread adoption. Financial indicators such as revenue and market capitalization also show strong growth for these companies.

Interestingly, the most highly valued high-tech companies are no longer those that develop unique products, but rather those that provide platforms for further activities. These companies can reach a wider audience, which is why Facebook and Alibaba, the largest Chinese e-commerce company, are currently the most highly valued representatives of the high-tech industry on the world market.

Despite not being the most widely represented industry on global exchanges, the high-tech sector includes companies that occupy top positions in terms of capitalization in the world. However, some high-tech companies are yet to go public and are only planning to carry out IPO procedures. This highlights the importance of studying methods for evaluating high-tech companies.

Valuing high-tech companies is challenging because it's often difficult to determine their true worth due to the specifics of their activities. For instance, most high-tech companies don't have significant tangible assets on their balance sheets, making it hard for investors to assess their value. Therefore, it's crucial to pay special attention to the formation of the cost of high-tech companies to ensure that their value is determined by factors that truly reflect their high cost and worth in the world market.

In my thesis, I chose the three largest companies for analysis, as they are competitors in the development and sale of chips for personal computers and game consoles, as well as data centers. By the way, we can say that without the products of these companies, the existence of such a thing as a cryptocurrency, which is so popular at the current time, would be impossible. Unfortunately,

the stock market is actively responding to global factors and trends. Now, this factor is the global economic recession, the energy and food crisis. Therefore, in my final work, I will try to evaluate the shares of these companies without much reference to these factors.

Despite declining market share prices in the technology sector, investors can take a professional approach to stock selection and control. Those who know how to study the trends of the global economy and the financial market and make strategic and timely decisions, both short-term and long-term purchases, evaluate the purchase in this sector as promising next year. The purpose of this thesis work is to analyze the shares of AMD, NVIDIA, and INTEL to prove that the technology sector in the realities of 2022-2023 is an attractive choice carrying investment opportunities in the future.

2 Objectives and Methodology

2.1 Objectives

The purpose of this thesis is to forecast the future course of AMD, NVIDIA, and Intel stocks by analyzing their existing conditions. Additionally, the author of this thesis will take market performance into account and assess the stock performance financially.

Theoretical aspects of the thesis will consider ideas like stocks, investment risks, stock price, and financial and technical analysis. This data will provide a precise picture of the stock prices of the chosen firms and their outlook.

To accomplish the thesis's objective, the author will conduct technical analyses in the analysis's practical section.

2.2 Methodology

The literature review is dedicated to using methods of extraction, synthesis, induction, and deduction. In other words, this dissertation aims to achieve a basic knowledge of the chosen indicators. The objectives of the analytical section are gained using different methods of technical analysis.

Technical analysis is the main part of the analytical part. The author uses moving averages as tools for this analysis. These indicators will help you understand how the trend is moving and the forecast for each of the stocks chosen by the author.

3 Literature Review

3.1 Overview of the Stock Market and Valuation Methods

The stock market is a complex and dynamic system that serves as the backbone of the global economy. It is a place where buyers and sellers of securities come together to trade financial instruments, such as stocks, bonds, and derivatives. The stock market provides companies with access to capital, and investors with the opportunity to profit from their investments. However, the stock market can also be a risky place, and investors need to understand the market and the various valuation methods used to make informed investment decisions.

3.1.1 Brief History of the Stock Market

The stock market has a long and storied history, dating back centuries. The first stock market is believed to have emerged in Amsterdam in the early 1600s, when the Dutch East India Company issued shares to the public to raise capital for its overseas ventures. This allowed investors to buy a stake in the company and share in its profits and losses.

Over time, other countries and companies followed suit, and the concept of buying and selling shares of ownership in a company became more widespread. In the United States, the New York Stock Exchange (NYSE) was founded in 1792, making it one of the oldest and most established stock exchanges in the world.

The stock market has gone through many ups and downs over the years, including major market crashes and economic downturns. One of the most famous of these was the Great Depression of the 1930s, which caused widespread financial hardship and led to the establishment of new regulations and oversight measures for the stock market.

In more recent times, the stock market has experienced a series of booms and busts, with the dot-com bubble of the late 1990s and the financial crisis of 2008 being two of the most notable examples.

Despite these challenges, the stock market remains a vital part of the global economy and a key driver of growth and innovation. Today, millions of people around the world invest in the stock market, buying and selling shares in a wide range of companies and industries.

3.1.2 Definition and Types of Stocks

A stock, also known as a share or equity, represents a unit of ownership in a company or corporation. When individuals or institutions purchase stocks, they are essentially buying a portion of the company and become shareholders. As a result, shareholders are entitled to a portion of the company's profits through dividends and potentially capital gains if the stock price increases.

There are two kinds of stocks: preferred stocks and common stocks

Common stocks are the most common type of stock and represent the majority of shares issued by companies. Shareholders of common stocks have the right to vote on major corporate decisions, such as the appointment of board members and executive compensation. Additionally, common stockholders are entitled to a portion of the company's profits, which are distributed in the form of dividends. However, these dividends are not guaranteed and may fluctuate based on the company's performance and financial situation.

Preferred stocks, on the other hand, offer a fixed dividend payment that is agreed upon at the time of issuance. Unlike common stockholders, preferred stockholders do not have voting rights but receive dividends before common stockholders. If a company goes bankrupt, preferred stockholders also have a higher claim to the company's assets compared to common stockholders.

Within these two broad categories, there are additional subcategories of stocks. For example, blue-chip stocks are stocks of large, well-established companies with a long history of stable earnings growth and dividends. Mid-cap stocks represent medium-sized companies that have the potential for growth, while small-cap stocks represent small companies with high growth potential but also higher risk.

In addition, stocks can be classified based on their sector or industry, such as technology stocks or healthcare stocks. Some investors also use market capitalization as a way to classify stocks, with large-cap stocks having a market capitalization of over $10 billion, mid-cap stocks between $2 billion and $10 billion, and small-cap stocks under $2 billion.

Overall, understanding the different types of stocks and their characteristics is important for investors to make informed decisions and build a diversified portfolio.

3.1.3 Initial Public Offering (IPO)

Definition of IPO

Initial Public Offering (IPO) is a process through which a company raises capital by offering its shares to the public for the first time. It is an important event for a company as it provides an opportunity to raise substantial capital, increase brand awareness and attract potential investors. IPOs can be a lucrative investment opportunity for individuals as they allow them to purchase

shares in a company at an early stage, potentially offering high returns in the future.

The IPO process involves a series of steps, including hiring an investment bank to underwrite the offering, submitting the necessary documentation to regulatory authorities, and conducting roadshows to promote the offering to potential investors. The success of an IPO is highly dependent on market conditions, the reputation of the company, and the quality of its management team.

While an IPO can provide significant benefits to a company, it also comes with its own set of risks and challenges. For example, the company must comply with strict regulatory requirements and disclose extensive financial and operational information to the public. Additionally, there is a risk that the market may not value the company's shares as highly as expected, resulting in lower than anticipated proceeds from the offering.

Overall, an IPO can be a complex and challenging process, but it can also be a valuable opportunity for companies looking to raise capital and expand their operations.

Advantages and Disadvantages of IPO

IPOs can provide a range of benefits to companies that choose to go public. Some of the advantages of an IPO include:

- Access to capital: An IPO provides a way for a company to raise significant amounts of capital from public investors. This capital can be used to fund growth initiatives, make acquisitions, or pay down debt.
- Increased visibility and prestige: Going public can raise a company's profile and increase its credibility among customers, suppliers, and other stakeholders.
- Liquidity for shareholders: An IPO allows existing shareholders, such as founders, employees, and early investors, to sell their shares on a public market, providing them with liquidity and potentially generating significant wealth.
- Access to stock-based compensation: Once a company is public, it can offer stock-based compensation to employees and executives, which can be a valuable tool for attracting and retaining talent.
- However, there are also some potential drawbacks to going public, including:
- Increased regulatory requirements: As a publicly traded company, a company is subject to a range of regulatory requirements, including financial reporting, disclosure, and governance requirements.
- Loss of control: Going public often involves giving up a degree of control over the company, as public investors become shareholders and have a say in the company's

direction.

- Short-term focus: Public companies are often under pressure to deliver short-term results to satisfy investors, which can lead to a focus on quarterly earnings rather than long-term growth.
- Costs: Going public can be expensive, with underwriting fees, legal and accounting fees, and ongoing compliance costs adding up quickly.

Factors Affecting IPO Price

The price of an IPO is typically determined by a range of factors, including:

- Company financials: Investors will analyse a company's financials, such as revenue, profitability, and growth potential, to determine the appropriate valuation for the company.
- Industry trends: The performance of other companies in the same industry can impact investor sentiment towards the IPO.
- Market conditions: General market conditions, such as interest rates, inflation, and economic growth, can also impact investor demand for an IPO.
- Company management: Investors will evaluate the experience and track record of a company's management team, as well as the overall corporate governance structure of the company.
- Investor sentiment: Finally, investor sentiment can play a significant role in the pricing of an IPO, with positive sentiment leading to higher valuations and negative sentiment leading to lower valuations.

In conclusion, an IPO can be a significant event for a company, providing access to capital, increased visibility, and liquidity for shareholders. However, the decision to go public should be carefully considered, taking into account the potential benefits and drawbacks of an IPO. Additionally, the price of an IPO is determined by a range of factors, with company financials, industry trends, market conditions, company management, and investor sentiment all playing a role.

3.1.4 Stock Splits

A stock split is a corporate action that increases the number of outstanding shares in a company while proportionally reducing their value. In other words, a stock split does not change the total value of the company, but rather it increases the liquidity of its shares. Stock splits are common among publicly-traded companies, and they can be used for various reasons, such as making the shares more affordable to individual investors, increasing the marketability of the shares, and increasing the liquidity of the shares. This chapter will provide an overview of stock splits,

including their definition, the reasons behind them, and their impact on the market.

Definition of Stock Splits

A stock split is a corporate action that increases the number of outstanding shares in a company while proportionally reducing their value. In other words, a stock split does not change the total value of the company, but rather it increases the number of shares available on the market. The purpose of a stock split is to make the shares more affordable to individual investors, increase the liquidity of the shares, and make them more marketable.

Stock splits can be done in a variety of ways, but the most common type of stock split is the 2-for-1 split. In this type of split, the number of outstanding shares is doubled, and the share price is halved. For example, if a company has 1 million shares outstanding and the share price is $100, a 2-for-1 split would result in 2 million shares outstanding and a share price of $50.

Reasons for Stock Splits

There are several reasons why a company might choose to do a stock split. One of the most common reasons is to make the shares more affordable to individual investors. By reducing the share price, more investors can afford to buy shares, which can increase the demand for the shares and the liquidity of the market.

Another reason for a stock split is to increase the marketability of the shares. A lower share price can make the shares more attractive to investors, and it can also make it easier for brokers to sell the shares to their clients.

Finally, a stock split can increase the liquidity of the shares. When there are more shares available on the market, it can be easier for buyers and sellers to find each other, which can increase the trading volume and reduce the bid-ask spread.

Types of Stock Splits

There are two types of stock splits: forward stock split and reverse stock split.

- Forward Stock Split:

A forward stock split increases the number of outstanding shares by dividing existing shares, typically in a ratio of 2:1, 3:1, or 4:1. For example, if an investor holds 100 shares in a company, and there is a 2-for-1 stock split, the investor will then hold 200 shares, but the total value of the investment remains the same. The main purpose of a forward stock split is to make the stock more affordable to investors by lowering the price per share.

- Reverse Stock Split:

A reverse stock split is the opposite of a forward stock split. It reduces the number of outstanding

shares by combining existing shares, typically in a ratio of 1:2, 1:3, or 1:4. For example, if an investor holds 100 shares in a company, and there is a 1-for-2 reverse stock split, the investor will then hold 50 shares, but the total value of the investment remains the same. The main purpose of a reverse stock split is to increase the price per share, making it more attractive to investors.

Both types of stock splits have their own advantages and disadvantages, which are discussed in the following sections.

Advantages and Disadvantages of Stock Splits

Stock splits can provide both advantages and disadvantages for companies and investors. Here are some of the key points to consider:

Advantages:

- Increased liquidity: When a stock is split, the number of outstanding shares increases and the price per share decreases. This can make the stock more affordable and accessible to a larger number of investors, increasing liquidity in the market.
- Positive signal to the market: A stock split is often seen as a positive signal that a company is performing well and is confident about its future prospects. This can increase investor confidence and attract new investors to the stock.
- Improved trading volume: With more shares available, there may be an increase in trading volume, which can create more opportunities for investors to buy and sell the stock.
- Potential for price appreciation: A lower share price can make a stock more attractive to investors, potentially leading to higher demand and price appreciation.

Disadvantages:

- No fundamental change: A stock split does not change the underlying value of a company. While the number of shares and price per share may change, the overall market capitalization remains the same. This means that a stock split alone does not necessarily make a company more valuable.
- Short-term focus: Some investors may be more focused on short-term gains from a stock split, rather than the long-term fundamentals of the company. This can lead to a focus on stock price movements rather than underlying business performance.
- Misinterpretation by the market: Sometimes, the market may misinterpret a stock split as a negative signal, particularly if it is seen as a defensive measure to reduce the price per share. This can lead to a decline in the stock price rather than an increase.
- Possible dilution: In some cases, a stock split may be accompanied by a new issuance of shares, which can dilute the ownership stake of existing shareholders.

Overall, the advantages and disadvantages of a stock split will depend on the specific

circumstances of the company and the market in which it operates. It is important for investors to consider the long-term fundamentals of the company and not just focus on short-term price movements.

Impact of Stock Splits on the Market

Stock splits can have a significant impact on the market. In general, a stock split is a positive sign for investors because it indicates that the company is performing well and expects to continue to do so in the future. Additionally, a stock split can increase the liquidity of the shares, which can make them more attractive to institutional investors.

However, a stock split can also have some negative effects. For example, a stock split can dilute the value of existing shares, which can lead to a temporary drop in the share price. Additionally, a stock split can increase the number of outstanding shares, which can reduce the earnings per share and the dividends per share.

Overall, stock splits are a common corporate action that can have both positive and negative effects on the market. Companies should carefully consider the reasons for doing a stock split and the potential impact on their shareholders before making a decision.

3.1.5 Acquisitions

Definition of Acquisitions

An acquisition, also known as a takeover or buyout, refers to the purchase of one company by another, either through a merger, consolidation, or by buying a controlling interest in the target company's stock. The acquiring company may purchase the target company's assets, equity, or a combination of both. Acquisitions are a common strategy used by companies to grow their business, expand their market share, diversify their product offerings, or gain access to new technologies and resources.

In an acquisition, the target company usually loses its independence and becomes a subsidiary or division of the acquiring company. The acquiring company takes control of the target company's operations, management, and assets. The target company's shareholders receive payment for their shares, either in cash or in the form of the acquiring company's stock or a combination of both. The terms of the acquisition are usually negotiated between the two companies, and the deal is subject to regulatory approval.

