

Investment Analysis in the Technology Industry - Based on the Traditional Investment Framework

Chuting Wu

School of Finance, Central University of Finance and Economy, Beijing, China

2022310263@email.cufe.edu.cn

Abstract. As the development of the global economy has entered an unprecedented situation, the direction of the future economic development trend of countries has been completely unpredictable, but from the direction of the efforts of countries around the world in recent years, the science and technology industry is still the only solution to break through the current medium trap. In recent years, science and technology enterprises have become an important direction of investment, and investors' demand for research and analysis of large science and technology enterprises is increasing day by day. In order to meet this demand, this paper selects three representative technology enterprises, uses a variety of means to analyze, and makes an in-depth discussion on the investment value of these three enterprises. This paper argues that the liquidity risk of these three companies is relatively small, there is the possibility of overvaluation, and Apple has the strongest profitability. The research results of this paper can bring marginal expansion for the future investment analysis.

Keywords: Science-and-technology enterprise, enterprises research, multi-methods.

1. Introduction

In recent years, as science and technology enterprises have become a strong investment port, investors' demand for research and analysis of large science and technology enterprises has become more and more obvious. Despite the relevant analysis and emergence of science and technology enterprises, there is still an imbalance between research demand and supply. In order to solve this contradiction, the article chooses three representative technology enterprises, namely Tesla, Apple and Amazon.

Tesla is an electric vehicle and clean energy company that produces and sells electric cars, solar panels, and energy storage solutions. Apple is a multinational technology company that initially focused on computer design and sales, but has since expanded into the design and development of computers, mobile phones, wearable devices, computer software, and more. At the same time, Amazon is one of the largest e-commerce companies in the United States. Founded in 1994, it was among the first companies to engage in online commerce, starting with the sale of books and eventually growing into the world's largest online retailer and the second-largest Internet company overall.

Through fundamental analysis, performance analysis, comparative analysis and other research methods, this paper deeply studies the investment value of the three enterprises, aiming to help the market to have a deeper understanding of the three enterprises.

2. Literature review

This paper makes reference to the existing literature. In the field of fundamental analysis, we have organized and reviewed the literature, and concluded that for Tesla, the existing consensus is that the awakening of environmental protection awareness provides a best-selling opportunity for its main business EV [1], but the EV market is still facing fierce competition [2]. We believe that the current situation and financial situation of Apple Inc. have two sides, and we also have a consensus with the past literature on its main profitable products [3-4]. At the same time. Amazon's underperformance is often associated with more negative economic trends [5]. In the comparative analysis, we made

full reference to the existing data and sorted out the relevant literature. The PE value of the three companies is high, which may be the reason why the market enthusiasm overvalues their stock prices [6,7]. Tesla's rising profit margin indicates that it is a growing company, and the profit margin reached its highest in 2018, suggesting that the environmental orientation of the market plays an important role in its profitability level [8]. Amazon's low profit margins are a recognized feature, although its innovation surprises us [9,10].

3. Basic fact analysis

3.1. Analysis of macroeconomic environment

As Figure1 shows that the expansion of America's economy is expected to slow down, due to the expectation of GDP in 2024 is approximately 0.7 percent, lower than 2.8 percent in 2023. This slow pace was thought to be the cause of raising interest rates by the Federal Reserve System, which is considered to be a kind of sustained monetary tightening policy beyond 2022.

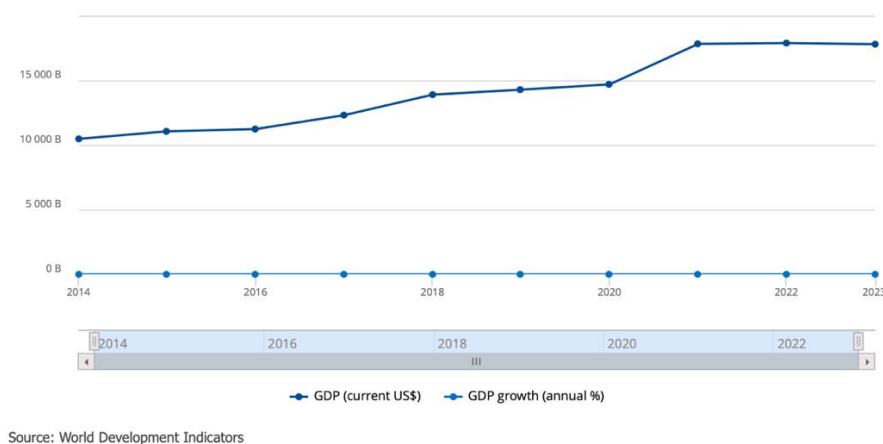


Fig. 1 US GDP

3.2. Industry environment analysis

As of 2024, the capacity status and development trends of the US IT industry show diversified characteristics. There are important ones that the raising interest rates by the Federal Reserve System increased financing costs, make the share of innovation from income shrunk.

