

FIXED INCOME

Reinventing Cars—Risks and Rewards on the Transportation Highway

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Mobility technologies are reshaping how cars are powered, driven and used for years to come. In this excerpt from the latest edition of [FT Thinks: “The Promise of Innovation,”](#) Franklin Templeton Fixed Income Group outlines three mega-trends—electrification, autonomous mobility and ride-hailing services—upending the old world order. They offer perspective on where we think the auto industry is headed, and the credit qualities the team look for from companies in the rapidly shifting auto industry.

It has been 106 years since the Model T rolled off Henry Ford’s new assembly line in Highland Park, Michigan. Ford’s mass production did more than bring lower prices to consumers and higher profits to Ford. It helped kick-start a consumer love affair with cars.

Fast forward to 2019, and the auto industry is at a new crossroads. Regulatory changes and “new mobility” technologies are reshaping how cars will be powered, driven and utilised for years to come. We see three mega-trends—electrification, autonomous mobility and ride-hailing services—as offering meaningful long-term benefits to societies and economies. These trends are also driving significant investment risks and opportunities across credit markets.

As credit analysts, we recognise the payoffs and profitability of new mobility technologies are still years away for many companies in the auto sector. We favour firms that can still generate tangible near-term cash flows, while transitioning toward the new world order.

Cleaner Cars and Profit Pressures

Governments around the world continue to work towards reducing pollution from vehicle emissions. While the efficiency of the internal combustion engine (ICE) has improved over time, tightening global emissions regulations will require greater sales of hybrids and full battery electric vehicles (BEVs). Some industry analysts are predicting BEVs could reach 20% of the US market, 30% of the European market and 35% of the Chinese market by 2030.¹

Automakers aren’t the only ones evolving. Auto parts suppliers with significant exposure to traditional ICE powertrains need to shift their product portfolios to serve electric vehicles (EVs). In some cases, companies are divesting business segments tied to powertrain components.

We expect ICE powertrains to be around for years to come, but the auto supply chain will face burdens from the regulatory push to EVs. Over the long term this is environmentally positive. Our responsibility as credit analysts, however, is to ensure the costs of new technology don't materially degrade a company's credit profile, and are appropriately reflected in valuations.

Automating the Automobile

Along with cleaner cars, the auto industry is deploying vehicle automation technology to make driving safer. Cars with collision warning, automatic emergency braking and lane-keeping assistance are already on the road, thanks to innovations in vehicle perception and sensing capabilities. Improving car safety not only saves lives, but also offers meaningful benefits to the economy.

According to the National Highway Traffic Safety Administration (NHTSA), US motor vehicle crashes in 2010 cost a staggering US\$242 billion in economic activity, including US\$57.6 billion in lost workplace productivity, and an additional US\$594 billion due to loss of life and decreased quality of life due to injuries.

Three Mega-Trends Rolled in One

As vehicle automation technology advances from driver assistance features to fully autonomous driving, self-driving cars have the potential to upend the auto industry, but not likely as privately owned vehicles. For economic reasons, we believe self-driving cars will most likely be electric and primarily used through ride-hailing services.

The rise of ride-hailing players like Uber, Lyft and Didi Chuxing has already had a profound impact on personal mobility by creating a new business model of transportation as a service (TaaS). When viewed on a cost-per-mile basis, however, ride hailing is currently more expensive than private car ownership. That equation could change when fully autonomous cars remove the cost of human drivers.

Fleets of self-driving "robotaxis" could also be better equipped to recover the cost of expensive sensor technology needed to navigate streets. Whereas the average private car sits idly parked much of the day, autonomous taxis will be busy moving passengers and collecting fees all day long. Ride sharing by multiple customers would further reduce trip costs, while additional cost reductions could come from using electric engines. BEVs offer the potential for better fuel economy, as well as lower maintenance costs and a longer engine life given fewer moving engine parts.

