

Fall 2024's

Inter-Fraternal Case Competition

Electric Vehicles and the Future of the
Auto Industry - Investors' Dilemma?

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The Auto Industry - Investors' Dilemma?

“The only real mistake is the one from which we learn nothing” - **Henry Ford**

“Success is 99 percent failure” - **Soichiro Honda**

The Auto Industry

The automotive industry began in the 1860s. The manufacturing process evolved from engineers working on a stationary car to a conveyor belt system where the car passed through multiple stations of specialized assembly workers. Starting in the 1960s, robotic equipment was introduced to the process, and today most cars are produced largely with automated machinery.

History of the top auto-producing countries:

- 1929: U.S. accounts for 90% of worldwide auto production.
- 1945: U.S. accounts for 75% of worldwide auto production.
- 1980: Japan overtakes the U.S. in the number of automobiles produced globally.
- 1984: U.S. returns to the top of auto production.
- 2006-2009: Japan again overtakes U.S. auto production numbers.
- 2009: China becomes the top worldwide auto producer, producing 13.8 million vehicles.
- 2012: China almost doubled the number of U.S. produced vehicles (19.3 million units to the U.S. 10.3 million) Japan was in third place with 9.9 million.

The auto industry is going through an epochal shift away from internal combustion engine vehicles (ICVs) towards electric vehicles (EVs). In response to the havoc wreaked by the pandemic on automakers' supply chains, particularly the availability of semiconductor chips, there is a dramatic pivot towards vertical integration. As car companies computerize, electrify, and attempt to take greater control of their supply chains, the industry is going through the most significant transformation in decades.

This all amounts to a huge upheaval for a global industry impacting thousands of companies, millions of workers, and billions in sunk internal combustion engine vehicle era costs. Refashioning supply chains will require huge investments and is fraught with risks of failure. Suppliers face the threat of less business as a result of vertical integration by the automakers.

Automaker executives have to navigate the challenges of how to deploy their resources without provoking a backlash from governments and trade unions concerned about the loss of good manufacturing jobs. They also need to contend with customer hesitation to buy electric vehicles due to higher prices, insufficient recharging infrastructure, range anxiety, and uncertainty about the market for used electric vehicles.

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Environmental Impact

For decades the car has been an essential part of daily life across much of the world, but automobiles using the internal combustion engine are a major cause of global warming. According to the United Nations, the global number of private cars is projected to triple by 2050, resulting in an increase in carbon pollution that could severely hinder the world's ability to limit the global average temperature rise to less than two degrees Celsius -- the sustainable limit identified by climate scientists. There are many possible solutions -- from fuel-efficient vehicles and cleaner fuels to electric vehicles -- with many groups pushing for rapid adoption. As one example, in 2020, UK businesses belonging to the UK Electric Fleets Coalition called on the government to set a target of having 100% electric car and van sales by 2030. It recommended stimulating EV manufacturing and strengthening the charging network.

Change may not come fast enough, however, causing some governments to resort to a carbon tax to accelerate the process. How companies respond to the tax, whether it be promptly adopting new technology and reducing carbon emissions or dragging their feet, can have significant financial implications, affecting their credit risk profiles, customer response, and even potentially impairing their ability to operate. Increasingly, investors, lenders, regulators, and other stakeholders are demanding greater assessment and transparency in the disclosure of climate change impacts and related financial risks.

The climate transition will require significant investments in improving the fuel efficiency of internal combustion engine vehicles and the shift to hybrid and electric vehicles for broader consumption. Automotive producers may be static in their behavior and only grow EV production to offset declining ICV sales or, alternatively, they may become adaptive and rapidly increase EV production to maintain or gain their total vehicles market share. Some may take the middle ground and focus on hybrid vehicles initially.

