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The Potential Impact of Ride-hailing
Services on BYD

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Abstract

Shared mobility, including ride-hailing services, has been on the rise, enabled by emerging technologies, and allowing for more convenient and flexible travel. The Chinese market is particularly attractive for ride-hailing as the country pushes to relieve its transportation problems, namely traffic congestion and subjacent economic implications. This study aims to measure the impact of ride-hailing services on BYD's share price performance. Three different scenarios of disruption were analyzed, quantifying the potential decrease in revenues. Moreover, an alternative view was considered, taking into consideration the depreciation suffered by society as a whole and the rate of substitution of vehicles.

Keywords: shared mobility; ride-hailing services; private car ownership

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Shared mobility in a sharing economy

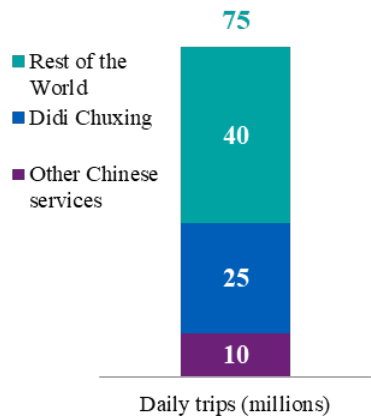
In a wider economy, sharing is redefining the ownership patterns. Access is gaining weight over ownership, in particular for value-seeking consumers, and disrupting traditional consumer behavior in mature industries. In the automotive industry, numerous new passenger mobility solutions had been developed over the last years, striving to fulfill the most recent users' needs. Shared mobility is a concept that comprises different new mobility services, which all have two standard features: 1) there is an element of sharing an asset (a vehicle) instead of owning it, and 2) those rely on technology, i.e., digital platforms.

One of the most promising models – particularly in China – is ride-hailing, which is believed to be one of the future game-changers in the industry. The ride-hailing services segment, facilitated by universal smartphone penetration, connects customers with drivers who provide rides for a fee, in their private vehicles. It includes the so-called Transportation Network Companies (TNCs) that design and operate these online platforms, functioning as a digital marketplace.

Sizing the ride-hailing Chinese market

China is the largest ride-hailing market, accounting for approximately half of the daily trips taken worldwide (35 million out of a total of 75 million). Revenues in the ride-hailing segment will amount to US\$ 53,475 million by end-2019, estimating a 19.6% growth slightly down from 20.2% in 2018. The number of users has been steadily increasing throughout the years, with 680 million users expected by 2023 and, correspondingly, a 47.1% penetration rate. Over the last years, numerous mergers and acquisitions prompted a greater industry

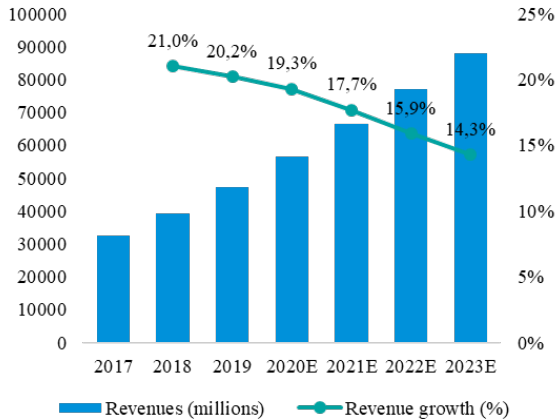
Exhibit 1: Average daily trips taken using a ride-hailing service



Source: World Economic Forum, BCG

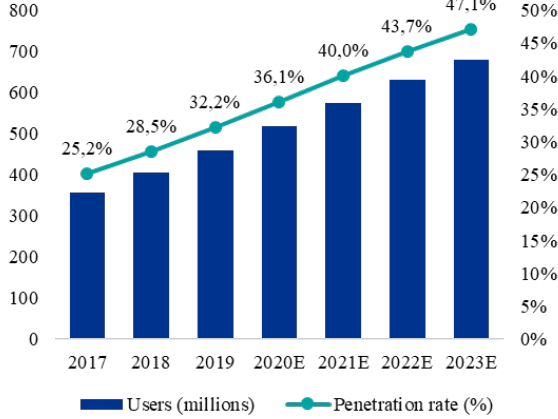
consolidation, being Didi Chuxing, the leading player. It holds a monopoly position while accounting for 400¹ million registered users and providing 25 million rides daily. Indeed, there is room for more growth, taking into consideration that ride-hailing companies have barely penetrated the potential market.

