

Tesla "Ride or Die"

Dear, Reader –

We are pleased to announce the launch of our newest research offering: Stock Research by Evergreen Gavekal.

This equity analysis medium provides a more in-depth qualitative analysis and rigorous bottom-up research on individual companies. We conduct a strategic review of the business, creating a holistic report rather than just a basic overview. For market enthusiasts seeking basic company summaries and topical metrics, there are dozens of sources for free reports online. For a thoughtful analysis and deeper insights, Stock Research by Evergreen Gavekal is a useful tool to equip investors to make convicted buy/sell decisions.

Stock Research will be free to Evergreen clients and \$99.99 for the general public. This is not a subscription, rather a pay-per-report service, enabling you to choose which company reports you purchase. We will continue to select relevant, top-of-mind companies that our investment committee is evaluating and we think readers are eager to have greater insight into.

The inaugural Stock Research report on Tesla is being released as a free sample for today's Evergreen Virtual Advisor newsletter. Invitations to buy future reports will be sent via email with a 50% discount code to our readership base. That is to say: if you are an EVA subscriber, you can purchase the reports for \$49.99.

We hope you enjoy!
The Evergreen Gavekal Team

Please see important disclosures following this presentation.

"It's okay to have all your eggs in one basket as long as you control what happens to that basket."

–Elon Musk

A little primer. It seems that every year some team selects a player in the NFL draft who's been studied tirelessly by scouts, interviewed extensively by team execs, and analyzed in detail by coaches but turns out to be a total bust. How is that possible? Despite having so much information on a given player, how can such a monumental mistake be made? We think in many instances it's the sheer amount of information that's the problem. That's why, at Evergreen, we think good equity research is executed when a company can be distilled down into understandable parts. Said differently, what are you betting on or against when you decide to own or not own a given company? If we cannot confidently identify clear positive/negative catalysts for a stock, we typically avoid them. So, to reiterate, the goal of our stock research report is not to inundate you with all the information on each stock. The internet is a vast resource that can drown you in information if you're not careful. Our goal is strip away all the noise and present you with the key variables needed to inform a buy/sell decision on a company.

The man, the myth, the legend. The story of Tesla should begin with its namesake. In July of 1856, a brilliant young boy named Nikola Tesla was born in the small village of Smijan, in what

is now present-day Croatia. He was the son of a priest, the fourth of five children, and grew up on a farm. Tragically, at the age of seven, his brother was killed in a riding accident that would haunt him his entire life. Tesla was supremely gifted in mathematics, performing integral calculus in his head without the need for pencil and paper. Such jarring displays of genius prompted teachers to accuse him of cheating. After contracting Cholera and coming close to death multiple times, he retreated to the mountains to avoid being enlisted into the Austro-Hungarian army. There, he read countless books and fostered his fascination with electricity. After learning Tesla was working from 3am to 11pm, his teachers warned his parents that he was going to die from exhaustion. Tesla would later immigrate to the United States, where he'd find himself matching wits with George Westinghouse and Thomas Edison. While he may have had the more brilliant mind, he lacked the business skills of his contemporaries. During his life, he was credited with countless contributions to modern technological advancements, including the X-Ray, alternating current motors, the Niagara Falls power plant, and many other applications within the field of electricity. But, gambling failures and a tormented mind left him broke and bouncing from hotel to hotel in New York City with unpaid bills. Oddly, he'd be seen obsessing over feeding pigeons in the local park. In 1943, he was found dead in room 3327 of the New Yorker Hotel after suffering a blood clot in his heart.

In many ways, the company has parallels with the man who inspired the name. Elon Musk, CEO and founder of the company, is considered both brilliant and maniacal. Musk double majored in Economics and Physics. He was admitted to Stanford for PhD studies, only to drop out after two days. He would start two companies, first a software company (which sold to Compaq) and then another in online payments that left Musk as the largest shareholder of Paypal when it was acquired by eBay in 2002. Today, he's leading the famed electric car manufacturer, Tesla Motors. Known as much for his brash company predictions and Twitter rants as he is for breakthrough developments in the automotive world, he's polarized the financial community. To many, he's running a house of cards waiting to collapse. To others, he's a once-in-a-generation visionary capable of altering the future course of technology.