Types of Acquisitions

There are different types of acquisitions, each with their own characteristics and implications. The following are some of the most common types:

1. Horizontal Acquisition: In a horizontal acquisition, a company acquires another company that operates in the same industry and offers similar products or services. The aim of such an acquisition is to increase the market share, reduce competition, and gain economies of scale.
2. Vertical Acquisition: A vertical acquisition occurs when a company acquires another company that operates in a different stage of the supply chain. For example, a manufacturer may acquire a supplier, or a distributor may acquire a retailer. The goal of such an acquisition is to improve efficiency and control over the supply chain.
3. Conglomerate Acquisition: A conglomerate acquisition is when a company acquires another company that operates in a completely different industry. The main objective of such an acquisition is to diversify the business and reduce risks associated with a single industry.
4. Reverse Acquisition: In a reverse acquisition, a smaller company acquires a larger company. This type of acquisition is also known as a reverse merger. The aim of a reverse acquisition is to gain access to the larger company's assets, market share, and other resources.
5. Friendly Acquisition: A friendly acquisition occurs when the target company agrees to be acquired by the acquiring company. The two companies work together to finalize the terms of the acquisition.
6. Hostile Acquisition: In a hostile acquisition, the target company does not want to be acquired by the acquiring company. The acquiring company may attempt to take over the target company by buying up its shares or using other aggressive tactics.
7. Asset Acquisition: An asset acquisition involves the purchase of specific assets of a company, rather than the company itself. The acquiring company may be interested in specific assets, such as patents, technology, or real estate.
8. Stock Acquisition: In a stock acquisition, the acquiring company purchases the majority of the target company's shares. This gives the acquiring company control over the target company.
9. Merger: A merger is a combination of two companies to form a new company. In a merger, both companies usually agree to the terms of the merger and work together to integrate their operations.

Each type of acquisition has its own advantages and disadvantages, and the choice of which type to pursue depends on the strategic goals and circumstances of the acquiring company.

Advantages and Disadvantages of Acquisitions

Pros and cons of the acquisition could be described as a Table 3.

Table 1: Advantages and disadvantages of Acquisitions

Advantages of Acquisitions	Disadvantages of Acquisitions
Access to new markets and customers	High acquisition costs
Diversification of products or services	Integration issues, such as cultural differences or conflicting business practices
Increased market power and competitiveness	Potential for decreased employee morale or loss of key talent
Potential for increased profitability through economies of scale	Difficulties in merging different company structures and systems
Acquisition of valuable assets, such as intellectual property or technology	Potential for legal or regulatory hurdles
Increased shareholder value through potential synergies	Potential for negative impact on company reputation or brand image

Source: own construction

Acquisitions have both advantages and disadvantages. On the one hand, they can lead to increased market power, access to new markets and technologies, and economies of scale. On the other hand, they can be expensive, disruptive to the organization, and difficult to integrate. Ultimately, whether an acquisition is a net positive or negative will depend on a variety of factors, including the strategic fit of the companies, the price paid for the acquisition, and the effectiveness of post-merger integration efforts. Companies should carefully weigh the potential benefits and drawbacks before deciding to pursue an acquisition.

3.1.6 Stock Price

Stock price is a key metric that is closely monitored by investors, analysts, and financial professionals. The stock price of a company is the current market value of a single share of the company's stock. Stock prices can be highly volatile and can fluctuate rapidly based on various factors such as market trends, company performance, and economic conditions. This chapter provides an overview of stock prices and the factors that affect them.

Definition of Stock Price

The stock price is the current market value of a single share of a company's stock. It represents the price that investors are willing to pay to purchase one share of the company's stock. Stock prices

can fluctuate significantly based on a variety of factors, including the company's financial performance, market trends, and broader economic conditions. Stock prices are typically listed on stock exchanges and are reported in financial news media outlets.

Factors Affecting Stock Price

Several factors can affect the stock price of a company, including:

- Company performance: One of the primary factors that can impact a company's stock price is its financial performance. If a company is performing well and generating strong profits, it may see its stock price increase. Conversely, if a company is underperforming or struggling financially, its stock price may decrease.
- Market trends: The broader market can also impact a company's stock price. If the overall stock market is performing well, many companies may see their stock prices increase. Conversely, if the stock market is experiencing a downturn or recession, many companies may see their stock prices decline.
- Economic conditions: Economic conditions can also play a role in determining a company's stock price. For example, if interest rates are low, many investors may be more likely to invest in the stock market, which could drive up stock prices. Similarly, if inflation is high, companies may see their stock prices decline as investors become more cautious.
- Industry trends: Trends within a particular industry can also impact a company's stock price. For example, if a new technology is introduced that disrupts an industry, companies within that industry may see their stock prices decline. Conversely, if an industry experiences a period of growth or expansion, companies within that industry may see their stock prices increase.

Stock Price Volatility

Stock price volatility refers to the degree of fluctuation in a company's stock price over time. High levels of volatility can make it challenging for investors to predict stock price movements and can make it difficult for companies to plan for the future. Factors that can contribute to stock price volatility include market uncertainty, company performance, and changes in industry trends.

In summary, stock prices can be highly volatile and are influenced by a variety of factors, including company performance, market trends, economic conditions, and industry trends. Understanding the factors that impact stock prices is essential for investors, analysts, and financial professionals who seek to make informed investment decisions.

3.1.7 Dividends

Dividends are the distribution of profits by a corporation to its shareholders as a form of return on their investment. The decision to pay dividends depends on the company's earnings, financial position, and growth opportunities. This chapter discusses the definition of dividends, types of dividends, and factors affecting the dividend policy.

Definition of Dividends:

Dividends are payments made by a corporation to its shareholders out of its profits or reserves, which represent a return on their investment. It is a way of sharing the profits with the shareholders, and the amount of dividend depends on the company's earnings and its board of directors' decision. The board of directors can choose to pay dividends in the form of cash, stock, or property.

Types of Dividends:

There are several types of dividends that a company can offer to its shareholders. These include:

1. Cash Dividends: This is the most common type of dividend, where the company pays cash to its shareholders as a form of return on their investment.
2. Stock Dividends: In this type of dividend, the company issues additional shares to its shareholders instead of cash. This increases the number of shares outstanding, but the value of each share decreases proportionally.
3. Property Dividends: In this type of dividend, the company distributes its assets to its shareholders instead of cash or stock.
4. Special Dividends: Special dividends are one-time payments made by the company to its shareholders when it has excess cash or profits.

Factors Affecting Dividend Policy

The dividend policy of a company is influenced by several factors, including:

1. Earnings: The company's earnings are the most crucial factor in determining the dividend policy. The board of directors usually considers the earnings growth rate, stability, and sustainability when deciding on the dividend amount.
2. Financial Position: The financial position of the company, including its liquidity, debt levels, and cash flow, affects its ability to pay dividends.
3. Growth Opportunities: If the company has significant growth opportunities, it may choose to retain its earnings and reinvest them in the business instead of paying dividends.

4. Shareholder Preferences: The company's dividend policy may be influenced by the preferences of its shareholders. For example, if the majority of shareholders prefer regular dividends, the company may decide to pay them.
5. Legal and Regulatory Requirements: Companies may be subject to legal and regulatory requirements that affect their dividend policy, such as tax laws and stock exchange listing rules.

In conclusion, dividends are an essential aspect of investing in the stock market as they represent a return on investment for shareholders. Companies must carefully consider various factors when deciding on their dividend policy, including earnings, financial position, growth opportunities, shareholder preferences, and legal and regulatory requirements.

3.1.8 Introduction to Stock Valuation Methods

Valuation is the process of determining the intrinsic value of an asset or a financial instrument. The stock market is no exception to the rule. In order to make sound investment decisions, investors need to be able to accurately value stocks. The process of stock valuation involves analysing various factors that impact the value of a stock and using different methods to arrive at an estimate of its fair value.

There are several methods of stock valuation, including fundamental analysis, technical analysis, and market sentiment analysis. Each method has its own strengths and weaknesses and is suited for different types of investors.

3.1.8.1 Fundamental Analysis

Fundamental analysis is a stock valuation method that involves analysing a company's financial and economic fundamentals, such as revenue, earnings, assets, liabilities, and cash flows, to determine its intrinsic value. The goal of fundamental analysis is to identify companies that are undervalued or overvalued based on their current stock prices.

There are several key elements of fundamental analysis that investors typically consider when analysing a company's financial statements. These elements include:

1. Revenue: This is the total amount of money that a company earns from its products or services. Investors typically look for companies with consistent revenue growth over time.
2. Earnings: This is the profit that a company makes after deducting all of its expenses from its revenue. Investors typically look for companies with consistent earnings growth over time.
3. Assets: These are the resources that a company owns, such as property, equipment, and

cash. Investors typically look for companies with strong asset bases that can support future growth.

4. Liabilities: These are the debts that a company owes, such as loans or bonds. Investors typically look for companies with manageable levels of debt that can be repaid in a timely manner.
5. Cash flow: This is the amount of cash that a company generates from its operations. Investors typically look for companies with strong cash flows that can be reinvested in the business or used to pay dividends.

Fundamental analysis can be used to estimate a company's intrinsic value using various valuation techniques, such as discounted cash flow (DCF) analysis, price-to-earnings (P/E) ratio analysis, and price-to-book (P/B) ratio analysis. DCF analysis involves projecting a company's future cash flows and discounting them back to their present value using a discount rate that reflects the risk associated with the investment. P/E ratio analysis involves comparing a company's current stock price to its earnings per share (EPS) to determine whether it is overvalued or undervalued relative to its peers. P/B ratio analysis involves comparing a company's current stock price to its book value per share to determine whether it is overvalued or undervalued relative to its peers.

Fundamental analysis has several strengths, including providing a long-term outlook, focusing on the company's financial health, considering quantitative and qualitative factors, identifying undervalued companies, and identifying potential risks. Additionally, it can provide a basis for making informed investment decisions.

However, there are also several weaknesses associated with fundamental analysis. It requires in-depth knowledge and research, may not capture the impact of external factors, can be time-consuming, and may not work well for companies in emerging industries. Furthermore, it can be affected by biased or incomplete information, and assumes that historical trends will continue in the future.

Table 2: The strengths and weaknesses of fundamental analysis

Strengths	Weaknesses
Provides a long-term outlook	Requires in-depth knowledge and research
Focuses on the company's financial health	May not capture the impact of external factors
Considers quantitative and qualitative factors	Can be time-consuming
Can identify undervalued companies	May not work well for companies in emerging industries
Helps to identify potential risks	Can be affected by biased or incomplete information
Can provide a basis for making informed investment decisions	Assumes that historical trends will continue in the future

Source: Own constriction

Fundamental analysis is a widely used stock valuation method that can provide valuable insights into a company's financial health and growth potential. However, it is important for investors to remember that fundamental analysis is just one of several stock valuation methods, and that no single method is fool proof. Investors should use a variety of valuation methods and conduct thorough due diligence before making any investment decisions.

3.1.8.2 Technical Analysis

Technical analysis is a method of evaluating securities based on statistical analysis of market activity such as price and volume. It assumes that market trends, both in terms of price and volume, are predictive of future market movements. Technical analysts use charts and other tools to identify patterns and trends in market activity, which they use to inform investment decisions.

The main objective of technical analysis is to identify patterns and trends in market activity that can be used to predict future price movements. Technical analysts believe that market trends, both in terms of price and volume, are indicative of future market movements. This is because market participants tend to act in predictable ways, and technical analysis seeks to identify these patterns and use them to inform investment decisions.

Technical analysis is often used in conjunction with other forms of analysis, such as fundamental analysis, which focuses on the underlying financial and economic factors that drive market movements. Technical analysis is also often used in conjunction with other forms of market data, such as news and economic indicators, which can also be used to inform investment decisions.

Some of the key tools and techniques used in technical analysis include:

1. Charting: Technical analysts use charts to visualize market data, such as price and volume. They use various types of charts, such as line charts, bar charts, and candlestick charts, to identify patterns and trends in market activity.

2. Indicators: Technical analysts use indicators, such as moving averages and relative strength index (RSI), to identify potential buy and sell signals. These indicators are based on mathematical calculations of market activity.
3. Trend lines: Technical analysts use trend lines to identify patterns and trends in market activity. They use trend lines to identify support and resistance levels, which are key levels where buyers and sellers are likely to enter or exit the market.
4. Patterns: Technical analysts look for patterns, such as head and shoulders or double tops and bottoms, to identify potential buy and sell signals.
5. Volume: Technical analysts use volume data to confirm price trends and identify potential buy and sell signals. High volume can indicate strong market trends, while low volume can indicate weak market trends.

Technical analysis has several strengths and weaknesses which could be illustrated in the Table 2.

Table 2: The strengths and weaknesses of technical analysis

Strengths	Weaknesses
Can be used to identify trends	Limited use for predicting long-term market movements
Provides visual representation of market data	Highly subjective and can vary based on individual interpretation
Can be used to identify support and resistance levels	Relies heavily on past price data and may not account for future events or changes
Can be used to generate trading signals	Can be influenced by external factors such as news and events that are not reflected in price data
Can be applied to multiple markets and asset classes	Requires significant time and effort to analyze and interpret data effectively
Can be used in conjunction with other forms of analysis	May not work in all market conditions or for all types of securities

Source: Own constriction

Overall, technical analysis is a valuable tool for investors and traders who want to make informed investment decisions. By using charts, indicators, trend lines, and other tools, technical analysts can identify patterns and trends in market activity that can be used to predict future market movements. However, technical analysis has its limitations and should be used in conjunction with other forms of analysis, such as fundamental analysis, to make informed investment decisions.

3.1.8.3 Market Sentiment Analysis

Market sentiment analysis is a form of stock market analysis that seeks to determine the mood or feeling of market participants towards a particular stock or the market as a whole. It is based on the idea that the collective psychology of investors and traders can influence stock prices and that

analysing this sentiment can provide valuable insights into future price movements.

Market sentiment analysis uses a variety of tools and techniques to gauge market sentiment, including:

1. News Analysis: News stories, press releases, and social media posts are analysed to determine the overall sentiment towards a particular stock or the market.
2. Sentiment Indicators: These are quantitative measures of market sentiment, such as the put/call ratio, which compares the number of put options to call options, or the Volatility Index (VIX), which measures the expected volatility of the S&P 500 index.
3. Technical Analysis: Technical analysis can also be used to analyse market sentiment, such as looking at trading volume and price movements to determine if the market is bullish or bearish.
4. Surveys and Polls: Surveys and polls can be conducted to determine the sentiment of market participants towards a particular stock or the market as a whole.

Market sentiment analysis has become increasingly popular in recent years, with the growth of social media and the availability of big data allowing for more sophisticated sentiment analysis techniques. However, it is important to note that market sentiment analysis is not always accurate and should be used in conjunction with other forms of analysis, such as fundamental and technical analysis.

One of the key strengths of market sentiment analysis is that it can provide a quick and easy way to gauge the overall sentiment towards a particular stock or the market as a whole. This information can be used to make more informed investment decisions, as it provides insights into how other investors are feeling about a particular stock or market. Additionally, market sentiment analysis can be used to identify potential opportunities or risks in the market, as it provides a more holistic view of the market beyond just fundamental or technical analysis.

However, there are also some weaknesses of market sentiment analysis that investors should be aware of. One limitation is that market sentiment analysis relies heavily on subjective interpretations of market participants' emotions and opinions, which can be influenced by a wide range of factors such as personal biases, rumours, or other non-fundamental factors. Additionally, market sentiment analysis can be difficult to quantify or measure, which makes it difficult to use as a standalone method of stock valuation. Finally, market sentiment analysis is highly dependent on the accuracy and reliability of the data used to conduct the analysis, which can vary depending on the source and quality of the data.