With the acceleration of digital transformation, enterprises' demand for IT services and technologies continues to grow, demonstrating strong market demand and the potential for technological innovation. The US IT services market is expected to reach \$461.03 billion by 2024, with an average annual growth rate of 6.47%. In the IT industry, the demand in areas such as artificial intelligence, big data, cloud computing and network security is particularly prominent. That is likely to dampen tech M&A activity. CCPA also makes them nervous by forcing them to increase their operating costs.

But then again, the tech industry is still full of opportunities, especially in areas such as cloud computing and artificial intelligence. The rapid development of AI and ML technologies gives birth to new growth opportunities for technology companies. The application prospects of cloud computing and the Internet of Things are also driving innovation and business model transformation for technology companies. but it is also accompanied by the challenges of talent shortage and increased competition. There is still a shortage of high-end IT talent, resulting in many companies unable to find specialized talent to work in a fixed field, and continuous learning and upskilling will be key for professionals who want to enter or continue their career in the IT industry. And as the government has become more concerned about monopolistic practices, antitrust regulations have become stricter.

In addition to Tesla, Apple and Amazon mentioned in this article, the leading technology enterprises in the United States also include Microsoft, Google, meta and so on. Microsoft dominates the software market with its Windows operating system and Office suite, while also becoming a key player in cloud computing through Azure. Best known for its search engine, Google is also a leader in advertising, cloud computing and artificial intelligence technologies. Meta, or Facebook, is focused on social media and virtual reality, and Meta is investing heavily in virtual worlds and artificial intelligence technologies.

The upstream and downstream supply chains of U.S. technology

companies are also facing multiple challenges and opportunities. Due to the international trade friction, the impact of the pandemic, and geopolitical tensions, many tech companies are reassessing and adjusting their supply chain structures. Companies tend to move towards regionalization and diversification to reduce their dependence on a single market. In addition, digital transformation and the application of new technologies such as artificial intelligence and blockchain are changing the way supply chains are managed, increasing transparency and efficiency. These technologies help businesses better predict demand and manage inventory. At the same time, more and more enterprises are starting to focus on ESG standards to promote the construction of sustainable supply chains. This is not only to meet regulatory requirements, but also to enhance brand image and market competitiveness.

4. Business performance analysis

4.1. Tesla

4.1.1 Historical overview

Tesla was built by Martin Eberhard and Marc Tarpenning in 2003, aiming to promote the transition for fossil fuel to sustainable energy.

Elon Musk attended the company as an investor and chairman in 2004, later became the CEO. The first car of Tesla faced the world in 2008, showing extremely unpredictable potential of electric vehicles. And the range of products has expanded over time.

4.1.2 Main business

There are approximately two parts of Tesla's main business. The most vital one is vehicles, including the design, making and selling of electric vehicles. As its universally known that they produce Model S, Model 3, Model X and Model Y (Figure 2). Secondly, they also provide solar products and energy storage solutions, such as Powerwall and Powerpack, not only for dwellings but also for shopping malls.

Up to 2023, Tesla own a huge share in the market of electric vehicles, that is 13.2 percentage in worldwide plug-in EV market. Tesla is commonly considered as a leader of clean-fuel cars' innovation, with a tremendous influence of brand and loyalty from costumers. The is one of the most valuable electric vehicles companies around the world in 2023, as the result of its immense market cap.

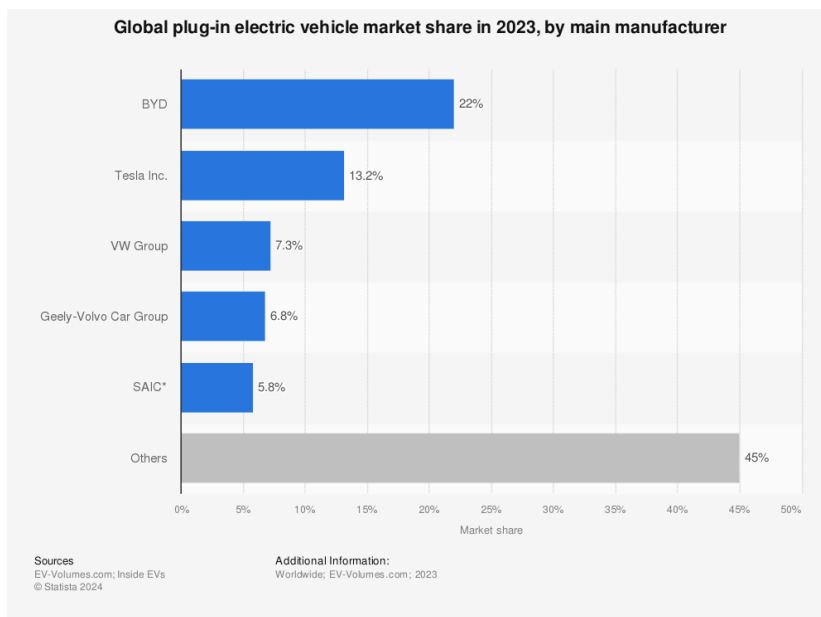


Fig. 2 global plug-in EV market share

Nevertheless, as the globalization is promoting constantly, Tesla is also facing the contention from domestic and abroad companies such as Ford and Mi. Some extensive war such as Russo-Ukrainian War may also cause disruption of its supply chain.