Civil War of the Roads. For over 100 years, our roads have been dominated by cars that run on internal combustion engines (ICEs). Still today, these make up 98% of cars that are sold. That's because the major technological limitations of the electric car were deal breakers for most consumers: speed and distance. Almost all electric vehicles were barely fast enough to drive on the freeways and could only drive relatively short distances before needing a charge. But breakthroughs in battery technology have transformed the dynamics of the automotive playing field.

Even with this breakthrough, the electric car has been met with intense skepticism at every turn. How would they charge the vehicle? After all, there are 150,000 gas station in the U.S. while EVs initially could basically only be charged in a garage. (Today, there are roughly 50,000 EV charging stations across America.) Drivers were tethered to the electric car's limitations, and could only use the vehicle to commute locally. Today, the estimated range on an EV is roughly 200-300 miles, compared with 400-500 on an ICE. Tesla claims they even have a model that can make it 330 miles. Anecdotally, every Tesla owner we've talked to claims their car doesn't make it anywhere near the stated range on a full charge. In the small print, you may notice that it states the maximum range is only attained by driving at ideal speeds including sub 50 mph on highways. The entire right lane of our freeways would be full of Tesla owners looking to maximize their range while driving 48 mph!

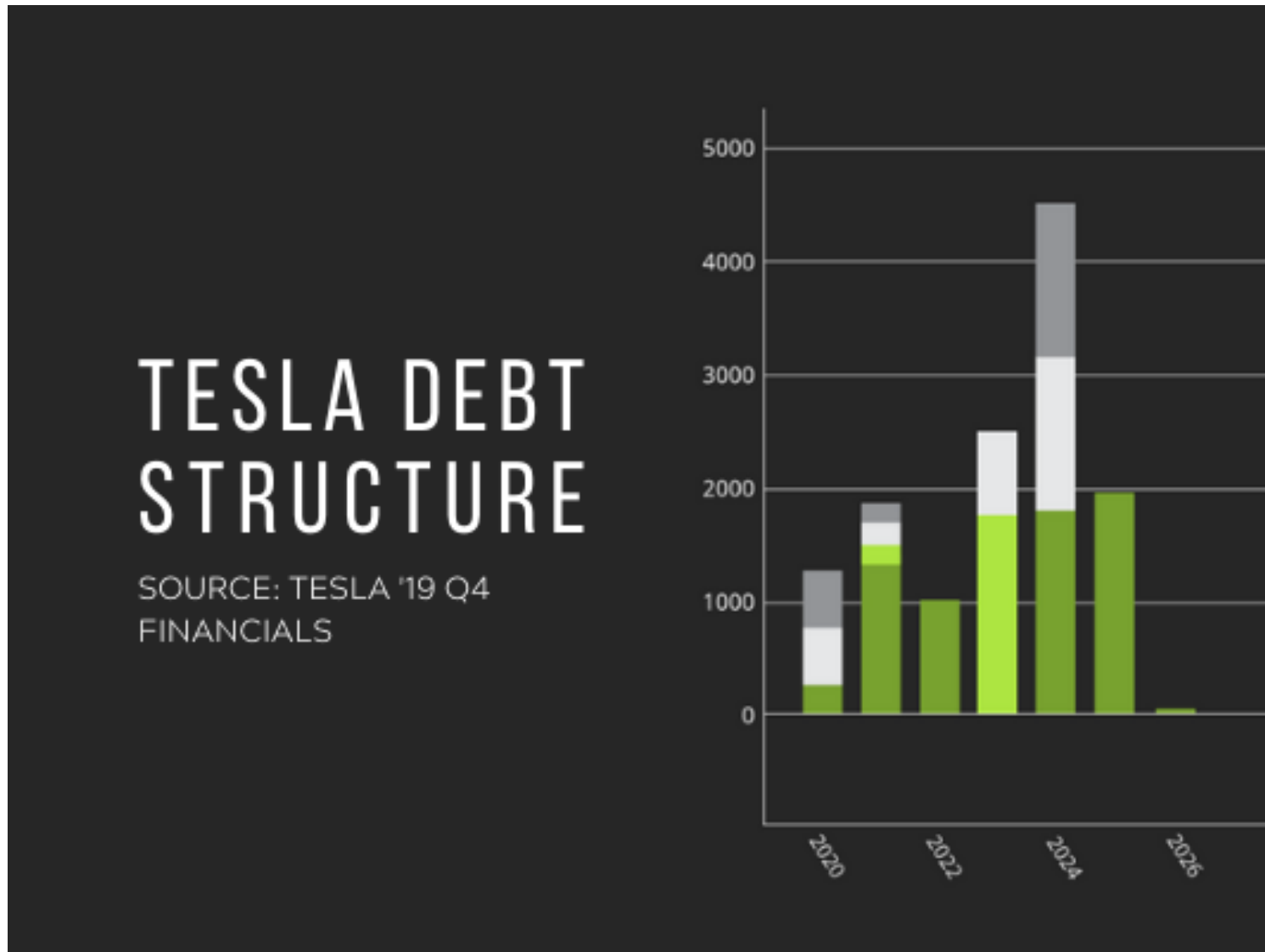
EV supporters will point to further improvements in technology that will bring the driving ranges to parity in the near future. A friend of Evergreen, who owns a massive stake in one of China's