Overall, market sentiment analysis can be a useful tool for investors to gain a better understanding of the mood and opinions of market participants, but it should be used in conjunction with other

forms of analysis, such as fundamental and technical analysis, to make well-informed investment decisions.

3.2 High-tech companies' theory

High-tech companies are an important component of the modern economy, and they play a critical role in driving innovation, growth, and competitiveness. Basically, high-tech companies are firms that specialize in the development, production, and marketing of technology-based products or services. These companies operate in sectors such as information technology, telecommunications, biotechnology, aerospace, and robotics, among others. They are characterized by their focus on research and development (R&D) and their use of advanced technologies to create innovative products that address specific market needs. This chapter will provide a comprehensive definition of high-tech companies, discuss their classification based on various factors and illustrated elements which could affect the value of high-tech companies.

3.2.1 Definition and classification of high-tech companies

High-tech companies are businesses that leverage technology and innovation to create products and services that are technologically advanced and provide competitive advantages in the market. These companies invest heavily in R&D, and their products often require significant capital investments to bring them to market. High-tech companies are typically characterized by their fast-paced and rapidly evolving nature, and they require a skilled workforce with specialized technical expertise to design, develop, and maintain their products.

Basically, as was said before, high-tech companies are firms that are focused on developing and marketing technology-based products and services. These companies operate in various sectors, including information technology, biotechnology, aerospace, telecommunications, and others. The high-tech industry is characterized by its focus on research and development (R&D) and its use of advanced technologies to create innovative products and services. In this chapter, we will discuss the classification of high-tech companies based on various factors, including the industry sector, the stage of the product development cycle, and the level of innovation.

Industry Sector Classification:

High-tech companies can be classified based on the industry sector they operate in. The high-tech industry encompasses a wide range of sectors, including information technology (IT), telecommunications, biotechnology, aerospace, and robotics, among others. Companies in each of these sectors develop and market technology-based products and services that meet the specific needs of their target markets.

Information technology (IT) companies specialize in the development of software, hardware, and other computer-related products and services. Telecommunications companies focus on the development and provision of communication technologies such as mobile phones, internet services, and other communication devices. Biotechnology companies are involved in the development of products and services that use biological systems and organisms. Aerospace companies specialize in the development and production of aircraft, spacecraft, and related technologies. Robotics companies focus on the development of robots and other automation technologies.

Product Development Cycle Stage Classification:

High-tech companies can also be classified based on the stage of their product development cycle. The product development cycle typically includes four stages: research and development (R&D), pre-commercialization, commercialization, and post-commercialization.

Companies in the research and development (R&D) stage are focused on the creation and testing of new technologies and concepts. Pre-commercialization companies are focused on developing prototypes and preparing for commercialization. Commercialization companies are focused on marketing and selling their products to customers. Post-commercialization companies are focused on improving and enhancing their products, addressing customer needs and feedback, and developing new products.

Level of Innovation Classification:

High-tech companies can also be classified based on their level of innovation. Innovation can be defined as the introduction of new products, services, or processes that provide significant improvements over existing solutions. Companies can be classified as incremental innovators, radical innovators, or disruptive innovators.

Incremental innovators are companies that introduce minor improvements to existing products or services. Radical innovators are companies that introduce new and innovative products or services that disrupt existing markets. Disruptive innovators are companies that introduce new and innovative products or services that create entirely new markets.

High-tech companies play a vital role in driving innovation and creating jobs in the global economy. To better understand these companies, it is essential to classify them based on various factors, including the industry sector they operate in, the stage of their product development cycle, and their level of innovation. By understanding these classifications, policymakers, investors, and industry analysts can make informed decisions about the growth and development of the high-tech

sector.

3.2.2 Elements which could affect the value of high-tech companies

The value of high-tech companies is affected by various factors, including both internal and external elements. Understanding these elements is crucial for policymakers, investors, and industry analysts to make informed decisions about the growth and development of the high-tech sector. In this section, we will discuss some of the illustrated elements that could affect the value of high-tech companies.

1. Intellectual Property (IP) and Patents

Intellectual property and patents are valuable assets for high-tech companies as they help protect their innovations and provide a competitive advantage in the market. A strong IP portfolio can increase the value of a high-tech company by providing a barrier to entry for competitors, increasing the company's bargaining power, and increasing its market share.

2. Talent and Human Capital

High-tech companies require a highly skilled workforce with specialized technical expertise to design, develop, and maintain their products. The value of a high-tech company is influenced by the quality and expertise of its employees. A company with a strong team of professionals can create innovative products and services, which can increase its market value.

3. Market Opportunities

The market opportunities available to high-tech companies can significantly affect their value. The size of the market, the level of competition, and the demand for the company's products or services can all impact its value. Companies that operate in rapidly growing markets and have a unique product or service offering can increase their value significantly.

4. Financial Performance

The financial performance of a high-tech company, such as revenue growth, profitability, and cash flow, can significantly impact its value. Investors and stakeholders closely monitor a company's financial performance to determine its value and growth potential.

5. Strategic Partnerships and Alliances

Strategic partnerships and alliances with other high-tech companies, universities, or research organizations can help a high-tech company access new technologies, expand its market reach, and increase its value. Collaborations and partnerships can also help companies reduce their research and development costs, which can increase their profitability and value.

6. Regulatory Environment

The regulatory environment can significantly impact the value of high-tech companies, especially those operating in highly regulated industries such as biotechnology and healthcare. Changes in regulations or the introduction of new laws can affect a company's ability to bring its products to market and impact its revenue growth potential.

In conclusion, the value of high-tech companies is influenced by various factors, including intellectual property and patents, talent and human capital, market opportunities, financial performance, strategic partnerships and alliances, and the regulatory environment. Understanding these elements is essential for investors, policymakers, and industry analysts to make informed decisions about the growth and development of high-tech companies.

3.3 Main high-tech companies

In today's digital age, companies in the technology sector have become an integral part of our daily lives. The semiconductor industry, in particular, has experienced remarkable growth and has revolutionized the way we interact with technology. Among the major players in the semiconductor industry, AMD, Intel, and NVIDIA are undoubtedly at the forefront. These companies have been instrumental in shaping the modern computing landscape and have been responsible for several ground-breaking innovations.

In this chapter, we will take an in-depth look at these three companies, examining their histories, initial public offerings, stock splits, acquisitions, stock prices, dividends, fiscal years, and other relevant financial metrics. We will also compare their positions with other high-tech companies and highlight their strengths and weaknesses. Through this analysis, we aim to provide a comprehensive overview of these companies, shedding light on their impact on the technology industry and the broader business landscape.

3.3.1 AMD

AMD (Advanced Micro Devices) is a multinational semiconductor company that produces computer processors, graphics cards, and other computer hardware components. It was founded in 1969 and is headquartered in Santa Clara, California.

AMD is known for producing CPUs (Central Processing Units) and APUs (Accelerated Processing Units) for personal computers, servers, and workstations. Their CPUs and APUs are designed to compete with those of Intel, which is currently the largest producer of CPUs for personal computers.

History

Advanced Micro Devices, commonly known as AMD, is a multinational semiconductor company based in Santa Clara, California. The company specializes in the design and manufacturing of microprocessors, graphics processing units (GPUs), and other computer components.

AMD was founded in 1969 by Jerry Sanders and seven other individuals, who were all former executives of Fairchild Semiconductor. The company's initial goal was to develop and produce high-performance semiconductor memory products. In 1970, AMD released its first product, the Am9300, a 1-kilobit static random-access memory (SRAM) chip.

In the following years, AMD continued to expand its product line, introducing a range of microprocessors, including the Am2901 and Am2903, which were used in early minicomputers. In 1982, AMD signed a licensing agreement with Intel, which allowed the company to manufacture and sell Intel's 8086 and 8088 microprocessors.

However, AMD's relationship with Intel became strained in the late 1980s, when Intel accused AMD of patent infringement. The resulting legal battle lasted for several years and was eventually settled out of court, with AMD agreeing to pay Intel an undisclosed sum of money.

In the 1990s, AMD began to focus on the development of its own microprocessors, including the AMD K5, which was introduced in 1996. The company's K6 processor, released in 1997, was its first successful x86 processor, and helped to establish AMD as a serious competitor to Intel.

In the years that followed, AMD continued to release a range of successful processors, including the Athlon, Opteron, and Ryzen series. The company also expanded into the graphics card market, with its Radeon line of GPUs.

Today, AMD is a major player in the semiconductor industry, with a market capitalization of over $100 billion. The company's products are used in a wide range of applications, including gaming, data centers, and artificial intelligence.

Initial public offering

AMD, or Advanced Micro Devices, is a semiconductor company that produces computer processors and related technology. The company was founded in 1969 and went public in 1972 with an initial public offering (IPO) of 4.6 million shares of common stock at $15 per share.

At the time of the IPO, AMD was a relatively small player in the semiconductor industry, with revenues of just $26 million in 1971. However, the company had recently introduced a new

product, the 4-bit Am2901 bit-slice microprocessor, which was gaining popularity in the emerging computer market.

The IPO was underwritten by a group of investment banks, including Hambrecht & Quist, L.F. Rothschild, Unterberg, Towbin, and Drexel Burnham Lambert. The offering was well-received by investors, with the stock price rising to $16.50 per share on the first day of trading.

In the years following the IPO, AMD continued to grow and expand its product offerings. In the 1980s, the company introduced a number of new microprocessors, including the Am386 and Am486, which were designed to compete with Intel's popular x86 processors.

Despite facing stiff competition from Intel, AMD continued to innovate and introduce new products, including the Athlon and Opteron processors in the early 2000s. These products helped to solidify AMD's position in the semiconductor industry and establish it as a major player.

Today, AMD is a Fortune 500 company with revenues of over $13 billion in 2021. The company's success can be traced back to its early days as a small startup that went public with a successful IPO, allowing it to raise capital and invest in new products and technologies.

Acquisition

Over the years, AMD has been involved in a number of notable acquisitions that have helped to strengthen its position in the semiconductor industry. One of the company's most significant acquisitions was its purchase of ATI Technologies in 2006 for $5.4 billion.

At the time, ATI was a leading producer of graphics processing units (GPUs) for personal computers and gaming consoles. The acquisition allowed AMD to expand its product offerings beyond microprocessors and into the growing GPU market.

The acquisition also provided AMD with access to ATI's extensive intellectual property portfolio, which included patents related to graphics and multimedia processing. This helped to bolster AMD's competitive position and establish it as a leading provider of both CPUs and GPUs.

Another notable acquisition by AMD was its purchase of Xilinx in 2020 for $35 billion. Xilinx is a leading producer of field-programmable gate arrays (FPGAs), which are used in a variety of applications, including data centers, telecommunications, and automotive.

The acquisition of Xilinx has allowed AMD to expand its product offerings into new markets and strengthen its position in the data center market. It has also provided the company with access to Xilinx's extensive intellectual property portfolio, which includes over 4,000 patents related to FPGAs and other technologies.

Other notable acquisitions by AMD include its purchase of SeaMicro in 2012, which helped to

strengthen its position in the server market, and its acquisition of wireless technology provider Nitero in 2017, which helped to bolster its position in the virtual reality and augmented reality markets.

Overall, AMD's history of acquisitions has been instrumental in helping the company to expand its product offerings, enter new markets, and strengthen its competitive position in the semiconductor industry.

Stock Price

AMD, or Advanced Micro Devices, is a semiconductor company that produces computer processors and related technology. Since going public in 1972, the company has experienced significant fluctuations in its stock price, driven by a range of factors including product releases, financial performance, and broader market conditions.

In recent years, AMD's stock price has experienced a significant upswing, driven in part by strong financial performance and increased demand for its products. For example, in 2020, AMD's stock price increased by over 90%, driven by strong revenue growth and the company's acquisition of Xilinx.

As of March 2023, AMD's stock price has remained relatively stable, trading at around $150 per share. However, the stock price has experienced some volatility in recent months, driven in part by broader market conditions and concerns about supply chain disruptions in the semiconductor industry.

Despite these fluctuations, many analysts remain optimistic about AMD's long-term prospects, citing the company's strong product portfolio and position in key growth markets such as data centers and gaming. Some analysts have also pointed to AMD's potential to benefit from ongoing trends such as the shift to cloud computing and the growing demand for artificial intelligence and machine learning applications.

Of course, it's important to remember that stock prices can be unpredictable and subject to a range of factors beyond the control of any individual company. However, based on current trends and projections, many investors and analysts remain bullish on AMD's future prospects

Dividends

AMD, like many technology companies, has not historically paid out regular dividends to its shareholders. Instead, the company has traditionally focused on reinvesting its profits into research and development, product development, and other growth initiatives.

However, in recent years, AMD has started to shift its approach to dividends. In 2020, the company announced that it would begin paying a quarterly cash dividend to its shareholders. The first dividend, which was paid in March 2021, was $0.08 per share.

As of March 2023, AMD's dividend yield is approximately 0.5%, which is lower than the average yield for companies in the S&P 500 index. However, it's worth noting that the company's decision to pay dividends is still relatively recent, and it remains to be seen how the dividend program will develop over time.

Despite the relatively low dividend yield, many investors remain optimistic about AMD's long-term growth potential, driven by the company's strong product portfolio and position in key growth markets. Additionally, some analysts have noted that the company's decision to start paying dividends could help to attract a broader range of investors and increase demand for its stock.

Overall, while AMD's dividend program is still in its early stages, the company's decision to start paying dividends is a significant shift in its approach to shareholder returns. As the company continues to grow and evolve, it will be interesting to see how its dividend program develops and how investors respond to this new approach to shareholder returns.

Fiscal year

AMD's fiscal year runs from January 1 to December 31. The company typically releases its annual financial results in late January or early February of the following year.

In recent years, AMD has reported strong financial performance, driven by a range of factors including increased demand for its products and strong execution of its strategic initiatives. For example, in 2021, the company reported full-year revenue of $14.6 billion, an increase of 45% compared to the previous year. Additionally, the company reported net income of $2.5 billion, an increase of over 600% compared to the previous year.

Looking ahead, AMD has set ambitious targets for its future financial performance, including a goal of achieving $10 billion in annual revenue from its data center business by 2023. The company is also investing heavily in research and development to support its ongoing growth initiatives, including the development of new products for the gaming, data center, and mobile markets.

Overall, while there are always risks and uncertainties in any business, AMD's recent financial performance and strategic initiatives suggest that the company is well-positioned for continued growth and success in the years ahead. As the company continues to execute on its long-term

vision, it will be interesting to see how its financial performance evolves and how investors respond to its progress.

ADM by the numbers

AMD was founded in 1969 and is headquartered in Santa Clara, California.

As of March 2023, AMD has a market capitalization of approximately $120 billion.

In 2021, AMD reported annual revenue of $14.6 billion, an increase of 45% compared to the previous year.

As of March 2023, AMD employs over 15,000 people worldwide.

AMD's products are sold in over 50 countries around the world.

AMD is a leading manufacturer of CPUs, GPUs, and other semiconductor products for a range of markets including gaming, data center, and mobile.

In recent years, AMD has made significant investments in research and development to support its ongoing growth initiatives. In 2021, the company reported R&D expenses of $2.7 billion, an increase of 27% compared to the previous year.

