

Which Types of Vehicle Companies Are More Worth to Invest In, Conventional or Electric?

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Abstract. In the contemporary century, carbon neutrality has become a fierce topic worldwide. The main energy resource is fossil fuels, dramatically damaging our environment and health. On this occasion, electric vehicles have become popular. This paper aims to analyse the information of conventional and electric vehicle companies, including data and literature, and illustrate the investment suggestion. There are two parts mainly focused on, the ability to gain profit and the risk of investing. Two companies are chosen to present the two different types, conventional and electric. After calculation, the risk level is similar, both of them are safe from liquidation. However, the ability to profit for conventional companies worsened, unlike the electric companies. Statistically, electric vehicles have a more prospective future, but many things, such as policies and customer preference, besides data, are essential to consider. After calculation, electric cars are more likely to bring profit to investors than conventional vehicle companies but more information still is needed to be analysed.

Keywords: Investment, Conventional fuel vehicles, Electric vehicles.

1. Introduction

Due to the environmental change and policies, electric cars seem very prospective. There are 22% of air pollution comes from the consumption of fossil fuels, and over 195 countries plan to reduce greenhouse gas emissions [1]. Besides, for long-distance travelling, the main costs come from the fuel assumption, but the energy efficiency is only 40% [2]. As a result, an increasing number of people have started to purchase cars. However, it does not mean that conventional vehicle companies will decline and be replaced by electric car companies because both of them are researching electric technology and trying to take up more market shares. More importantly, some governments are willing to give subsidies to the companies that develop electric technology, which causes many electric components to be researched and developed such as batteries (Lead-acid batteries, Nickel metal hydride batteries, and lithium-ion batteries) and algorithms related to the energy storage system. However, the researches still need more effort [3,4]. For example, the battery's energy density and life cycle need more effort, which may need supercapacitors' support. It is hard to forecast which company will be the comparative advantage in the future [5]. Data analysis is an essential and effective method to judge what to invest in as an investor. Analysing the profitability, efficiency and risk, such as return on capital employed (ROCE) and leverage, is practical and helpful in deciding whether to invest or not for investors apart from the information related to cutting-edge technology and policies. As a result, the main target of the paper is to calculate the data and analyse it.

This paper will introduce and explain the methods of analysing whether to invest in conventional vehicle companies or electronic vehicles. Toyota and Tesla are chosen to present these two types of companies. The reason is that Toyota was the world's largest and most valuable vehicle company, and Tesla is the largest and most valuable vehicle company. Still, the main difference is that Tesla produces electric cars only. Then the calculation results of the models will be listed. Discussion and suggestions are displayed at the last of the paper.

2. Methods and results

Trend analysis includes the consideration of the impact of circumstances in comparison to analyse of the results of Toyota. In this case, the main differences in recent years are COVID-19.

Regarding profitability level, ‘Return on capital employed (ROCE) is the key index to measure how much profit the company generated from the capital employed. ROCE (total assets – total non-current liability) includes both profitability and efficiency level of the company so ROCE usually could represent how well a company performed over the year.

$$ROCE = \frac{\text{profit before interest and tax}}{\text{sales revenue}} * \frac{\text{sales revenue}}{\text{capital employed}} = \frac{\text{profit before interest and tax}}{\text{capital employed}} \quad (1)$$

In the last four financial years, the indicator kept decreasing from 0.0493 to 0.0346. Remarkably, the indicator dropped over 20% between 2020 and 2021, which was the most significant gap. The ROCE of Toyota is shown in Table 1.

Table 1. The Calculation of ROCE of Toyota [9]

In million yen	FY2018	FY2019	FY2020	FY2021
Profit before interest and tax	209,827	202,225	196,288	184,011
Sales revenue	2,003,973	2,214,946	2,171,355	2,118,302
Capital employed	4,252,642	4,303,809	4,305,339	5,315,747
ROCE	0.0493	0.0470	0.0456	0.0346

To further explain, ROCE is constructed by operating profit margin and assets turnover, so analysing both parts is necessary to judge which component should be bettered.

$$\text{Operating profit margin} = \frac{\text{operating profit}}{\text{sales revenue}} * 100\% \quad (2)$$

$$\text{asset turnover} = \frac{\text{sales revenue}}{\text{capital employed}} \quad (3)$$

First, the operating profit margin should be considered because this indicator can present the capability of gaining profit. According to Table 2, it had decreased in the last three years, which means the sales part has problems. The results coincided with the data of sales revenue that were falling.

Table 2. The operating profit margin and asset turnover of Toyota [6]

	FY2018	FY2019	FY2020	FY2021
Operating profit margin	10.47%	9.13%	9.04%	8.69%
Asset turnover	0.4712	0.5146	0.5043	0.3985

On the other hand, asset turnover data kept dropping in the recent three years, similarly to the operating profit margin. The indicator is used to judge whether a company is efficient. It presents how much sales revenue could be generated with the current level of employed capital. From 2019, the data decreased by about 20% in 2021.

Tesla is the most prominent vehicle company (Toyota was the biggest), which is worth analysing and comparing with Toyota to judge if investing in conventional companies is a proper choice. Tesla’s data is shown in table 3.

Table 3. The calculation of ROCE of Tesla [7]

In million us dollars	FY2018	FY2019	FY2020	FY2021
Profit before interest and tax	(1,005)	(665)	1,154	6,343
Sales revenue	21,461	24,578	31,536	53,823
Capital employed	16,306	18,777	37,978	51,288
ROCE	-0.0616	-0.0354	0.0304	0.1237

According to the calculation in Table 3, Tesla's ROCE was increasing at apace. In 2018, the ROCE was negative at 0.0616, but in 2021, it grew to 0.1237, which increased by around 300%. Remarkably, the profit before interest and tax (PBIT) increased by about 700%, from 2018 to 2021, which was a dramatic rise.