largest EV companies, has studied battery technology extensively. He recently gave us some interesting insight on this topic, stating that many people have become accustomed to Moore's law. Put plainly, it's the principle that computers' double in speed every two years, creating massive improvements across all technological devices. We all have seen this in our everyday life. Our phones have become exponentially more powerful. Our TVs have superior pictures than 10 years ago. Our cameras take better pictures. You get the point. But, doesn't your phone battery last about the same time? Now, you could argue that battery has more strain on it as it performs more functions, but the point remains that if battery progress matched computing progress they should both grow. So, we should have phones that do more and batteries that last longer, but we have phones that do more and batteries that last the same amount of time. The point is: battery progress is much more linear than the exponential progress we see in technological computing power. We expect that battery life will continue to be an industry headwind for longer than most expect.

Batteries have issues beyond just their limiting driving range. They are easily affected by the cold. The American Auto Association estimates that batteries operating in 20-degree weather lose their charge 40% faster. Aside from weather, most pure EV (non-hybrid) owners are reliant on power grids to power their cars. Meaning power outages leave them stranded. Folks in California dealing with rolling blackouts may find timing their car charges to be a logistical nightmare. Then there's the issue of the length of time to complete a vehicle charge. Most vehicles take overnight to charge. If you live in Florida and return home from work, only to learn a hurricane is coming, you can't head to the gas station and skip town. Instead, you'd be stuck staring at the clock waiting for the EV to recharge. Many EV limitations can be chalked up as inconvenient and mostly avoided but there is a psychological dependence related to "recharging" that some people can't overcome.