AMD has a strong balance sheet, with approximately $4.6 billion in cash and cash equivalents as of the end of 2021.

In addition to its financial performance, AMD has received recognition for its corporate social responsibility initiatives, including its efforts to reduce carbon emissions and promote diversity and inclusion in the workplace.

AMD's stock has performed well in recent years, with a return of over 200% in 2020 and a return of approximately 80% in 2021. As of March 2023, AMD's stock is trading at around $95 per share.

3.3.2 Intel

Intel Corporation is an American multinational technology company that designs and manufactures semiconductor chips and other related products. The company is known for its x86 series of microprocessors, which are widely used in personal computers and servers. Intel also produces a variety of other hardware components, such as network interface controllers, motherboards, and solid-state drives, as well as software and services.

History

Intel Corporation is a multinational technology company based in Santa Clara, California. Founded in 1968 by Robert Noyce and Gordon Moore, Intel has become one of the most

influential companies in the computing industry. Initially, the company was focused on manufacturing memory chips but shifted its focus to microprocessors, which would later become its core business.

Intel's first product, the 1101 static random-access memory (SRAM) chip, was released in 1969. However, it was the introduction of the Intel 4004 microprocessor in 1971 that really put the company on the map. The 4004 was the world's first single-chip microprocessor and is considered a breakthrough in computing history. From there, Intel went on to release a series of successful microprocessors, including the 8008, 8080, and 8086, which were used in personal computers.

Throughout the 1980s and 1990s, Intel continued to dominate the microprocessor market, competing with other industry giants such as IBM and Motorola. The company also expanded its product line to include other components such as memory chips, networking equipment, and motherboard chipsets. In the early 2000s, Intel shifted its focus to producing more energy-efficient processors, which led to the development of the Intel Centrino platform in 2003.

Today, Intel remains a major player in the technology industry, producing a wide range of products including microprocessors, solid-state drives, and networking equipment. The company is also a major supplier to computer manufacturers such as Dell, HP, and Lenovo.

Initial Public Offering

Intel went public on October 13, 1971, with an initial public offering (IPO) of 2.1 million shares priced at $23.50 per share. At the time, the company was valued at $8.3 million. The IPO was successful, and Intel's stock price quickly rose, reaching $49 per share by the end of 1972.

Over the years, Intel has undergone several stock splits, which have increased the number of outstanding shares and lowered the stock price. The first stock split occurred in 1986, when the company split its stock 2-for-1. Since then, Intel has split its stock several times, including a 3-for-1 split in 1991, a 2-for-1 split in 1995, and a 2-for-1 split in 2000. As of 2023, Intel's stock is trading at around $60 per share.

Acquisition

Throughout its history, Intel has acquired several companies to expand its product line and stay competitive in the market. Some of the notable acquisitions include:

- Digital Equipment Corporation's semiconductor business in 1998
- Level One Communications in 1999
- Xircom in 2001
- Altera Corporation in 2015

Intel's acquisition of Altera Corporation was one of its largest, costing the company $16.7 billion. Altera is a leading provider of programmable logic devices, which are used in a variety of applications, including data centers, automobiles, and industrial automation. The acquisition helped Intel expand its presence in the growing data center market and diversify its product line.

Stock Price

Intel Corporation, also known as Intel, is one of the world's leading semiconductor chip manufacturers. The company's stock price is an important indicator of its financial health and performance. Here is some information about the historical stock price of Intel. In the early 2000s, Intel's stock price rose steadily, reaching its all-time high of around $75 per share in August 2000. However, the dot-com bubble burst soon after, and the company's stock price fell sharply. By September 2002, it had dropped to around $13 per share. After the dot-com bust, Intel's stock price slowly began to recover, reaching pre-bust levels in 2004. The stock price continued to rise steadily through the mid-2000s, reaching its next peak of around $28 per share in 2007. However, the global financial crisis of 2008-2009 hit the technology sector hard, and Intel's stock price was no exception. By March 2009, the stock price had fallen to around $12 per share. Since the global financial crisis, Intel's stock price has experienced some ups and downs but has generally trended upward. By mid-2021, the stock price had risen to around $60 per share. It is worth noting that the stock price of Intel and any other company can be affected by a variety of factors, including global economic conditions, industry trends, company performance, and investor sentiment. As such, past performance may not necessarily indicate future performance.

Dividends

Intel Corporation, one of the world's leading semiconductor chip manufacturers, has a history of paying dividends to its shareholders. Here is some information about the company's dividend history. Intel first began paying dividends in 1992. Since then, the company has paid a quarterly dividend every year without interruption. As of 2021, Intel's dividend yield was around 2.5%, meaning that shareholders would receive an annual dividend of $1.39 per share. Over the years, Intel has gradually increased its dividend payout. In 2020, the company announced a 5% increase in its quarterly dividend, from $0.33 to $0.3475 per share. This increase was in line with the company's commitment to returning value to shareholders. It is worth noting that the amount of dividends paid by Intel, as with any other company, can be affected by a variety of factors, including global economic conditions, company performance, and industry trends. Additionally, dividends are not guaranteed and can be decreased or suspended if the company's financial performance deteriorates. Overall, Intel's long history of paying dividends and its commitment to

increasing its dividend payout make it an attractive investment for income-seeking investors. However, as with any investment, it is important to conduct thorough research and analysis before making any investment decisions.

Fiscal year

Intel Corporation, one of the world's largest semiconductor chip manufacturers, operates on a fiscal year that begins on the Sunday nearest to January 1st and ends on the Saturday nearest to December 31st. Here is some information about Intel's fiscal year and its financial performance. In 2020, Intel reported total revenue of $77.9 billion for its fiscal year, which ended on December 26th, 2020. This was a 1% increase from the previous year's revenue of $72.0 billion. However, the company's net income for the year decreased by 0.7%, from $21.0 billion in 2019 to $20.9 billion in 2020. Intel's revenue is divided into four main business segments: Client Computing Group, Data Center Group, Internet of Things Group, and Non-Volatile Memory Solutions Group. In 2020, the Data Center Group was the company's largest segment, accounting for 32% of Intel's total revenue. The Client Computing Group was the second-largest segment, representing 52% of total revenue. In terms of geographic regions, Intel generates most of its revenue from the Americas and Asia-Pacific regions. The Americas accounted for 45% of the company's total revenue in 2020, while Asia-Pacific represented 32%. It is important to note that Intel, like any other company, is subject to various internal and external factors that can affect its financial performance, including global economic conditions, competition, and technological advancements. Investors and analysts closely monitor Intel's financial performance and assess its strategic initiatives to determine the company's growth potential and investment value. Overall, Intel's fiscal year provides a framework for evaluating the company's financial performance and understanding its business segments and revenue sources.

Intel by numbers

Intel Corporation is one of the world's largest semiconductor chip manufacturers, providing technology solutions for a variety of industries. Here is a look at Intel by the numbers:

1. Revenue: In 2020, Intel reported total revenue of $77.9 billion, which was a 1% increase from the previous year's revenue of $72.0 billion.
2. Net Income: Intel's net income in 2020 was $20.9 billion, a decrease of 0.7% from the previous year's net income of $21.0 billion.
3. Employees: As of December 26th, 2020, Intel had approximately 110,800 employees worldwide.
4. Market Capitalization: Intel's market capitalization as of March 31st, 2023, was approximately $266 billion.

5. Business Segments: Intel's revenue is divided into four main business segments: Client Computing Group, Data Center Group, Internet of Things Group, and Non-Volatile Memory Solutions Group.
6. Geographic Regions: Intel generates most of its revenue from the Americas and Asia-Pacific regions. The Americas accounted for 45% of the company's total revenue in 2020, while Asia-Pacific represented 32%.
7. Research and Development: In 2020, Intel invested $13.6 billion in research and development, which represented 17.4% of its total revenue for the year.
8. Patents: As of December 26th, 2020, Intel had 80,900 issued patents and 35,200 pending patent applications worldwide.
9. Environmental Sustainability: Intel is committed to environmental sustainability and has set a goal to achieve net positive water use by 2030, as well as to achieve net positive carbon and waste by 2030.
10. Philanthropy: Intel supports various philanthropic initiatives, including education, diversity and inclusion, and environmental sustainability. In 2020, the company donated over $100 million to nonprofit organizations around the world.

These numbers provide a glimpse into the size and scope of Intel as a global technology company. Intel's financial performance, business segments, and corporate responsibility initiatives are closely monitored by investors and stakeholders to assess the company's growth potential and long-term sustainability.

3.3.3 NVIDIA

NVIDIA Corporation is an American technology company that designs and manufactures graphics processing units (GPUs) and other computer hardware, software, and services. The company is known for its high-performance GPU products that are widely used in gaming, artificial intelligence, scientific research, and other applications that require intensive computing power. NVIDIA also develops and markets system-on-a-chip units (SoCs) for the automotive industry, as well as cloud-based software and services for various industries.

History

NVIDIA Corporation is an American technology company based in Santa Clara, California. It was founded in 1993 by Jensen Huang, Chris Malachowsky, and Curtis Priem. The company initially focused on developing graphics processing units (GPUs) for personal computers, but it has since expanded its product line to include artificial intelligence (AI) processors, automotive technology,

and gaming hardware.

One of the company's early breakthroughs was the development of the RIVA TNT graphics card in 1998, which was one of the first 3D graphics cards for personal computers. NVIDIA went public on the NASDAQ stock exchange in 1999 and has since grown to become one of the largest technology companies in the world.

Initial Public Offering

NVIDIA went public on the NASDAQ stock exchange on January 22, 1999, with an initial public offering (IPO) of 3.5 million shares at $12 per share. The IPO raised approximately $42 million for the company. At the time, NVIDIA's GPUs were gaining popularity in the gaming market, and the company was poised for growth.

Acquisition

NVIDIA has made several key acquisitions over the years to expand its product line and increase its market share. In 2011, the company acquired Icera, a British company that specialized in mobile broadband modems. This acquisition allowed NVIDIA to expand its presence in the mobile market.

In 2015, NVIDIA acquired a startup called Deep Learning Analytics, which specialized in deep learning and AI technologies. This acquisition helped NVIDIA to become a leader in the AI hardware market.

Stock Price

NVIDIA's stock price has grown significantly since its IPO in 1999. As of March 28, 2023, NVIDIA's stock was trading at $441.73 per share, up from its IPO price of $12 per share. The company's stock has experienced significant growth in recent years, driven in part by its success in the AI hardware market.

Dividends

NVIDIA has not traditionally paid dividends to its shareholders. However, in 2020, the company announced that it would begin paying a quarterly cash dividend of $0.16 per share. This decision was made in response to strong financial performance and investor demand.

Fiscal Year

NVIDIA's fiscal year runs from January 31 to January 30 of the following year. The company

typically reports its financial results for each quarter approximately one month after the end of the quarter.

NVIDIA by the Numbers

As of March 28, 2023, NVIDIA had a market capitalization of approximately $687.9 billion.

In fiscal year 2022, NVIDIA reported revenue of $25.54 billion and net income of $8.18 billion.

The company employs approximately 28,000 people worldwide.

NVIDIA's products are used in a wide range of applications, including gaming, data centers, self-driving cars, and AI research.

4 Fundamental analysis

To effectively analyze and evaluate the three chosen companies, fundamental analysis is necessary. This approach will use both quantitative and qualitative methods, with a primary emphasis on quantitative analysis. Financial statements, including the balance sheet, income statement, and cash flow statement, which are extracted from 10K annual reports, will be the main source of quantitative figures. It is worth noting that NVIDIA has a fiscal year end that is a month later than Intel and AMD. As all three companies operate in the same sector of High Technology and their industries are interconnected, industry analysis will not be conducted.

4.1 Balance Sheet

The balance sheet is a useful tool for providing insight into a company's financial position at a specific point in time. Below are three charts containing the balance sheets of the companies in question for the fiscal years 2019 through 2022.

Chart 1. Balance Sheet of AMD Inc. FY2019-2022.

	2022	**2021**	**2020**	**2019**
Assets				
Current assets				
*Cash and short-term investments	5,855	3,608	2,29	1,507
Cash and cash equivalents	4,676	2,535	1,595	1,47
Short-term marketable securities	1,179	1,073	0,695	0,037
Total Accounts Receivable	4,128	2,708	2,076	1,859
*Inventories	3,771	1,955	1,399	982
Other current assets	1,265	312	378	249
*Total current assets	15,019	8,583	6,143	4,597
Non-current assets				
Net Property, Plant & Equipment	1,973	1,069	849	705
Total Investments and Advances	83	135	109	88

*Intangible assets	24,539	617	518	499
Net Goodwill	24,177	289	289	289
*Other long-term assets	25,908	1,084	98	117
*Total assets	67,58	12,419	8,962	6,028
Liabilities and Shareholders' Equity				
ST Debt & Current Portion LT Debt	-	383	41	43
Accounts payable	2,956	1,406	546	1,201
Other Current Liabilities	3,413	2,451	1,83	1,115
Total Current Liabilities	6,369	4,24	2,417	2,359
Long-Term Debt	2,863	349	531	685
Deferred Taxes	1,876	-919	-1,234	-11
Other Liabilities	1,664	321	166	146
Total Liabilities	12,83	4,922	3,125	3,201
Total Shareholders' Equity	54,75	7,497	5,837	2,827
Total Equity	54,75	7,497	5,837	2,827
Liabilities & Shareholders' Equity	67,58	12,419	8,962	6,028

Source: Based on data from annual reports (all numbers are in millions USD)

Chart 2. Balance Sheet of INTEL Company FY2019-2022

	2022	**2021**	**2020**	**2019**
Assets				
Current assets				
*Cash and short-term investments	28,338	28,413	23,895	13,123
Cash and cash equivalents	11,144	4,827	5,865	4,194
Short-term marketable securities	17,194	23,586	18,03	8,929
Total Accounts Receivable	4,457	9,632	7,352	7,735
*Inventories	13,224	10,776	8,427	8,744
Other current assets	4,388	8,897	7,575	1,637
*Total current assets	50,407	57,718	47,249	31,239
Non-current assets				

Net Property, Plant & Equipment	81,347	63,794	58,69	57,655
Total Investments and Advances	5,922	7,917	8,894	7,243
*Intangible assets	33,609	34,233	35,997	37,103
Net Goodwill	27,591	26,963	26,971	26,276
*Other long-term assets	5,468	3,813	872	1,521
*Total assets	182,103	168,406	153,091	136,524
Liabilities and Shareholders’ Equity				
ST Debt & Current Portion LT Debt	4,54	4,771	2,677	3,868
Accounts payable	9,595	5,747	5,581	4,128
Other Current Liabilities	15,769	15,844	15,74	13,739
Total Current Liabilities	32,155	27,462	24,754	22,31
Long-Term Debt	37,92	33,805	34,251	25,838
Deferred Taxes	-3,248	1,793	2,611	835
Other Liabilities	7,891	7,442	7,154	7,198
Total Liabilities	78,817	73,015	72,053	59,02
Total Shareholders' Equity	101,423	95,391	81,038	77,504
Total Equity	103,286	95,391	81,038	77,504
Liabilities & Shareholders' Equity	182,103	168,406	153,091	136,524

Source: Based on data from annual reports (all numbers are in millions USD)

Chart 3. Balance Sheet of NVIDIA Company FY2019-2022

	2022	**2021**	**2020**	**2019**
Assets				
Current assets				
*Cash and short-term investments	13,296	21,208	11,561	10,897

Cash and cash equivalents	3,389	1,99	0,847	10,896
Short-term marketable securities	9,907	19,218	10,714	0,001
Total Accounts Receivable	3,827	4,65	2,429	1,657
*Inventories	5,159	2,605	1,826	979
Other current assets	791	366	239	157
*Total current assets	23,073	28,829	16,055	13,69
Non-current assets				
Net Property, Plant & Equipment	4,845	3,607	2,856	2,292
Total Investments and Advances	299	266	-	-
*Intangible assets	6,048	6,688	6,93	667
Net Goodwill	4,372	4,349	4,193	618
*Other long-term assets	3,521	3,575	2,144	118
*Total assets	41,182	44,187	28,791	17,315
Liabilities and Shareholders’ Equity				
ST Debt & Current Portion LT Debt	1,426	-	1,12	91
Accounts payable	1,193	1,783	1,201	687
Other Current Liabilities	3,477	2,552	1,543	945
Total Current Liabilities	6,563	4,335	3,925	1,784
Long-Term Debt	10,605	11,687	6,598	2,552
Deferred Taxes	-3,149	-977	-565	-519
Other Liabilities	1,666	1,308	1,101	724
Total Liabilities	19,081	17,575	11,898	5,111
Total Shareholders' Equity	22,101	26,612	16,893	12,204
Total Equity	22,101	26,612	16,893	12,204

Liabilities & Shareholders' Equity	41,182	44,187	28,791	17,315

Source: Based on data from annual reports (all numbers are in millions USD)

3.1.1. Vertical Common-size Balance Sheet Analysis

Given that the selected companies vary significantly in size, with AMD and INTEL being notably larger than the others, conducting a vertical common-size balance sheet analysis can be a valuable tool. This analysis involves calculating each entry on the balance sheet as a percentage of total assets, allowing for a more meaningful comparison between the companies despite their differences in size.