There is a concern that some large automakers remain a major hurdle to government policy aimed at moving to zero-emission vehicles. The sector's climate policy engagement is characterized by high-level public relations statements for climate action, contrasted with strategic opposition to regulations to phase out internal combustion engines. Laggard automakers such as Toyota and Nissan which are forecast to have the lowest percentage of zero emission vehicles in 2029 also have the most negative climate policy engagement. Similarly, regions with the most ambitious climate legislation for the automotive industry, like the EU, are leading on forecasted battery electric vehicle production whereas regions with less ambitious climate legislation, such as Japan, are lagging on switching to EVs.

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The Tesla and BYD Battle

As of 2023, the two global leaders in the electric vehicle industry are Tesla and BYD. While Tesla had a first-mover advantage and was the clear leader in the EV segment of the automotive market for many years, it now faces serious competition from BYD, the relative newcomer from China, along with some of the legacy automakers who are increasing their range of EV models. Today China dominates global EV production largely because of BYD's dramatic growth.

Despite Tesla's erstwhile success, there are questions as to whether it can keep growing as fast and as profitably as it has for much longer. While its operating margins were 17% in 2022, they fell to 11.4% in the first quarter of 2023, 9.6% in the second quarter, 7.2% in the third quarter, and 8.2% in the fourth quarter. When it launched the Roadster in 2008 and Model S in 2012, Tesla was the only option for customers interested in EVs. Now car buyers can choose from 500 EV models from a large number of automakers. Some market analysts estimate that over 400 new models will arrive in 2023 and 2024. This will provide Tesla stiff competition that it has not had to face until now. Tesla's product line is limited with the Model 3 and Model Y accounting for 95% of its revenues. Both models are aging with the Model 3 and Model Y being 6 and 3 years old respectively. This makes them less attractive to buyers in an industry that refreshes its models every 2-4 years and does a complete redesign every 4-7 years. If it is to compete with other automakers, particularly BYD – the Chinese EV leader – Tesla would need to offer lower cost models. However, this threatens to further depress Tesla's profitability.

BYD is rapidly gaining on Tesla as the world's leading EV maker. It leads in EVs in a number of markets including Brazil, Colombia and Thailand and is among the top five clean car companies in Australia, India and New Zealand. It recently also entered Mexico, Spain, Singapore, and Sweden.

This is all the more remarkable given that BYD only started exporting EVs in 2021 with Norway being one of its first export markets. With its cars now sold in 53 countries around the world, BYD is the largest automaker most people have never heard of. In 2023 it became the largest auto manufacturer in China overcoming Volkswagen which had held that position since 2008.

Former Tesla director Steve Westly states "By any standard, BYD has come from nowhere to be one of the major car companies in the world. What they've done in a short period of time is nothing less than stunning."

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BYD's popularity stems from the fact that it offers a broad range of good-looking and well functioning cars at competitive prices. Its sub-compact electric hatchback models start at US \$10,400. This is a fraction of Tesla's Model 3 which costs US \$42,990. BYD's affordability comes from its strategy of vertical integration. Making more components internally leads to lower costs and more control of its supply chain. Unlike some of its competitors, BYD makes its own batteries and semiconductors. In March 2023, BYD announced a \$500 million investment in a Chinese lithium miner. It is said to have purchased six mines in Africa. Not much more information is available as the terms of the deals are opaque.

However, for all of its global expansion, BYD still generates 75% of its revenue domestically. This contrasts with Tesla which derives half its revenues in the US and Toyota which earned just a quarter of its revenue in Japan. This is a concern for BYD as auto sales growth has been slowing in China. For 2023, BYD's goal was to sell 3.7 million fully-electric and hybrid cars while Tesla's target was 2 million cars. BYD is building its first overseas production facility in Thailand and is also considering production in Brazil, France, Indonesia and the Philippines.

Additional Manufacturers

Volkswagen, which has long held the largest market share in China through its gasoline-powered vehicles, is trying to figure out how to compete with Chinese automakers as the Chinese market pivots to electric vehicles. Rather than build cars in Europe and bring them to China it is investing billions of dollars in Chinese companies to gain access to cutting-edge Chinese EV technology. At this point, BMW and Mercedes Benz are not major players in the EV market.