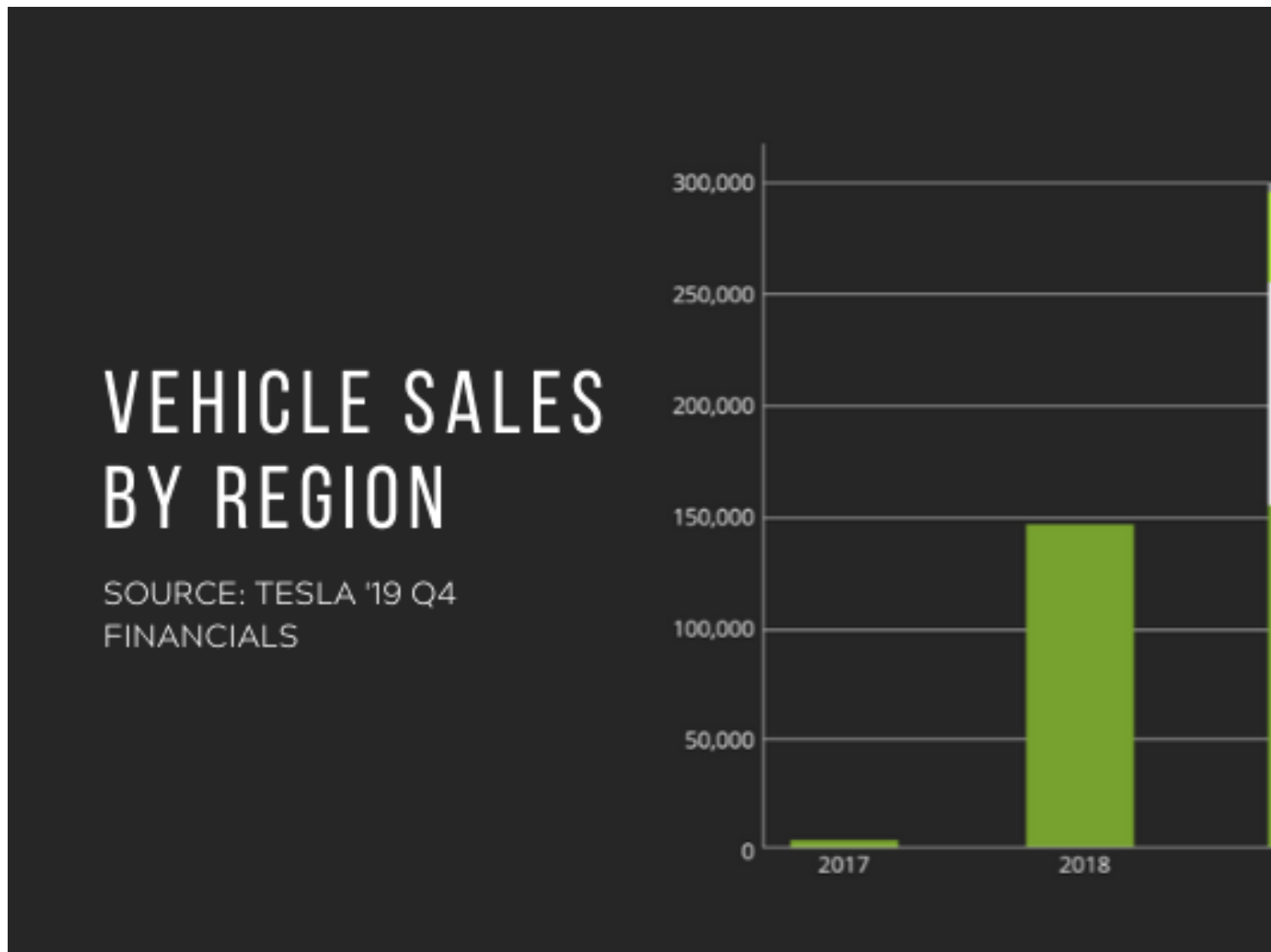
We want to point out that in January of 2020 Tesla unveiled its brand new Giga Factory in Shanghai, a mere 12 months after breaking ground on the project. January production volume saw Tesla's model debut as #1 in production for that month producing 2,625 units — roughly 10% ahead of the runner up, the GAC Aion S. Their success in China is undoubtedly a crucial aspect of the company's growth prospects with China's EV market being almost 2x that of Europe and 3x the US. But Tesla has faced similar work stoppages as other automakers because of the worldwide fallout from the Coronavirus. China's government has responded strongly to the outbreak, mandating sweeping shutdowns of plants around the country. Tesla has since resumed operations at Giga Shanghai and has signaled that they only expect a small impact to their bottom line. At this point, it's anyone's guess how the virus' impact will continue to evolve and affect the global economy at-large.