4.2. Apple

4.2.1 Historical overview

Apple Inc., one of the biggest technology companies around the world, was co-founded by Steve Jobs and Steve Gary Wozniak in California, 1976. One year after established, Apple rolled out Apple II, which turns out to be the first type of mass-produced personal computers. 1980 is a remarkable year for early Apple in which it has IPO. However, Jobs left Apple in 1985 and five years later, Apple appeared facing serious financial problem and declination in market share. This problem was solved in 1998, a year after Jobs back to Apple as temporary CEO and started to produce iMac. Apple's future becomes more and more inspiring, in especial after iPhone is available in 2007 then iPad in 2010.

4.2.2 Main business

The company is now headquartered in Silicon Valley, where it conducts its main business including design and development of computers, mobile phones, wearable devices. Its product line consists of three main segments: hardware production line, including iPhone, iPad, Mac, Apple Watch, AirPods; software including iOS, macOS, iPadOS; service including Apple Music. iCloud. Apple Pay. App Store. The technology research and development investment of Apple mainly depend on artificial intelligence and chips.

Apple has a enormous market cap, the first company to surpass a trillion dollars in market value in August, 2018. It took two years to double its market cap and now its market cap is up to 3.15 trillion.

Apple now hires more than one hundred workers around the world, and its production is selling in 175 countries and regions. The market share of iPhone around the world can nearly approach 25% (Figure 3). The users of Apple have developed to a number more than half a billion, showing the key role of Apple in technology market.

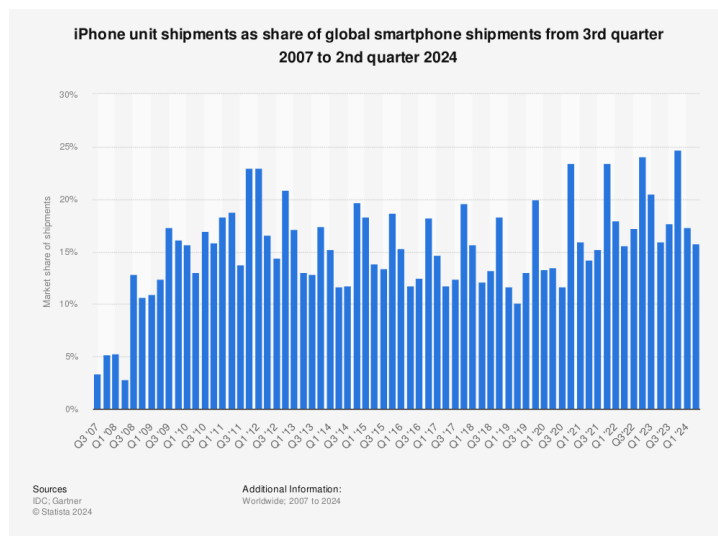


Fig. 3 marked share of iPhone

4.3. Amazon

4.3.1 Historical overview

Amazon was founded by Jeff Bezos in July 1994 which used to be an online bookstore in the beginning. The company appears on the market in 1997 and has raised more than fifty million by IPO. 1999, Amazon design a platform that allows the third parts to sell their goods on it. Eight years later, it developed Kindle, which leads to a complete revolution of reading. And now it has developed into the largest online retail platform.

4.3.2 Main business

There are some essential parts that runs the Amazon. The centre of Amazon's main business stands e-commerce. The AWS is also playing a key role in Amazon since it provides basic equipment and platform service. Amazon also own a powerful advertising platform, producing personal solution of advertisement by their big data extract from their customers.

To date Amazon act as a dominator in world-wide e-commerce market (Figure 4). It won this by its wide range of production, stick costumer basis and effective physical distribution. It's AWS, the The wind vane of the cloud service market, contributes a lot to Amazon's profitability. Amazon is facing competition with other e-commerce platform such as Alibaba, but is no denying that it does have a huge competitive advantage.