French automaker Renault is making large investments in its EV subsidiary, Ampere, in a bid to be competitive with EVs from China and Tesla. Many analysts consider price parity between internal combustion engine vehicles and electric vehicles key to the transition to electrification.

In a bid for enhanced affordability of EVs, Ampere is aiming to match the cost of Renault's gas powered cars by 2027. Interestingly, Nissan and Mitsubishi Motors are investing €800 million in Ampere.

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Japanese automakers Toyota and Nissan, who are laggards in the move to EVs, are trying to catch up in introducing EV models at competitive prices. Nissan is working with Dongfeng Motor, its Chinese joint venture partner to release several EV and hybrid models. Toyota has shifted the focus of its China R&D center to EVs. It is bringing on more engineers from its Chinese joint ventures and is turning to local component suppliers to speed up the introduction of EV models.

The Korean automaker Hyundai Motor and its affiliate Kia have also benefited from having less expensive EVs in their product line. The two sister companies together leapfrogged GM and Ford in 2023 to become the second-largest seller of battery-powered cars in the U.S.

In the U.S., after promising to invest billions in pivoting to EVs, both General Motors and Ford have recently announced a scaling back on their EV plans. General Motors abandoned a self-imposed goal to produce 400,000 EVs by mid-2024. Similarly, Ford pushed back its EV-output target by a year citing US buyers' unwillingness to pay a premium for EVs coupled with high interest rates that make them even more expensive. The question this raises is whether these pullbacks are permanent or a bump in the road to pivoting to EVs. General Motors CEO, Mary Barra, opined that she believes it is the latter.

Challenges

As inventories of EVs have started piling up on U.S. dealership lots, Ford, Hyundai, Tesla, Volkswagen, and EV startups Lucid and Fisker have had to turn to discounts in late 2023 to combat lower demand. Also in December 2023, General Motors bought out about half of its 2000 Buick dealerships nationwide because they refused to sell EVs. Yet some other legacy automobile companies such as Mitsubishi Motors, Stellantis, and Ford Motor are exiting the EV market in China.

While BYD and other Chinese automakers are making inroads in gaining market share around the world they are conspicuously absent from the U.S. market. Washington has instituted several measures including a 25% tariff on Chinese auto imports, that make entry into U.S. markets fiscally unsustainable.

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U.S. officials cite massive subsidies provided by the Chinese government which allow Chinese automakers to sell their cars at unfairly low prices. The EU shares similar concerns alleging that due to subsidies from the government Chinese vehicles are unfairly priced significantly lower than EU-made models. It is considering raising the import duty on Chinese cars from the current 10%. Analysts fear that China could retaliate with its own taxes on non-Chinese automakers operating in China.

Tesla also has to contend with its significant dependence on China for both manufacturing and sales. While this has not been a problem thus far, the changing geopolitical environment, tensions between China and the U.S., and China's promotion of its own EV industry could hurt Tesla. The recent decree banning the use of Apple phones by government employees in China is not an encouraging development. On July 6, 2023, Tesla was among the automakers required to sign an undertaking to stop its price war and "compete fairly consistent with core socialist values".

ASSIGNMENT

You have a 3-5 year investment horizon and are looking to add a publicly listed automaker to your portfolio....

Based on its financial and sustainability performance, which company would you choose to invest in?

Support your decision with in-depth analysis.

Sources: BBC.Com, Bloomberg Businessweek, Economist, New York Times, Wall Street Journal, Wikipedia.

Logistics

Each team should include a google folder consisting of all final deliverable(s): pitch decks, marketing materials, PowerPoints, etc. (shared with kevans21@umd.edu)

Structure of Case Competition Presentations:

Presentation Date:

- Wednesday, October 30th, 2024 (6:30 - 9:30pm)

Presentations:

- Teams will have 10 minutes to present followed by a 3 minute Q&A session from the judges

Attire:

- This is a business professional event.

**Feel free to reach out to your designated mentor for any case specific questions, or Keola Evans (kevans21@umd.edu) for any case competition logistic inquiries.*

GOOD LUCK!!



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