The Noose of Debt. In a recent interview, Elon Musk described running Tesla by recounting a scene in Indiana Jones (Raiders of the Lost Ark) where Harrison Ford is running from a huge rolling boulder through a tunnel and his only option is to jump over a bottomless pit. We assume the boulder is a mounting pile of debt and the hole in front is the graveyard of failed new American car company entrants. Not counting Tesla, the last major car company formed was Chrysler, a mere 95 years ago! Why there hasn't been a new car company is certainly open for debate. One contributing factor comes from the fact that car companies make significantly more money on parts than vehicle sales. Therefore, the larger your installed base, the better. The average car on the road today is 12 years old, with most warranties lasting 4-5 years. Tesla is trying to break that mold. Tesla has amassed \$10bln in debt from various creditors and many skeptics predict these obligations will spell the end for Musk's vision.



Source: Bloomberg, Evergreen Gavekal

In a strategic pivot, Musk decided to shift his focus from making luxury vehicles—such as the Tesla Model S and Model X—to making a car for the masses: the Model 3. This created a massive need for capital as he decided that he needed scale if Tesla were to survive. It's almost unprecedented to have a company with a market cap of roughly \$130 billion (as this report is being written) with so many people predicting imminent doom.



Source: Bloomberg, Evergreen Gavekal

Many have accused him of hyping his stock and making false promises meant to mislead shareholders. With plenty of evidence to support them, as there have been missed production deadlines, quality control failures, delays in technological upgrades, etc. On the flip side, his defenders have said that to accomplish seemingly impossible feats, you must aim to heights that most would declare impossible. When George Washington set out to defeat the British, how many people thought he'd succeed? Was he lying? Was he dreaming big? When the Wright brothers set their sights on flight, were there volunteers lining up to help them test their planes? When Jeff Bezos, went around raising capital for Amazon, did he say that the odds of his startup succeeding were slim to none – or did he offer a vision that few (if any) besides himself could see?

Musk knows the noose is around Tesla's neck and the most pressing issue is not whether he'll

be able to create a car that changes the world, but whether he can survive long enough to prove he can?






















Therefore, the first question you must ask before deciding to buy / sell Tesla is assessing their solvency issue. The recent doubling of the stock, as well as strong Model 3 sales for 2019 may have tipped the scales in the company's favor.

As of the time this report was written, Tesla's market capitalization is larger than that of Ford, GM, and Fiat/Chrysler COMBINED! Despite only accounting for 1.3% of total vehicle sales in the U.S. car market. This is inexplicable by any reasonable financial explanation. Frankly, the only way to justify that a car company could trade at these types of valuation is to claim that in fact, it's not a car company. If Tesla, isn't a car company what is it? Well, I think Elon Musk and his loyal bandwagon of followers would identify it as a technology company.

Currently, Tesla cars have a self-driving feature known as Autopilot. They are considered to be Level 2 autonomous vehicles. Below is a table showing all the categories.

The 5 levels of driving automation

For on-road vehicles

		 Human driver	 Automated system		
		Steering and acceleration/ deceleration	Monitoring of driving environment	Fallback when automation fails	Automated system is in control
Human driver monitors the road	0 NO AUTOMATION				N/A
	1 DRIVER ASSISTANCE				SOME DRIVING MODES
	2 PARTIAL AUTOMATION				SOME DRIVING MODES
Automated driving system monitors the road	3 CONDITIONAL AUTOMATION				SOME DRIVING MODES
	4 HIGH AUTOMATION				SOME DRIVING MODES
	5 FULL AUTOMATION				

Source: SAE International

Vox

Tesla drivers can engage what they call autopilot once the vehicle enters the freeway and will drive the car until it exits the freeway. While the driver must keep their hands on or near the wheel, the vehicle will increase and decrease speed as needed, change lanes and avoid obstacles all on its own. Tesla does this with an advanced camera system. We've included a link that actually shows exactly how the camera interprets the vehicles surroundings.

<https://www.technology.org/2020/02/05/take-a-look-into-how-tesla-autopilot-sees-the-world->

video/

Imagine you show a young child a picture of a puppy playing with a toy in a backyard. From there, you then show the child a picture of the dog once it's no longer a puppy. Then, you show the child other pictures of other dogs some big, some small, some old, some young, etc....the point is that the child would be able to identify them all as dogs. Unfortunately, despite all their genius, computers cannot do that. Instead, a computer must be shown millions of pictures of different dogs of all different types in different scenarios before it can "know" that a dog is in fact a dog. This is exactly the task Tesla is pursuing with its car fleet today. Every car sold is a data gathering machine equipped with a camera, radar, and ultrasonic sensors that are currently gathering information and relaying it back to their machine learning center. They are racing against the competition to first, gather as much data as possible and then to teach their cars how to react autonomously.