Table 4 displayed Tesla's both operating profit margin and assets turnover. Operating profit margin increased quickly, similarly to the ROCE and asset turnover kept at a high level.

Table 4. The operating profit margin and asset turnover of Tesla [7]

	FY2018	FY2019	FY2020	FY2021
Operating profit margin	-4.68%	-5.71%	3.66%	11.78%
Asset turnover	1.327	1.309	0.830	1.049

ROCE, operating profit margin and asset turnover are helpful indicators to judge if a company is ideal to be invested in the long run since it measures efficiency and profitability. However, the risk is not considered. Leverage should be taken into account to include risk.

The current and gearing ratios could be calculated based on the data. The current ratio measures the liquidity of a business, which is the ability to meet short-run liabilities. It can test the business risk directly since the company will go bankrupt or involve in the process of liquidation if the company is not able to cover the current liability. On the other hand, the gearing ratio tests the ability to meet long-term obligations. It is also essential since there is the risk that the company cannot avoid insolvency.

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}} \quad (4)$$

$$\text{Gearing ratio} = \frac{\text{Debt}}{\text{Equity}} \quad (5)$$

The calculation results of the two companies are shown below in Table 5.

Table 5. The calculation of current ratio & gearing ratio [6,7]

In million US dollars	Toyota	Tesla
Total debt	23,861	30,548
Total equity	24,919	31,583
Current liability	8,912	19,705
Current asset	14,611	27,100
Current ratio	1.64	1.38
Gearing ratio	0.96	0.97

3. Discussion

As mentioned above, Toyota was becoming worse in both efficiencies and gaining profit, especially in 2021. However, the significant drop in asset turnover was mainly caused by the higher capital employed level. Capital employed had increased by about 25% in 2021, compared with 2020. In 2021, Toyota invested 252,959 million yen in property, plant and equipment, which aims to better their supply chain and enhance the ecosystem. Overall, with the recovery of the Asian economy and COVID-19 fading out, the financial condition of Toyota would be prospective.

Many reasons may cause it, but the pandemic is the major one. Toyota has many different businesses in vehicles, such as the production of car engines, air conditioners, and other components. It means that, comprehensively, Toyota's income in many aspects would be lower if people reduced the frequency of travelling. Vice versa, Toyota's income would be much higher in the post-pandemic era. More importantly, Toyota had achievements in the electronic vehicle market. Its net operating profit in the Chinese automobile market increased by 72%.

On the other side, the risk level, Toyota was safe from liquidation or bankruptcy. The current ratio was higher than 1.5 but lower than 2, which means Toyota can pay back the short debt and the efficiency is secured. Also, the risk of bankruptcy in the long is low because the gearing ratio is lower than 1. It means that Toyota's total debt can be covered with its current equity level

On the contract, the trend of Tesla is almost the opposite of Toyota. Tesla's financial indicators grew extremely quick. Its PBIT increased by around 700% in the last four years and ROCE increased by about 300%. It means that Tesla was successful in both efficiency and profitability. Moreover, by the statistic, Tesla was not affected by COVID-19, which was different from other similar vehicle companies. On the contrary, its sales revenue and net operating profit had a massive growth in 2020 and kept rising in 2021. More significantly, Tesla was popular in the Chinese market during the pandemic. Chinese people snapped up Tesla vehicles.

The risk level of investing in Tesla is not high. Although the current ratio was a little lower than 1.5, it was still acceptable since vehicles can be sold quickly, so liquidity is the reason. Besides, Tesla has been experiencing a period of growth, which could be deducted from the development of operating profit so 1.38 is reasonable.

However, investing in Tesla may not be profitable because the share price is extremely high. It means that investors may not gain as much profit as they forecasted. Without any doubt, investors are likely to gain profit in the long run, based on the calculation, but the ratio of return may be low.

According to the statistics, electric vehicles are more worth investing in. The reason is that the company has ideal performance in gaining profit and risk. It means that investors are more likely to earn profit with lower risk. However, the market and policies in the future are very hard to forecast by solely analysing historical data. Many countries support electric vehicles to achieve the target of carbon neutrality. Hence, electric cars are cheaper than conventional cars in some countries but the conditions may be different, influencing the market. The fuel price increase may also be one of the reasons electric vehicles become popular due to the Russia-Ukraine war, but the price is also hard to forecast. Besides, electric vehicle technology is not mature nowadays and conventional fuel companies also invested a lot of money in researching electronic cars and gaining market shares. For example, Mercedes plan to switch to ultimate electricity at the end of this decade [8]. More importantly, the total costs of hiring an electric car may be different with the distance travelled and other aspects but it may change in the future[9]. As a result, it is very difficult to judge which kind of companies, pure electric vehicle companies or conventional vehicle companies, are better to be invested in by analysing the data.

4. Conclusion

In conclusion, the ROCE and leverage of these two companies have been calculated and discussed. In comparison, conventional vehicle companies seem to decline and electric car companies are experiencing a sunrise period. Although Toyota has some achievements in the electric vehicle market, its overall revenue and efficiency are declined. For Tesla, all indicators are growing in the recent two years, which is the opposite of Toyota. Besides, their leverage level is acceptable, so investors would not lose much money if investing. However, investing in conventional vehicles or electric companies is not suggested in terms of investment. The reason is that the companies' future may be affected by policies. It is difficult to judge if governments will support electric cars since many problems exist. For instance, electricity may damage the environment harder than fuels in some countries where the fundamental infrastructures are unenlightened [10]. Also, other government interventions may increase the total costs of driving electric cars such as tariffs [11]. As a result, comprehensively, investing in vehicle companies is not an ideal choice currently.

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