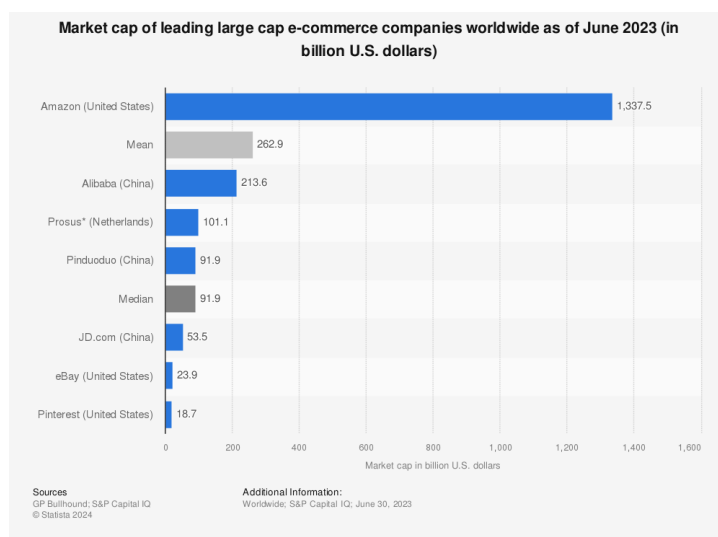


Fig. 4 e-commerce companies

5. Contrastive analysis

5.1. Comparison of risk factors

We selected some representative indicators. The market value can help us understand the size of the enterprise, the beta directly expresses the volatility of the enterprise, the debt ratio reflects the asset structure, and the current ratio tells us whether the enterprise has liquidity risk. Just As table 1 shows that all of the three companies have a huge scale since their market cap are substantial. They all have beta values greater than 1, with the largest being Tesla 2.25 and the smallest being Apple 1.23, meaning they all have greater volatility than the stock market average. The debate ratios are in a controllable range, while Tesla has the lowest 40.3%. Though Apple has the highest debt ratio 82.4%, we must mention the assets of Apple Inc. are considerable. And the liabilities are not deformed, though they do have a certain long-term debt. The highest current ratio belongs to Tesla, 1.73. Their current ratios are generally healthy, with only Apple less than 1 but very close. 0.99 in current ratio may claims that there is little problem with its core business. So, from this perspective, the three companies have close value but Tesla a little bit higher (Table 1).

Table 1 risk ratio

	Tesla	Apple	Amazon
market cap	641.99 B	3.15 T	1.87 T
beta	2.25	1.23	1.36
debt	40.3%	82.4%	61.8%
current ratio	1.73	0.99	1.05

5.2. Comparison of profit factors

The income of the companies in the latest three years has a steady rise. The increase of Tesla's income was up 1% from a year earlier, which is mostly due to the contribution of electric cars production. The income of Apple not only benefits from the larger consumer basic of iPhone, Mac, but also contribute from the growth in service business. Though the net profit declined in 2021, the net income of Apples keeps the tendency of increasing. What's more, it can be seen that Amazon has the highest total asset turnover 0.31, which means it has the highest efficiency in the use of assets among them all. Apple has the lowest total asset turnover 0.11. However, it also has the highest profit margin as 25.3 percents, claiming that it can get a higher percentage of profit from sales. It also has the highest ROA ratio and ROE ratio, respectively are 2.9% and 183%, which means it's return on capital investment and shareholder investment are high. In this case, Amazon has the lowest ROA ratio which turns out to be 1.8% while Tesla has the lowest ROE ratio 15.9%. We may take Apple the most worth investing in this part (Table 2).

Table 2 profitability ratio

	Tesla	Apple	Amazon
total asset turnover	0.13	0.11	0.31
profit margin	15.5%	25.3%	5%
ROA	2.1%	2.9%	1.8%
ROE	15.9%	183%	19%

5.3. Comparison of market factors

When it comes to the performance of the market, we can find that Tesla has the highest PE ratio 76.49. It means that investors are willing to pay higher prices for their future growth potential. The highest PB ratio is won by Apple, 47.8, shows that market takes the stock is undervalued. And the lowest is Amazon, 9.27. However, the PEG ratio of the three are all above 1, which means their earnings growth potential is probably overstated. Among them, Apple has the lowest PEG ratio 2.47. What's more, the moving average of 50 days price is lower than 200 days price for Tesla while Apple and Amazon are on the opposite side. It can be seen from this; they will probably buy by ratio investor and index investor.

As the competition among technology companies are becoming intenser, those three companies should seize their own fortes. The unique advantages those big companies have including the value of their brand, which has a lot of loyal followers. What's more, they also have advanced situation of innovation, acting as a essential role in motivate market's creation.

6. Conclusion

In conclusion, the technology industry in which these companies are located is still at the cusp and has a good development trend. These companies are the industry leaders, will bring good results in terms of profit returns, and in terms of basic financial indicators, thunder is less likely. However, we may consider that the market is overvaluing several companies and the investment value is relatively limited.

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