Chart 4. Vertical Common-size Balance Sheet 2022

2022	**AMD**	**INTEL**	**NVIDIA**
Current assets			
Cash and short-term investments	8.65%	15.57%	32.24%
Cash and cash equivalents	6.93%	6.12%	8.22%
Short-term marketable securities	1.73%	9.45%	24.02%
Total Accounts Receivable	6.10%	2.45%	9.28%
Inventories	5.58%	7.26%	12.51%
Other current assets	1.87%	2.41%	1.91%
Total current assets	22.86%	42.26%	88.19%
Non-current assets			
Net Property, Plant & Equipment	2.92%	44.67%	11.74%
Total Investments and Advances	0.12%	3.25%	0.72%
Intangible assets	36.27%	18.44%	14.67%
Net Goodwill	35.73%	15.16%	10.60%
Other long-term assets	38.33%	3.00%	8.53%
Total assets	100.00%	100.00%	100.00%
Liabilities and Shareholders' Equity			
ST Debt & Current Portion LT	0.00%	2.50%	3.46%

Debt			
Accounts payable	2.86%	5.28%	2.89%
Other Current Liabilities	5.05%	8.66%	8.42%
Total Current Liabilities	9.42%	17.68%	15.89%
Long-Term Debt	4.23%	20.81%	25.74%
Deferred Taxes	2.78%	-1.78%	-7.64%
Other Liabilities	2.46%	4.33%	4.04%
Total Liabilities	19.90%	41.04%	37.03%
Total Shareholders' Equity	80.10%	55.96%	53.52%
Total Equity	80.10%	44.04%	53.52%
Liabilities & Shareholders' Equity	100.00%	100.00%	100.00%

Source: Based on data from annual reports

This table contains information about current and non-current assets, liabilities and capital of the three largest manufacturers of computer components: AMD, Intel and Nvidia.

When we look at the indicators of current assets, we see that Nvidia has the largest amount of cash and short-term investments, accounting for more than 32% of the total current assets. At the same time, AMD has the smallest amount of cash and short-term investments, while Intel has the average.

In addition, it can be seen that AMD and Nvidia have significantly larger shares of their working capital in the form of stocks than Intel. AMD, for example, has reserves of 5.58% of the total current assets, while Intel has this figure of only 2.45%. At the same time, Intel has the largest share of its working capital in the form of accounts receivable (5.28%), which AMD does not have, and Nvidia has a rather low figure (2.45%).

When analyzing non-current assets, we see that Intel has the largest share in the form of the net value of fixed assets, while AMD and Nvidia have a lower share. AMD and Nvidia have significantly higher shares of their non-current assets in the form of intangible assets, such as patents and licenses, compared to Intel.

Attention is drawn to the high level of intangible assets, including patents and licenses from AMD. This may indicate the innovative nature of the company's business, which may give it an advantage in the market in the long run.

Among the indicators of liabilities, we can see that Intel has the highest level of long-term loans, while AMD has less than 5% of the total liabilities. All three companies have approximately the same level of short-term debt and other current liabilities.

In general, we can say that Nvidia has the greatest liquidity and stability among the three manufacturers of computer components.

Next in the table are indicators related to the obligations of the company and its long-term investments. AMD's total liabilities amount to 19.90% of the total, while Intel and Nvidia have a significantly higher level of liabilities, amounting to 41.04% and 37.03%, respectively. This may indicate that AMD is more financially stable and has a lower level of debt.

At the same time, AMD has a higher share of long-term investments and intangible assets, such as Goodwill and Intangible Assets, compared to Intel and Nvidia. This may indicate that AMD is actively investing in various areas, such as research and development, to ensure a long-term advantage in the market. However, a high proportion of investments may also indicate a high level of risk associated with newer and more unstable business lines.

In addition, the table also shows that AMD has a higher share of equity, which may indicate a more stable financial position of the company and its ability to manage risks.

3.1.2. Horizontal Common-size Balance Sheet Analysis

Horizontal common-size balance sheet analysis helps to analyse companies‘ change
in financial statements within a certain time frame.

Chart 5. Horizontal Common-size Balance Sheet 2022

	AMD	**INTEL**	NVIDIA
	22-21v%	22-21v%	22-21v%
Assets			
Current assets			
*Cash and short-term investments	62,28%	-0,26%	-37,31%

Cash and cash equivalents	84,46%	130,87%	70,30%
Short-term marketable securities	9,88%	-27,10%	-48,45%
Total Accounts Receivable	52,44%	-53,73%	-17,70%
*Inventories	92,89%	22,72%	98,04%
Other current assets	-99,59%	-50,68%	116,12%
*Total current assets	74,99%	-12,67%	-19,97%
Non-current assets			
Net Property, Plant & Equipment	84,57%	27,52%	34,32%
Total Investments and Advances	-38,52%	-25,20%	12,41%
*Intangible assets	-96,02%	-1,82%	-9,57%
Net Goodwill	-91,63%	2,33%	0,53%
*Other long-term assets	2290,04%	43,40%	-1,51%
*Total assets	444,17%	8,13%	-6,80%
Liabilities and Shareholders' Equity			
ST Debt & Current Portion LT Debt	-	-4,84%	-
Accounts payable	110,24%	66,96%	-33,09%
Other Current Liabilities	39,25%	-0,47%	36,25%
Total Current Liabilities	50,21%	17,09%	51,40%
Long-Term Debt	-99,18%	12,17%	-9,26%
Deferred Taxes	-100,20%	-281,15%	-99,68%
Other Liabilities	-99,48%	6,03%	27,37%
Total Liabilities	160,67%	7,95%	8,57%
Total Shareholders' Equity	630,29%	6,32%	-16,95%
Total Equity	630,29%	8,28%	-16,95%
Liabilities & Shareholders' Equity	444,17%	8,13%	-6,80%

Source: Based on data from annual reports

Assets

Part of the Assets table displays the company's current and inactive assets, such as cash and short-term investments, accounts receivable, inventories, fixed assets, intellectual property rights and other assets. These indicators describe how the company manages its resources and how these resources are used to

create value for the company and its shareholders.

The table shows that AMD has the largest percentage of cash and short-term investments, which may indicate a stable financial position of the company. In addition, AMD also has a high percentage of inventory, which may indicate good preparation for production.

Intel has the largest amounts of cash and cash equivalents, which can indicate stability and confidence in its financial performance. However, Intel also has a large percentage of short-term investments, which may indicate the need to use funds to manage them more effectively.

NVIDIA has the lowest percentage of cash and short-term investments, which may indicate a less confident financial position of the company. However, NVIDIA also has the highest percentage of other long-term assets, which may indicate the company's development and growth prospects in the future.

It is interesting to note that AMD and NVIDIA have negative interest rates on some assets, such as intellectual property and other long-term assets, which may indicate problems in the management and use of these assets.

Liabilities and Shareholders‘ Equity

This part of the table shows the liabilities and equity of the company's shareholders. It can be seen that the company has both short-term and long-term obligations, including long-term debt. It is also seen that the company has enough shareholder capital to cover all its obligations and leave some profit. The general condition of the company looks quite stable.

AMD has the largest increase in total shareholders' equity (Total Shareholders' Equity) compared to Intel and Nvidia, which may indicate a higher valuation of the company by investors.

Intel has the largest number of long-term liabilities (Long-Term Debt), which may indicate a higher level of debt financing.

Nvidia has the largest increase in Total Liabilities compared to AMD and Intel, which may indicate a higher level of responsibility to creditors and suppliers.

AMD has the largest growth in total liabilities and shareholders' equity (Total Shareholders' Equity) compared to Intel and Nvidia, which may indicate a faster growth of the company and a higher level of risk.

3.2Income Statement

The income statement provides valuable information for analyzing and evaluating a company's financial performance. By examining the distribution of total revenues and expenses, investors can gain insights into the company's profitability, operating efficiency, and overall financial health. In order to conduct a thorough analysis, it is helpful to create charts that break down each line item of the income statement as a percentage of total revenues. This allows for a more detailed understanding of how the company generates its revenue and how it is allocating its resources.

Furthermore, comparing the income statement data over a period of time, such as from 2019 to 2022, can provide valuable insights into trends and changes in the company's financial performance. For example, significant increases in revenue or decreases in expenses may indicate strong growth potential, while declining revenues or increasing expenses may suggest potential challenges.

Chart 6. Income Statements AMD 2019-2022

AMD	**2022**	**2021**	**2020**	**2019**
Sales/Revenue	23,601	16,434	9,763	6,731
Cost of Goods Sold (COGS) incl. D&A	15,098	8,505	5,416	3,862
Gross Income	8,503	7,929	4,347	2,869
SG&A Expense	6,889	4,251	2,964	2,28
Unusual Expense	514	-7	68	189
Interest Expense	88	34	47	94
Pretax Income	1,184	3,669	1,275	372
Income Tax	-122	513	-1,21	31
Net Income	1,32	3,162	2,49	341
EPS (Basic)	0.84	2,57	2,06	0.30
Basic Shares Outstanding	1,561	1,213	1,184	1,091
EPS (Diluted)	0.84	2,57	2,06	0.30
Diluted Shares	1,571	1,229	1,207	1,12

Outstanding				
EBITDA	5,876	4,141	1,737	847

Source: Based on data from annual reports

Chart 7. Income Statements INTEL 2019-2022

Intel	**2022**	**2021**	**2020**	**2019**
Sales/Revenue	63,054	79,024	77,867	71,965
Cost of Goods Sold (COGS) incl. D&A	36,373	35,418	34,46	30,025
Gross Income	26,681	43,606	43,407	41,94
SG&A Expense	24,345	21,733	19,736	19,512
Unusual Expense	-1,121	1,452	1,12	-227
Interest Expense	496	597	629	489
Pretax Income	7,768	21,703	25,078	24,058
Income Tax	-249	1,835	4,179	3,01
Net Income	8,014	19,868	20,899	21,048
EPS (Basic)	1,94	4,86	4,94	4,71
Basic Shares Outstanding	4,108	4,059	4,199	4,417
EPS (Diluted)	1,94	4,86	4,94	4,71
Diluted Shares Outstanding	4,123	4,09	4,232	4,473
EBITDA	15,371	33,665	35,91	33,254

Source: Based on data from annual reports

Chart 8. Income Statements NVIDIA 2019-2022

NVIDIA	**2022**	**2021**	**2020**	**2019**
Sales/Revenue	26,974	26,914	16,675	10,918
Cost of Goods Sold (COGS) incl. D&A	11,618	9,439	6,279	4,135
Gross Income	15,356	17,475	10,396	6,783
SG&A Expense	9,779	7,434	5,78	3,892

Unusual Expense	1,414	-100	84	45
Interest Expense	262	236	184	52
Pretax Income	4,181	9,941	4,409	2,97
Income Tax	-187	189	77	174
Net Income	4,368	9,752	4,332	2,796
EPS (Basic)	1,74	3,85	1,72	1,13
Basic Shares Outstanding	2,487	2,496	2,468	2,436
EPS (Diluted)	1,74	3,85	1,72	1,13
Diluted Shares Outstanding	2,507	2,535	2,512	2,472
EBITDA	7,121	11,215	5,714	3,272

Source: Based on data from annual reports

3.2.1. Vertical Common-size Income Statement Analysis

As previously stated, the companies that have been chosen for analysis vary in size. In order to effectively evaluate these companies' income statements, a vertical common-size income analysis can be utilized. This approach calculates each balance sheet entry as a percentage of revenues, providing a clear picture of how revenues are being distributed throughout the company. By using this tool, analysts can more easily compare companies of different sizes and identify trends in their financial performance. The common-size income analysis is a valuable technique that can help investors and other stakeholders make informed decisions about the companies they are interested in.

Chart 9. Vertical Common-size Income Statement Analysis 2022

	AMD	**Intel**	**NVIDIA**
Sales/Revenue	100.0%	100.0%	100.0%
Cost of Goods Sold (COGS) incl. D&A	63.9%	57.7%	43.0%
Gross Income	36.1%	42.3%	57.0%
SG&A Expense	29.2%	38.6%	36.2%
Unusual Expense	2.2%	-1.8%	5.2%

Interest Expense	0.4%	0.8%	1.0%
Pretax Income	5.0%	12.3%	15.5%
Income Tax	-0.5%	-0.4%	-0.7%
Net Income	5.6%	12.7%	16.2%
EPS (Basic)	0.84	1.94	1.74
Basic Shares Outstanding	1,561	4,108	2,487
EPS (Diluted)	0.84	1.94	1.74
Diluted Shares Outstanding	1,571	4,123	2,507
EBITDA	24.9%	24.4%	26.4%

Source: Based on data from annual reports

This table presents the results of a vertical analysis of the income and expenses of three technology companies: AMD, Intel and NVIDIA for the period from 2019 to 2022.

The table shows that Intel has the largest total sales/revenue, but AMD has the highest level of profitability, expressed in terms of Gross Income and EBITDA. It can also be noted that NVIDIA has the lowest level of unusual expenses, which may indicate a more stable financial situation in the company.

Other important indicators that can be distinguished from the table are Net Income, which is positive for all three companies, but Intel has significantly higher than AMD and NVIDIA, and EPS, which AMD has higher than the other two companies.

It can also be noted that AMD and NVIDIA have significantly lower COGS costs than Intel, which indicates their more efficient business model.