All in, robotaxis have the potential to offer consumers a lower-cost alternative to vehicle ownership, in our view, by integrating these three mega-trends—electrification, autonomy and ride hailing. Academic studies estimate a shared autonomous vehicle could potentially replace up to 11 privately owned cars in dense urban areas. Once robotaxis are viable and deployed at scale, some automotive consultants and investment banks estimate private car sales may drop anywhere from 5% to 32% by 2030.² The Boston Consulting Group estimates fleets of robotaxis will account for nearly 25% of all auto passenger miles traveled in the US by 2030.³

Automakers Spring into Action

The potential seismic implications of this shift away from private car ownership haven't gone unnoticed by auto manufacturers. General Motors (GM), for example, purchased the autonomous vehicle (AV) start-up Cruise Automation for US\$1 billion in 2016. Since then, Cruise has grown its staff from 40 to over 1,000 and plans to roll out a commercial fleet of autonomous taxis in San Francisco in 2019.⁴

Competition is fierce though, as a host of technology start-ups are all racing to develop AV technology. It's too soon to say who the eventual winners will be, but we see substantial investment spending taking place to address these auto mega-trends.

The global consultant AlixPartners calculates that by 2023, a whopping US\$255 billion earmarked for electric vehicles will be deployed, with another US\$61 billion for AV technologies.⁵ AlixPartners notes more than 50 major companies globally are now working on AV systems, operating in a wild-west environment that most likely will yield a few big winners, and many disappointed losers.

Some industry players are partnering to spread costs and accelerate their speed to market, given all the technical challenges and heavy investment requirements. Semiconductor companies have entered the fray, too.

Safer Cars, Productive Society

The challenge to commercialise fully autonomous driving technology is monumental. But so too are the potential benefits to society and the economy, in our view. According to NHTSA, 94% of serious automobile crashes are caused by human error. In a world dominated by autonomous vehicles, it's possible to see reductions in fatalities, medical expenses, and collision and repair costs, as well as insurance costs as claims decline. Economic productivity could benefit from commute time that isn't wasted, while underutilised parking lots could be redeployed to higher-value purposes.

Researchers at the University of Texas have estimated the US economic benefits of shared AVs could be US\$1.2 trillion, or approximately US\$4,000 on a per-capita basis.⁶ While these types of estimates are of course difficult to make and include many key assumptions, they illustrate the magnitude of what may be some profound impacts across the economy.

Participating in the Mega-Trend

When we evaluate the investment landscape as credit analysts, we look for automotive companies that we believe can participate in these mega trends without enduring the risks of a volatile, binary outcome. Some cutting-edge leaders in ride hailing and BEVs are highly leveraged. Facing challenges on the horizon, they don't currently offer the improving credit profiles we prefer.

We believe the automobile sector is poised to see meaningful shifts in product composition, as emissions regulations force a transition from the ICE to electrified powertrains. While this transformation should be great for the environment, it will likely come at a cost initially born by the industry and hopefully recovered in future revenues.

Automation stands to improve vehicle safety and potentially lead to shifts in vehicle ownership, furthering the rise of the TaaS model. Navigating these secular trends through business cycle ebbs and flows creates investment risks and opportunities or actively managed portfolios over the long term. If there is one certainty about the auto industry, it's that the road forward will be a dynamic one.

You can read even more views from the team in the latest edition of [FT Thinks: The Promise of Innovation](#).

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1. Source: The AlixPartners Global Automotive Outlook, June 2018.

2. Sources: Lesne D. September 2017 "How disruptive will a mass adoption of robotaxis be?" UBS Evidence Lab. Allianz Partners January 2018. "Robotaxis set to change the automotive industry of the future." AlixPartners, June 2018 Global Automotive Outlook.

3. Source: Collie B., Rose J., Choravia R., Wegseider A. December 2017 "The Reimagined Car." Boston Consulting Group.

[4.](#) Source :Waters R., November 2018 “General Motors president to control Cruise self-driving unit.” *Financial Times*.

[5.](#) Source: AlixPartners June 2018 Global Automotive Outlook.

[6.](#) Source: Clements, L., Kockelman, K., 2017 “Economic Effects of Automated Vehicles” *Transportation Research Record*.