Alphabet is the primary competitor to Tesla which uses a different technology known as Lidar. There are two primary drawbacks to Lidar. First, the entire area in which the vehicle operates must be previously mapped, called a geofence. Second, the cost to outfit a car with the necessary amount of Lidar sensors is significantly more expensive than the camera-based system Tesla uses. This is a massive advantage for Tesla. Waymo has an estimated 600 test vehicles on the roads of Phoenix today, driving around and mapping the streets. Each vehicle is a Chrysler Pacifica that's been outfitted with roughly \$60,000 in equipment. They recently reported that they've now driven over 20,000,000 miles autonomously. Tesla's research vehicles; their installed customer base of drivers, have driven over 1 BILLION miles. (We've included a 4-hour video from Tesla's autonomy day for real enthusiasts. Note the first hour is one long car commercial with no content and lots of scenes of Tesla's driving through the countryside.)

We've named the race to autonomy as the third major decision point for owning Tesla, and believe it's by far the most critical in the long run. Having a car that's electric is cool and makes you feel good about your impact on the environment but a car that drives itself is revolutionary. Just recently, Elon Musk said that he envisions creating an Uber platform where Tesla drivers can initially taxi passengers around town. Eventually, with truly autonomous vehicles he imagines owners sending their cars to work for them, leasing them out as a robotic taxi fleet during the day only summoning back the vehicle upon the owners need. This seems inconceivable today, but when you think about the advances in computing power and the emergence of machine learning, are we ready to declare it impossible? If autonomous driving does happen, and there are those who doubt it ever will, the changes to the economy and businesses everywhere will rival any technological breakthrough in human history.

Just to rattle off a few implications to highlight the disruptiveness of such progress. How would the auto insurance industry respond to a world where humans do not drive at all or play a greatly reduced role behind the wheel? You wouldn't need parking lots in office buildings or garages in your home because the car would go to a holding lot in a rural part of town to wait for you. Commuting long distances via a car with the interior of a bedroom versus a cockpit, could change people's perception about travel. Long haul truck drivers would likely be relegated to last mile tasks, if they were needed at all. We'd be remised if we didn't mention the millions of teenagers who'd never again be put behind the wheel of a CAR!

Below, our investment team ranks Tesla in areas we believe are vital to a company's overall

valuation.



*indicating our conclusion is: **highly overvalued**

It's rare that we analyze a company and are faced with such a polarizing outcome. On one hand, should Tesla emerge as the winning company within the autonomous driving space, it could very likely become the largest company in the world, surpassing a trillion dollar market cap (à la Amazon and Microsoft). We know if pigs had wings, they could fly and there are certainly a multitude of challenges. Yes, governmental regulations can be cumbersome and painfully slow. Consumers may shutter at the thought of trusting their lives – or their children's lives – to a computer. Technology itself may have bitten off more than it can chew by trying to have a computer logically drive a car in an environment that has so many human-dependent variables. But, I'd caution investors who dismiss this as "Jetson-type" technology that's decades away from having an impact. This type of thinking could mean missing out on owning a generational company. There are lots of very smart people without a horse in the race who think this seemingly-distant reality is just a couple years away.

All that being said, virtually no company has been able to avoid the recent market bludgeoning doled out by the Coronavirus – and Tesla is no exception. While we are drawn to the upside of the story, in the business of stock analysis it's best to avoid a complete "strike out" – especially given the widespread panic stemming from the Coronavirus. Ultimately, we are putting a sell on Tesla, with one caveat. Investors would be well served to carefully monitor the progress of the autonomous vehicle landscape. Because if Tesla is really a tech company dressed up as a car company, we're betting the Wolf will get its prey.

Final call: **SELL** | Conviction Level: **LOW**



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