In general, we can conclude that all three companies have good financial results, but each has its own characteristics and strengths. AMD provides higher profit from sales, which indicates more efficient cost management. NVIDIA has the largest revenue among the three companies, but its profit from sales is at the level of AMD, which may indicate higher production and cost management costs. Intel has higher sales costs, which significantly exceeds the costs of AMD and NVIDIA.

An important indicator is EBITDA, which is high for all three companies. This indicates a high profitability from the core business and the ability to cover their expenses. However, NVIDIA has unusual costs that are higher than AMD and Intel, which may be due to investment projects that are expected in the future.

In general, all three companies show positive profits, which indicates their financial stability and success in the technology industry.

3.2.2. Horizontal Common-size Income Statement Analysis

Horizontal common-size analysis of income statements is a useful tool for examining changes in a company's income statement items over a specific period, such as 2021-2022. This type of analysis allows for a more detailed understanding of how different items in the income statement have changed in relation to each other and as a percentage of total revenue

Chart 10. 2021- 2022% Change of Income Statement Entries

	AMD	**Intel**	**NVIDIA**
	22/21v%		
Sales/Revenue	43,61%	-20,21%	0,22%
Cost of Goods Sold (COGS) incl. D&A	77,52%	2,70%	23,09%
Gross Income	7,24%	-38,81%	-12,13%
SG&A Expense	62,06%	12,02%	31,54%
Unusual Expense	-7442,86%	-177,20%	-101,41%
Interest Expense	158,82%	-16,92%	11,02%
Pretax Income	-67,73%	-64,21%	-57,94%
Income Tax	-123,78%	-13669,48%	-198,94%
Net Income	-58,25%	-59,66%	-55,21%
EPS (Basic)	-67,32%	-60,08%	-54,81%
Basic Shares Outstanding	28,69%	1,21%	-0,36%
EPS (Diluted)	-67,32%	-60,08%	-54,81%
Diluted Shares Outstanding	27,83%	0,81%	-1,10%

EBITDA	41,90%	-54,34%	-36,50%

Source: Based on data from annual reports

This table represents the horizontal total size of the financial statements of three companies: AMD, Intel and NVIDIA, for the period from 2021 to 2022.

From the table, we can conclude that AMD has a significant sales growth of 43.61%, while Intel and NVIDIA sales decreased by 20.21% and 0.22%, respectively. However, it is worth paying attention to the high percentage of growth in production and sales costs for AMD and NVIDIA, which may indicate problems with cost management or an increase in production volume, which may lead to a reduction in profits.

It is interesting to note that AMD had unusually high uncertain costs, which increased by 7442.86%. NVIDIA also had notable unusual expenses, but by 101.41%. Such costs may be associated with investment projects or asset sales.

In general, the table indicates that net profit and earnings per share decreased for all three companies, which may be due to economic factors, such as increased costs for materials or labor resources. However, AMD's sales growth may indicate that the company is in a state of active development, while Intel and NVIDIA may have a potential reserve for improving financial performance in the future.

Among the significant indicators, we can note the percentage change in COGS (including depreciation), which shows how production costs have changed, as well as the percentage change in EBITDA, which is an important indicator when analyzing the profitability of a company.

Despite the decrease in net profit, AMD is still showing a positive result, while Intel and NVIDIA are experiencing serious problems. Thus, based on the table data, it can be concluded that AMD is currently a more successful company compared to its competitors Intel and NVIDIA.

However, when analyzing financial statements, it is necessary to take into account other factors, such as the current economic situation, industry trends, etc. It should also be noted that the table does not contain information about many other financial indicators, such as company debts, the need for working capital, etc. Thus, for a more accurate analysis of financial statements, more information is required than just a table with data for the year.

Despite this, the table provides important information about the financial performance of companies and can serve as a starting point for a deeper analysis. For example, comparing the percentage change in COGS (including depreciation) and EBITDA between companies can help identify differences in the cost management strategy between them.

In general, based on the presented data, it can be concluded that AMD shows a higher level of sales growth, but also increases production costs, which can lead to lower profits. At the same time, Intel and NVIDIA are experiencing serious sales problems, but maintain a higher level of net profit and EBITDA. All this indicates that each company has its advantages and disadvantages, and requires a deeper analysis to understand their position in the market.

3.3. Cash flow statement

The concept of a cash flow statement is to track where a company gets its money from and how it uses it. The cash flow statement includes three main categories: cash receipts from operating activities, cash receipts from investing activities and cash receipts from financing activities.

Cash receipts from operating activities usually include money received from the sale of goods or services, as well as any other income related to the main activities of the company. This category also includes expenses related to operational activities, such as payment of suppliers, salaries of employees, etc.

Cash proceeds from investing activities relate to the purchase and sale of assets, such as real estate, equipment and investments in other companies. This category may also include dividends from investments.

Cash receipts from financial activities are related to the financing of the company. These may include obtaining loans, issuing bonds and issuing shares.

The cash flow statement is an important tool for analyzing the financial condition of the company and its solvency. It allows investors and analysts to understand where the company gets its money from and how it uses it.

.There are three charts below with simplified cash flow statements of the big tech trio for FY2019-FY2022.

Chart 11. Simplified Cash Flow Statements for AMD Inc.

	2022	**2021**	**2020**	**2019**
Operating Activities				
Depreciation, Depletion & Amortization	4,262	463	354	258

Changes in Working Capital	-1,846	-774	-931	-542
Net Operating Cash Flow	3,565	3,521	1,071	493
Investing Activities				
Capital Expenditures	-450	-301	-294	-217
Net Assets from Acquisitions	-1,544	-	-	-
Sale of Fixed Assets & Businesses	2,366	-	-	-
Purchase/Sale of Investments	1,643	-378	-658	41
Net Investing Cash Flow	1,999	-686	-952	-149
Financing Activities				
Cash Dividends Paid - Total	-	-	-	-
Change in Capital Stock	-3,535	-1,895	85	523
Issuance/Reduction of Debt, Net	679	-	-	-473
Net Change in Cash	2,3	940	125	387
Free Cash Flow	3,115	3,22	777	276
Net Financing Cash Flow	-3,264	-1,895	6	43

Source: Based on data from annual reports

Chart 11. Simplified Cash Flow Statements for INTEL.

	2022	**2021**	**2020**	**201**
Operating Activities				
Depreciation, Depletion & Amortization	13,035	11,792	12,239	1
Changes in Working Capital	-4,508	-4,873	2,179	
Net Operating Cash Flow	15,433	29,991	35,384	3
Investing Activities				
Capital Expenditures	-25,05	-20,329	-14,259	-1
Net Assets from Acquisitions	-	-209	-837	-
Sale of Fixed Assets & Businesses	6,579	-	317	
Purchase/Sale of Investments	9,534	-5,287	-7,801	
Net Investing Cash Flow	-10,477	-25,167	-20,796	-1
Financing Activities				
Cash Dividends Paid - Total	-5,997	-5,644	-5,568	-

Change in Capital Stock	2,009	-1,395	-13,332	-1
Issuance/Reduction of Debt, Net	5,164	2,474	5,722	
Net Change in Cash	6,317	-1,038	1,671	
Free Cash Flow	-9,617	9,662	21,125	1
Net Financing Cash Flow	1,361	-5,862	-12,917	-1

Source: Based on data from annual reports

Chart 12. Simplified Cash Flow Statements for NVIDIA.

	2022	**2021**	**2020**	**2019**
Operating Activities				
Depreciation, Depletion & Amortization	1,544	1,174	1,098	381
Changes in Working Capital	-2,207	-3,363	-703	717
Net Operating Cash Flow	5,641	9,108	5,822	4,761
Investing Activities				
Capital Expenditures	-1,833	-976	-1,128	-489
Net Assets from Acquisitions	-49	-263	-8,524	-
Sale of Fixed Assets & Businesses	-	-	-	-
Purchase/Sale of Investments	9,334	-8,567	-9,989	6,634
Net Investing Cash Flow	7,375	-9,83	-19,675	6,145
Financing Activities				
Cash Dividends Paid - Total	-398	-399	-395	-390
Change in Capital Stock	-9,684	281	194	149
Issuance/Reduction of Debt, Net	-	3,977	4,968	-
Net Change in Cash	1,399	1,143	-10,049	10,114
Free Cash Flow	3,808	8,132	4,694	4,272
Net Financing Cash Flow	-11,617	1,865	3,804	-792

Source: Based on data from annual reports

3.3.1. Cash Flow Statement Analysis

Summary conclusions based on tables:

In 2022, all three companies had a positive Net Operating Cash Flow.

Intel had the largest net operating flow among the three companies, namely US$ 15,433 million.

Intel also had the largest net investment flow (Net Investing CashFlow), amounting to -10,477 million US dollars. At the same time, AMD and NVIDIA had a positive net investment flow.

AMD had the highest Free Cash Flow of $3,115 million.

Intel had the largest Net Financing Cash Flow among the three companies, amounting to US$ 1,361 million. While AMD and NVIDIA had negative net financial flows.

Chart 13. Vertical Common-Size Cash Flow Statements 2022

	AMD	**INTEL**	**NVIDIA**
Operating Activities			
Depreciation, Depletion & Amortization	23.0%	52.9%	7.6%
Changes in Working Capital	-9.9%	-29.2%	-18.6%
Net Operating Cash Flow	13.1%	71.2%	32.3%
Investing Activities			
Capital Expenditures	-1.4%	-161.4%	-32.5%
Net Assets from Acquisitions	-4.9%	-	-0.7%
Sale of Fixed Assets & Businesses	7.4%	42.6%	-
Purchase/Sale of Investments	5.1%	61.9%	165.5%
Net Investing Cash Flow	3.8%	-67.8%	131.3%
Financing Activities			
Cash Dividends Paid - Total	-	-38.8%	-3.4%
Change in Capital Stock	-18.9%	13.0%	-137.1%
Issuance/Reduction of Debt, Net	4.6%	33.4%	-
Net Change in Cash	2.2%	14.7%	3.3%
Free Cash Flow	3.0%	-62.3%	67.5%
Net Financing Cash Flow	-3.2%	8.8%	-205.8%

Source: Based on data from annual reports

Operating activities represent a key source of cash generation for all three AMD, Intel and NVIDIA companies. In 2022, Intel received the largest net cash flow from operating activities ($15.433 million), while AMD and NVIDIA have these figures of $3.565 million and $5.641 million, respectively.

Separately, it should be noted that all three companies have positive net cash flows from operating activities, which indicates a good financial condition and stability of the business. In addition, all three companies have significant depreciation rates, and, as a result, their main operating costs are associated with investments in equipment and infrastructure.

Based on the vertical analysis of Investing Activities for AMD, INTEL and NVIDIA in 2022, the following conclusions can be drawn:

For AMD and NVIDIA, a significant part of the money was spent on buying and selling investments. At the same time, NVIDIA had the largest number of investment transactions related to the sale and purchase of investments, while AMD had the largest expenses related to the acquisition of fixed assets and the acquisition of new assets. At INTEL in 2022, a significant part of the investment funds was directed to capital expenditures.

In 2022, AMD had significant costs for the purchase of fixed assets, which is likely due to the expansion of production and an increase in the company's sales volume.

NVIDIA showed the largest positive net cash flow on investment transactions, which indicates that the company effectively used its investment resources.

For INTEL in 2022, negative cash flow from investment operations was associated with high costs of capital investments and fixed assets, while cash receipts from the sale of fixed assets and businesses were relatively small.

From the analysis of Financing Activities for 2022 , the following conclusions can be drawn:

AMD and NVIDIA had a positive net cash change as a result of financial transactions, while Intel showed a negative result.

AMD paid cash dividends in 2022, while Intel and NVIDIA did not pay dividends.

AMD reduced its capital investments, while Intel increased them. NVIDIA did not have significant changes in this indicator.

AMD received net cash inflows as a result of debt issuance/repurchase, whereas Intel had cash inflows as

a result of debt issuance and NVIDIA did not issue or repurchase debt in 2022.

Intel and NVIDIA had a decrease in net cash inflows as a result of capital changes, while AMD increased it.

The general conclusions on Financing Activities for 2022 indicate that AMD had the most favorable result compared to Intel and NVIDIA. AMD paid dividends, reduced its capital investments and received cash inflows as a result of debt issuance/repurchase. On the other hand, Intel and NVIDIA did not pay dividends, increased their capital investments and had a decrease in net cash inflows as a result of capital changes.

3.4. Revenues Structure

Revenue Structure analyzes which business is the company's main source of income, what other sources of income it has and how diverse its earning models are.

3.4.1. AMD

Chart 14. Revenues Structure for AMD

Operating segment revenue:	2021-2022v%	2022 % of revenues	2022	2021 % of revenues	2021
Data Center revenue	63,59%	25,60%	6,043	22,48%	3,694
Client revenue	-9,96%	26,27%	6,201	41,91%	6,887
Gaming revenue	21,37%	28,83%	6,805	34,12%	5,607
Embedded revenue	1750,41%	19,29%	4,552	1,50%	0,246
Total revenue	43,61%	100,00%	23,601	100,00%	16,434

Source: Based on data from annual reports (all numbers are in millions USD)

This table presents the company's revenue structure for 2021 and 2022 by business segment. The key segment is Data Center, which accounts for 25.6% of the company's total revenue in 2022. This segment also showed the largest revenue growth from 22.48% in 2021 to 63.59% in 2022, which indicates a good state of business in this area.

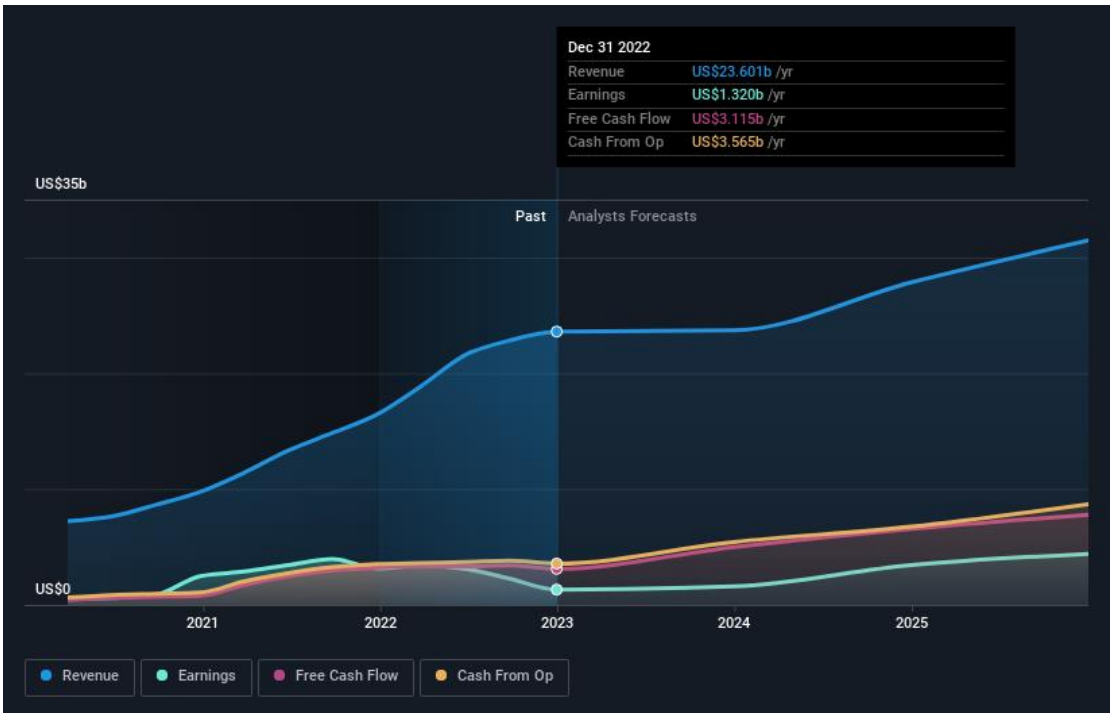
At the same time, the client segment (Client revenue) reduced its revenues by 9.96% in 2022, which may indicate the presence of problems in this area. However, the Gaming revenue segment increased its revenues by 21.37% in 2022, which indicates that the company is successfully developing its business in this area.

It is also worth paying attention to the significant revenue growth in the Embedded segment (1750.41%),

which accounts for 19.29% of the company's total revenue in 2022. This may indicate that the company is successfully developing its business in this area.

In general, it can be concluded that the company shows good results in different segments of its activities and has a diversified revenue structure, which is a good sign for investors.

Chart 15. Revenues Forecast for AMD



https://simplywall.st/stocks/de/semiconductors/etr-amd/advanced-micro-devices-shares/future

Based on the given data, we can see that AMD's revenue and earnings have been growing consistently over the past few years. However, it's important to note that past performance does not guarantee future results, and these forecasts are only estimates.

Looking at the forecast for 2025, AMD is expected to generate $31,461 million in revenue and $4,408 million in earnings. This represents a growth rate of 13.1% in revenue and 28.1% in earnings compared to the previous year.

For 2024, AMD is projected to generate $27,858 million in revenue and $3,438 million in earnings, which represents a growth rate of 17.9% in revenue and 27.9% in earnings compared to the previous year.

In 2023, the company is forecasted to generate $23,705 million in revenue and $1,602 million in earnings, which represents a growth rate of 33.1% in revenue and 345.1% in earnings compared to 2022.

It's worth noting that AMD's revenue growth rate is expected to slow down gradually, as the forecasted growth rate for 2025 is lower than the previous year. However, the earnings growth rate is expected to increase, indicating that the company is becoming more efficient in generating profits.

The number of analysts covering AMD is also increasing, which suggests that the company is attracting more attention and becoming a more important player in the industry.

3.4.2. INTEL

Chart 16. Revenues Structure for INTEL

Operating segment revenue:	2021-22v%	2022%	2022	2021%	2021
Desktop	-14,28%	16,77%	10,661	15,60%	12,437
Notebook	-26,18%	29,55%	18,783	31,92%	25,443
Other	-28,96%	3,56%	2,264	4,00%	3,187
Total client computing revenue	-22,79%	49,88%	31,708	51,53%	41,067
Data Center and AI	-15,40%	30,19%	19,196	28,47%	22,691
Network and Edge	11,25%	13,96%	8,873	10,01%	7,976
Mobileye	34,85%	2,94%	1,869	1,74%	1,386
Accelerated Computing Systems and Graphics	8,14%	1,32%	0,837	0,97%	0,774
Intel Foundry Services	13,87%	1,41%	0,895	0,99%	0,786
All other	-96,09%	0,31%	0,196	6,30%	5,019
Total operating segment revenue	-20,23%	100,00%	63,574	100,00%	79,699

Source: Based on data from annual reports (all numbers are in millions USD)

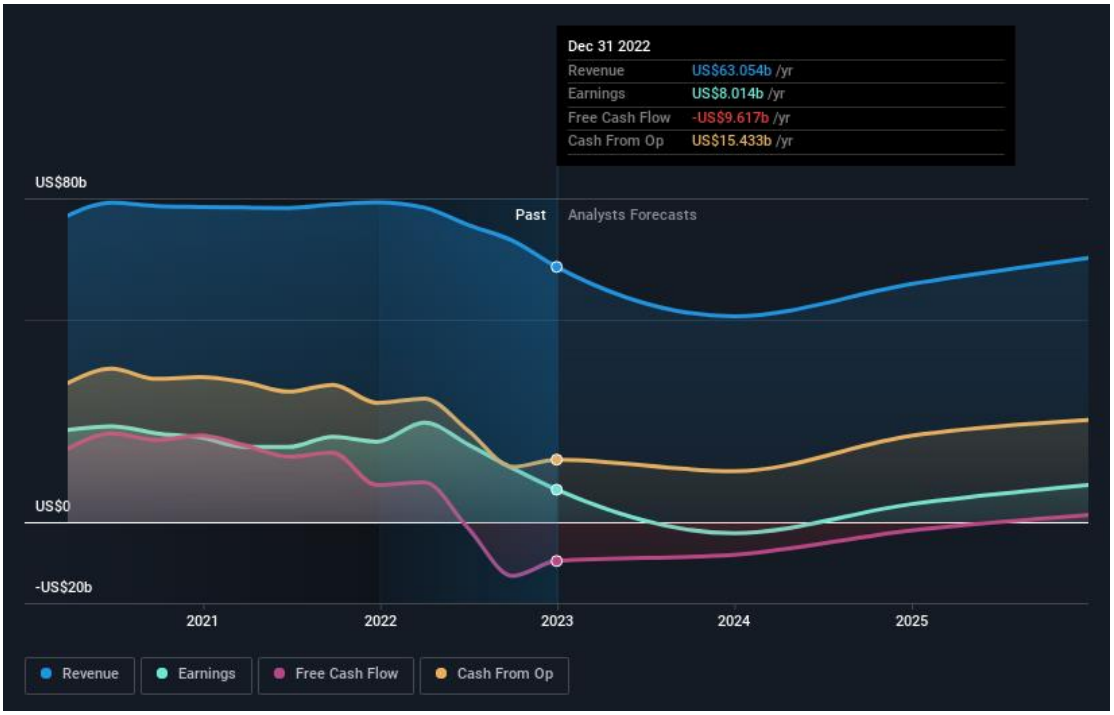
This table presents Intel's revenue data for 2021 and 2022, broken down by operating segments.

According to the table, the client segment of computers is the main source of income for Intel. However, revenue in this segment decreased by 22.79% from $41.067 billion in 2021 to $31.708 billion in 2022.

The Data Center and AI operating segment, which represents solutions for data centers and artificial intelligence, also has a significant impact on Intel's revenue. However, revenue in this segment also decreased by 15.40% from $22.691 billion in 2021 to $19.196 billion in 2022.

Judging by the significant decrease in revenue in the client and operating segments, we can conclude that the COVID-19 pandemic has a negative impact on Intel's activities. In addition, a decrease in revenue in the customer and data center segments may indicate a decrease in demand for computers and server equipment, which may lead to a deterioration in Intel's financial performance in the future.

Chart 17. Revenues Forecast for INTEL



https://simplywall.st/stocks/us/semiconductors/nasdaq-nvda/nvidia/future

From the provided data, we can see that Intel's revenue, earnings, and free cash flow are expected to decline in the coming years. In 2023, the company is forecasted to have negative earnings and free cash flow, which is a cause for concern. Additionally, the number of analysts covering the company appears to be decreasing, which may indicate a lack of confidence in Intel's future prospects.

However, it's worth noting that the data provided only includes a few years, and it's important to consider the longer-term trends and factors that may impact Intel's performance. The company may be taking steps to address these challenges and could see a turnaround in the future.

3.4.3. NVIDIA

Chart 18. Revenues Structure for NVIDIA

Operating segment revenue:	2021-22v%	2022%	2022	2021%	2021
Graphics	-5,22%	55,42%	$ 15,04	58,96%	$ 15,87
Compute and networking	9,54%	44,58%	$ 12,10	41,04%	$ 11,05
Total	0,84%	100,00%	$ 27,14	100,00%	$ 26,91

Source: Based on data from annual reports (all numbers are in millions USD)

Based on the given table, we can see the operating segment revenue forecast for the year 2022 compared to the actual revenue of 2021 for two segments of the company, Graphics and Compute and Networking, and the total revenue.

For the Graphics segment, the revenue is expected to decrease by 5.22% in 2022 compared to 2021, but it still contributes the majority of the company's revenue at 55.42%. On the other hand, the Compute and Networking segment is expected to grow by 9.54% in 2022 and contribute 44.58% to the total revenue of the company.

Overall, the total revenue of the company is expected to increase by 0.84% in 2022 compared to 2021. It's important to note that this forecast is subject to change depending on various factors such as market trends, competition, and global economic conditions.

Chart 19. Revenues Forecast for NVIDIA

https://simplywall.st/stocks/us/semiconductors/nasdaq-nvda/nvidia/future

Based on the provided data, it appears that Nvidia is forecasting a steady increase in both earnings and revenue over the next few years. The company is expecting double-digit revenue growth in 2022 compared to 2021, which is a positive sign for investors. However, the earnings growth rate is expected to be somewhat lower, indicating that the company may be investing heavily in growth initiatives.

Looking further out, Nvidia is projecting strong revenue and earnings growth in 2024 and 2025, with double-digit growth rates expected for both metrics. This suggests that the company is optimistic about its ability to execute on its growth plans and capitalize on market opportunities.

It's worth noting that Intel is operating in a highly competitive industry, and the company will need to continue innovating and investing in new technologies to stay ahead of its rivals. Nonetheless, the growth forecasts suggest that the company is on a positive trajectory and may be a promising investment opportunity for those with a long-term outlook.

Summary

As we can see from the table, the bulk of AMD's revenue comes from the client computer segment, which includes desktops and laptops, as well as Data Center and AI. At the same time, AMD's Data Center and AI brings in less than 20% of revenue, while the client segment brings in more than 50% of revenue. Other

segments, such as Network and Edge, Mobileye, Accelerated Computing Systems and Graphics and Intel Foundry Services, generate less than 3% of revenue each.

Regarding Nvidia, their revenues are mainly generated in two segments: Graphics and Compute and networking, with Graphics generating more than 55% of revenue. Compared to AMD, Nvidia is less dependent on the customer segment and has a more diverse product portfolio.

Intel, on the other hand, has a more evenly distributed revenue structure. In 2021, Compute and networking generated more than 40% of revenue, and Graphics - less than 60%. Thus, Intel has a wider range of products and does not depend so much on one particular segment.

We can see that all three companies have experienced revenue growth in recent years, although the drivers of that growth have been different for each company.

In terms of earnings, Nvidia has consistently grown its earnings over the past few years, while AMD's earnings have also grown steadily. Intel's earnings have been less consistent, with a significant dip in 2023 but a rebound in 2024.

When it comes to free cash flow, both Intel and Nvidia have had negative free cash flow in recent years, which may indicate that they are investing heavily in growth opportunities. AMD, on the other hand, has had positive free cash flow in recent years.

Looking ahead, AMD and Nvidia both have positive revenue and earnings growth forecasts for 2022, while Intel's growth forecasts are more mixed.

2.5. Ratios Analysis

Financial ratio analysis provides a more comprehensive understanding of a company's financial statements. The ratios are categorized into four sections - liquidity, solvency, profitability, and valuation ratios - based on the insights they offer. While financial statements can be subject to manipulation, ratios provide a more accurate and reliable representation of a company's financial health.

2.5.1. Liquidity Analysis

Liquidity analysis is a crucial aspect of assessing a company's financial health, as it focuses on the ability of a company to meet its short-term financial obligations. In other words, it provides an understanding of a company's ability to pay its debts and expenses as they come due. Liquidity ratios are financial ratios that

measure a company's ability to pay off its short-term liabilities when they become due. These ratios are important for creditors, investors, and other stakeholders, as they provide an indication of a company's short-term financial health.

Chart 33. Liquidity Ratios

	AMD	Intel	NVIDIA
Current ratio	2,36	1,57	3,52
Quick ratio	1,77	1,16	2,73
Cash ratio	1,05	0.346	2,03
Defensive interval ratio	298.03	84.11	51.93

These ratios provide a snapshot of a company's financial health in terms of its ability to meet its short-term obligations. A company with a high current ratio, quick ratio, and cash ratio is generally considered to be in good financial health, as it has enough assets that can be quickly converted into cash to meet its short-term liabilities. On the other hand, a low current ratio, quick ratio, and cash ratio may indicate that a company is struggling to meet its short-term obligations and may be at risk of defaulting on its debts.

Formulas used for ratios are following:

Current liquidity ratio (current liquidity ratio) - the ratio of current assets to current liabilities: Current liquidity ratio = Current assets / Current liabilities

Rapid response ratio (rapid liquidity ratio) - the ratio of the most liquid assets to current liabilities: Rapid response ratio = (Cash + cash equivalents + Market securities + Accounts Receivable) / Current liabilities

Cash ratio (cash security ratio) - the ratio of cash and cash equivalents to current liabilities: Cash ratio = (Cash + cash equivalents) / Current liabilities

Protective interval coefficient (protective interval coefficient) - the number of days for which the company can cover its expenses in the absence of additional income: Protective interval coefficient = (Cash + cash equivalents + Market securities + Accounts Receivable) / (Operating expenses / 365)

Current ratio:

1. AMD has the highest current ratio, indicating that it has the strongest ability to meet its short-term obligations among the three companies.
2. NVIDIA has the second-highest current ratio, which indicates that it is also in a strong position to meet its short-term obligations.
3. Intel has the lowest current ratio among the three companies, which suggests that it may face some difficulties in paying off its short-term liabilities.

Quick ratio:

1. AMD has the highest quick ratio, which indicates that it has a higher ability to meet its short-term obligations than Intel and NVIDIA.
2. NVIDIA has the second-highest quick ratio, indicating that it has a strong ability to meet its short-term obligations.
3. Intel has the lowest quick ratio, suggesting that it may face some difficulties in paying off its short-term liabilities quickly.

Cash ratio:

1. AMD has the highest cash ratio, indicating that it has the highest proportion of cash and cash equivalents to meet its short-term liabilities among the three companies.
2. NVIDIA has the second-highest cash ratio, suggesting that it also has a strong position in terms of liquidity.
3. Intel has the lowest cash ratio, which suggests that it may have to rely more on other current assets to meet its short-term obligations.

Defensive interval ratio:

1. AMD has the highest defensive interval ratio, indicating that it has the longest time (298.03 days) to cover its expenses with the available liquid assets.
2. Intel has the second-highest defensive interval ratio, which suggests that it also has a relatively long period (84.11 days) to cover its expenses with available liquid assets.
3. NVIDIA has the lowest defensive interval ratio among the three companies, indicating that it may have to use other current assets or rely on external financing to cover its expenses in the short term.

In conclusion, AMD appears to be in the strongest position in terms of liquidity, followed by NVIDIA and Intel. All three companies have positive current, quick, and cash ratios, indicating that they have the ability to meet their short-term obligations. However, it's worth noting that Intel has the lowest liquidity ratios among the three companies, suggesting that it may face some challenges in meeting its short-term obligations.

2.5.2. Solvency Analysis

Solvency ratios focus on a company's ability to meet its long-term debt obligations. Unlike liquidity ratios that assess the ability to pay short-term debts, solvency ratios evaluate the company's capacity to manage long-term debt as part of its other financial components. The purpose of these ratios is to provide investors and stakeholders with a clear understanding of a company's long-term financial stability. The table below summarizes the solvency ratios for the companies under consideration. It's important to note that Apple has no short-term or long-term debt, resulting in a zero debt-to-component ratio.

Chart 34. Solvency Ratios

	AMD	Intel	NVIDIA
Debt-to-assets	0.195	0.255	0.194
Debt-to-capital	0.242	0.324	0.279
Debt-to-equity	0.23	0.76	0.44
Financial leverage	1,2	1,8	1,9

Formulas used for ratios are following:

Debt-to-assets ratio = Total debt / Total assets This ratio shows the percentage of assets that are financed by debt

Debt-to-capital ratio = Total debt / (Total debt + Total equity) This ratio shows the proportion of a company's capital structure that is financed by debt.

Debt-to-equity ratio = Total debt / Total equity This ratio shows the amount of debt financing relative to equity financing.

Financial leverage = Total assets / Total equity - 1 This ratio shows the extent to which a company is using debt to finance its assets, relative to its equity. A higher financial leverage indicates a higher reliance on debt to finance assets.

AMD has a relatively low debt-to-assets ratio of 0.195, indicating that only 19.5% of its assets are financed by debt. Its debt-to-capital ratio is 0.242, suggesting that 24.2% of the company's capital is funded by debt. AMD's debt-to-equity ratio is relatively low at 0.23, indicating that the company's shareholders have a larger stake in the company than its creditors. AMD's financial leverage ratio of 1.2 suggests that the company is using leverage to some extent to finance its operations.

Intel has a higher debt-to-assets ratio of 0.255, indicating that 25.5% of its assets are financed by debt. Its debt-to-capital ratio is 0.324, suggesting that a larger portion of the company's capital (32.4%) is funded by debt. Intel's debt-to-equity ratio is relatively high at 0.76, indicating that the company's creditors have a larger stake in the company than its shareholders. Intel's financial leverage ratio of 1.8 suggests that the company is using leverage more extensively than AMD to finance its operations.

Nvidia has a debt-to-assets ratio of 0.194, indicating that only 19.4% of its assets are financed by debt. Its debt-to-capital ratio is 0.279, suggesting that a larger portion of the company's capital (27.9%) is funded by debt. Nvidia's debt-to-equity ratio is 0.44, indicating that the company has a moderate level of debt financing compared to its equity. Nvidia's financial leverage ratio of 1.9 suggests that the company is using leverage to a greater extent than AMD, but less than Intel, to finance its operations

In general, all three companies have manageable levels of debt financing, with AMD and Nvidia having lower debt ratios compared to Intel. Intel has a higher level of debt financing, which may make the company more vulnerable to economic downturns and interest rate fluctuations. However, Intel's high debt levels could also reflect investments in research and development and other growth opportunities. Overall, solvency ratios suggest that all three companies are financially stable and have sufficient assets to cover their long-term debt obligations.

2.5.3. Profitability Analysis

Profitability ratios provide insights into a company's ability to generate profits and manage their revenue effectively, which is crucial for determining their competitive position in the market and overall value. The ratios can be categorized into two groups based on the measurement of return on sales and return on investment. A detailed analysis of these ratios will be discussed below.

Chart 35. Profitability Ratios

	AMD	Intel	NVIDIA
Return on Sales			
Gross profit margin	43%	42.6%	**63.34%**
Operating profit margin	**19.84%**	**12.04%**	**23.09%**
Pre-tax margin	5.02%	12.32%	15.50%
Net profit margin	*5.59%*	12.71%	*16.19%*
Return on Investment			
Operating ROA	18.7%	12.79%	10.25%
ROA	1.96%	4.56%	10.26%
ROIC	**3.4%**	-1.62%	**26.35%**
ROE	2.40%	7.87%	18.66%

Formulas used for ratios are following:

Return on Sales:

- Gross profit margin = (Revenue - Cost of goods sold) / Revenue
- Operating profit margin = Operating income / Revenue
- Pre-tax margin = Pre-tax income / Revenue
- Net profit margin = Net income / Revenue

Return on Investment:

- Operating return on assets (ROA) = Operating income / Total assets
- Return on assets (ROA) = Net income / Total assets
- Return on invested capital (ROIC) = (Operating income - Taxes) / (Total assets - Current liabilities)
- Return on equity (ROE) = Net income / Shareholders' equity

The profitability ratios of the three companies indicate their efficiency in managing their revenues.

In terms of return on sales, NVIDIA has the highest gross profit margin at 63.34%, indicating that the company has a strong pricing power and effective cost management. AMD and Intel also have a relatively high gross profit margin of 43% and 42.6% respectively.

When it comes to operating profit margin, NVIDIA still leads the way with a high percentage of 23.09%, while AMD and Intel have lower operating profit margins of 19.84% and 12.04% respectively.

In terms of pre-tax margin and net profit margin, NVIDIA again demonstrates its strong profitability with percentages of 15.50% and 16.19% respectively. Intel follows with a net profit margin of 12.71%, while AMD has the lowest net profit margin of the three with 5.59%.

Moving onto the return on investment ratios, operating ROA shows how efficient a company is in using its assets to generate profits, and all three companies have positive operating ROA. AMD has the highest operating ROA at 18.7%, while Intel has a lower operating ROA of 12.79% and NVIDIA has the lowest of the three at 10.25%.

In terms of ROA, AMD has the lowest ROA at 1.96%, while Intel and NVIDIA have relatively higher ROA at 4.56% and 10.26% respectively.

ROIC measures the company's ability to generate returns on its invested capital. NVIDIA has a very high ROIC at 26.35%, while AMD has a ROIC of 3.4% and Intel has a negative ROIC of -1.62%.

Finally, looking at ROE, Intel has the highest percentage at 7.87%, while NVIDIA and AMD have lower percentages of 18.66% and 2.40% respectively.

Overall, NVIDIA stands out in terms of profitability among the three companies, with high gross profit margin, operating profit margin, pre-tax margin, net profit margin, and ROIC. Meanwhile, Intel performs relatively well in terms of ROE, while AMD shows relatively strong operating ROA.

2.5.4. Valuation Analysis

Valuation ratios are commonly used as a starting point for making investment decisions, as they offer an easy-to-understand way of comparing companies and determining the attractiveness of their stocks. By looking at these ratios, investors can quickly gain insight into a company's performance and whether its stock is overvalued or undervalued. This information is crucial for making informed investment decisions and can help investors to avoid potential risks and maximize potential returns. Overall, valuation ratios play a significant role in the investment process and are an important tool for investors.

Chart 36. Valuation Ratios

	AMD	Intel	NVIDIA
Price to earnings ratio	31.42	16.57	154.59
Price to cash flow ratio	48.93	8,6	119.71
Price to sales ratio	6,79	2,06	25,03
Price to book value ratio	2,78	1,17	30.55

Formulas used for ratios are following:

Price to earnings ratio (P/E ratio) = Market price per share / Earnings per share

Price to cash flow ratio (P/CF ratio) = Market price per share / Cash flow per share

Price to sales ratio (P/S ratio) = Market price per share / Sales per share

Price to book value ratio (P/B ratio) = Market price per share / Book value per share

Looking at the data, NVIDIA appears to have the highest Price to Earnings (P/E) ratio, which indicates that investors are willing to pay a premium for the company's earnings. Intel has the lowest P/E ratio, which suggests that investors may have lower expectations for the company's earnings growth.

When it comes to Price to Cash Flow (P/CF) ratio, NVIDIA again has the highest ratio, indicating the market's positive perception of the company's cash flow potential. On the other hand, AMD has the highest P/CF ratio, indicating that investors are willing to pay a premium for the company's cash flow.

In terms of Price to Sales (P/S) ratio, NVIDIA once again has the highest ratio, which may suggest that investors are optimistic about the company's revenue growth potential. Intel has the lowest P/S ratio, indicating that investors may not have high expectations for the company's sales growth.

Lastly, the Price to Book Value (P/BV) ratio indicates the market's perception of a company's assets' true value. In this case, NVIDIA has the highest P/BV ratio, suggesting that investors are willing to pay a premium for the company's book value. Intel has the lowest P/BV ratio, which may suggest that investors do not have high expectations for the company's assets' value.

Overall, these valuation ratios provide useful insights into how the market perceives these companies' current and future potential.

Valuation Ratios Summary

From the analysis of the presented financial indicators for the three technology companies AMD, Intel and NVIDIA, the following conclusions can be drawn:

Liquidity: In general, all three companies have good liquidity indicators, but NVIDIA has a significant advantage in this area by having higher ratios, especially the defensive interval ratio, which suggests that it can easily repay its short-term liabilities without using long-term assets.

Solvency: Overall, all three companies have moderate solvency scores, with AMD having the lowest debt-to-equity ratio and NVIDIA having the highest debt-to-capital ratio. However, all three companies have a Financial Leverage score above 1, which suggests that they are using debt to finance their operations.

Profitability: NVIDIA is the most profitable company with high ROE, ROIC, return on sales, gross profit margin, operating profit margin, pre-tax margin and net profit margin. AMD and Intel have more moderate profitability indicators, but still quite high. In particular, Intel has lower performance than AMD and NVIDIA.

Valuation: NVIDIA has the highest price-to-earnings ratio, price-to-cash flow ratio, price-to-sales ratio and price-to-book value ratio, which may indicate that investors value it higher than AMD and Intel. AMD has more moderate valuation metrics, while Intel has the lowest metrics in this area.

In general, NVIDIA looks like the most attractive investment opportunity with high profitability and liquidity indicators, as well as a high assessment of its value by investors.

2.6. Rates of Return

Rates of return are important measures for evaluating investment opportunities. The beta coefficient indicates the volatility of a stock relative to the overall market. A beta of 1 indicates that a stock moves in

tandem with the market, while a beta greater than 1 indicates a higher volatility than the market, and a beta less than 1 indicates a lower volatility.

The required rate of return (RRR) is the minimum return that an investor expects to receive on an investment to compensate for the risk they are taking. The RRR is based on a combination of factors, such as the current interest rate, market conditions, and the level of risk associated with the investment.

The expected rate of return (ERR) is the return that an investor expects to earn from an investment. ERR1 is the trailing or historical rate of return, while ERR2 is the forward-looking rate of return. ERR2 takes into account the expected growth rate of the company and other factors that could affect the stock price in the future.

The beta coefficient, RRR, ERR1, and ERR2 are all interrelated. The RRR is influenced by the risk level of the investment, which is represented by the beta coefficient. The higher the beta coefficient, the higher the RRR, as investors require a higher return to compensate for the higher risk. The ERR is also influenced by the beta coefficient, as higher beta stocks have higher expected returns due to their higher risk level.

In general, a higher beta coefficient suggests a riskier investment, which results in a higher RRR and a higher expected return. The expected return can be compared to the required rate of return to determine if the investment is attractive. If the expected return is higher than the RRR, the investment may be a good opportunity. Conversely, if the expected return is lower than the RRR, the investment may not be worth the risk.

Chart 37. Rates of Return and supporting data

	AMD	Intel	NVIDIA
Beta(1-Year)	1,58	0,9	1,68
RRR	-	2.60%	32.34%
ERR1	-	4.2%	25.93%
ERR2	-	69.41%	22.86%
Km=	10,24		
Krf=	**0,049**		

Formulas used for ratios are following:

RRR (Required Rate of Return) is the minimum return that investors expect from an investment to compensate them for the risk they take. The formula for RRR is:

RRR = Rf + (Km x Beta)

where: Rf = risk-free rate of return Km = expected market return Beta = Beta coefficient of the stock

ERR1 (Expected Rate of Return Trailing) is the expected rate of return based on past performance. The formula for ERR1 is:

ERR1 = (Total return for the past year / Beginning stock price) - 1

where: Total return for the past year = dividends paid + (Ending stock price - Beginning stock price)

ERR2 (Expected Rate of Return Forward) is the expected rate of return based on future expectations. It is usually calculated using analyst estimates of earnings and other factors. The formula for ERR2 is:

ERR2 = (Expected dividends per share + Expected price appreciation) / Beginning stock price - 1

where: Expected dividends per share = the estimated dividends the company will pay over the next year Expected price appreciation = the estimated increase in the stock price over the next year

The given table provides information on beta and required and expected rates of return for three companies, AMD, Intel, and NVIDIA, with a given market risk premium (Km) of 10.24% and a risk-free rate (Krf) of 0.049.

Beta is a measure of a stock's volatility in relation to the overall market, where a beta of 1 indicates that the stock's price will move with the market, and a beta above 1 implies higher volatility and risk than the market, while a beta below 1 suggests lower volatility and risk. Based on the given data, AMD has the highest beta of 1.58, indicating higher volatility than the overall market, whereas Intel has the lowest beta of 0.9, implying lower volatility than the market. NVIDIA's beta of 1.68 suggests higher volatility than the market.

The required rate of return (RRR) is the minimum return an investor expects to receive on an investment to compensate for the risk taken. The given table shows that Intel's RRR is 2.6%, which is the lowest among the three companies, indicating lower risk and therefore lower expected returns. In contrast, NVIDIA's RRR of 32.34% is the highest, indicating higher risk and higher expected returns. AMD does not have a given RRR.

The expected rate of return (ERR) is the return an investor expects to receive on an investment based on its risk and potential reward. Based on the given data, Intel's ERR1 of 4.2% is the lowest among the three companies, while NVIDIA's ERR2 of 22.86% is the second-highest, after AMD's ERR2 of 25.93%.

Overall, the analysis suggests that AMD has the highest beta and expected returns, while Intel has the lowest beta, RRR, and expected returns. NVIDIA has a high beta and high expected returns, indicating higher risk but also higher potential rewards.

5 Conclusion

Based on the analysis of financial indicators and a comparative analysis of AMD, Intel and NVIDIA, the following conclusions and recommendations can be made.

In general, all three companies show positive financial results. However, there are significant differences in their indicators.

First of all, it should be noted that NVIDIA is the leader in the industry with the highest ROIC, ROE and share price in relation to revenue and book value of the company. However, it also has a high level of debt compared to AMD and Intel.

Intel also has good financial results, but shows lower ROIC and ROE indicators than NVIDIA. In addition, it has the lowest P/E Ratio and P/S Ratio compared to AMD and NVIDIA, which may indicate a lower market valuation.

AMD has lower performance on most indicators, but its financial results still remain at a good level. It also has a lower debt level than Intel and NVIDIA.

Based on the analysis, the following is recommended:

For a short time:

AMD and NVIDIA have higher risks and potential volatility in stock prices, but they can be good options for short-term investments, especially for investors who are looking for a rapid rise in stock prices and can react quickly to changes in the market.

Intel, on the other hand, may be a more stable option for short-term investments, especially for those looking for sustainability and dividends.

For a long time:

NVIDIA looks like the most attractive company for long-term investments due to its high ROIC and ROE indicators, as well as growth potential in the AI and graphics technology industries.

AMD may also be a good option for long-term investments due to the growth potential in the processor and graphics technology industry, as well as a more affordable stock price compared to NVIDIA.

Intel, although it has stable financial results and dividends, may be less attractive for long-term investments due to lower ROIC and ROE indicators, as well as strong competition in the processor and graphics technology market.

In general, the choice of investments depends on the investor's goals, risk tolerance and time horizon. Investors looking for high growth potential may be interested in NVIDIA and AMD, while those looking for sustainability and dividends may pay attention to Intel. In any case, before investing, it is necessary to conduct an additional analysis of companies and the market as a whole, as well as take into account your personal investment goals and risk tolerance.

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