Exhibit 2: Ride-hailing services’ revenues in China (2017-2023E)



Source: Statista 2019

Exhibit 3: Ride-hailing services’ registered users in China (2017-2023E)



Source: Statista 2019

The success of the ride-hailing services in China hinges mainly on urban transportation problems. Indeed, Chinese megacities face numerous difficulties, namely 1) insufficient road infrastructure, which leads to a disparity between supply and demand, as infrastructure supply grows slower than car ownership. China's vehicle fleets increased by 26%² CAGR over the last ten years, compared to a 6% CAGR growth in the road infrastructure. Although cities try to deal with the problem by constructing more and broader roads, as well as enlarging the existent ones, it is only a temporary fix due to 2) an improper road planning, which, in turn, is one of the main reasons for the intense urban congestion in China. Consequently, another transportation problem is 3) rising economic costs of urban congestion, including delays, low working efficiency, additional fuel consumption, as well as air and noise pollution. In this sense,

¹ Huang, E. (2019). China’s ride-hailing giant Didi is welcoming its competitors to its app. *Quartz*.

² National Bureau of Statistics of China (2018).

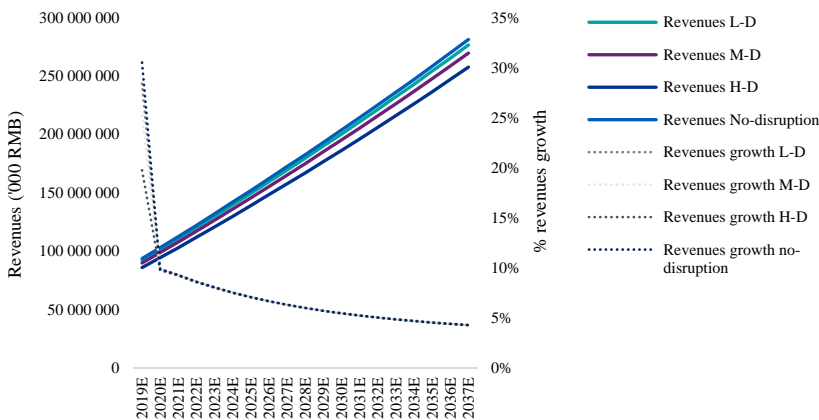
ride-hailing services deliver convenience and flexibility to their users while also playing a pivotal role in bridging the existing transportation network gaps. Hence, the economic and environmental landscapes are encouraging for the penetration of the new ride-hailing model of mobility, which may alleviate the Chinese transportation difficulties.

Impacts on the auto-making industry

With the ride-hailing sector proliferating, automakers are concerned about the effect on vehicle sales. In an extreme highly disruptive scenario, vehicle sales growth will be damped by shared mobility, as a consequence of the substitution effect. On average, a shared vehicle replaces between 7 and 11 privately owned cars, resulting in an approximate impact of 10.15%³ on the units sold by an automaker.

For this study, three distinct scenarios were formulated, depending on the level of disruption, to quantify the impact of ride-hailing services on BYD's share price performance. The low-disruption (L-D) scenario was assumed to decrease 2% of the private vehicle units sold (i.e., including ICE vehicles, BEV, and PHEV). The median-disruption (M-D) scenario is expected to decrease 5%, while high-disruption (H-D) accounts for the 10.15% decrease.

Exhibit 4: Automotive segment revenues in three different disruption scenarios



Source: Own estimates

Exhibit 5: BYD's share price in three different disruption scenarios

	Price/sh.
Low-disruption scenario	40.47 SELL
Median-disruption scenario	37.74 SELL
High-disruption scenario	33.04 SELL
No-disruption scenario	42.30 SELL

Source: Own estimates

³ McKinsey&Company (2017). *How shared mobility will change the automotive industry.*

Accordingly, the higher the disruption, the more accentuated the decrease in revenues of the automotive segment. However, in the long-run, independently of the ride-hailing disruption scenario, the growth rate of revenues will converge to 5% YoY.

Likewise, the BYD share performance is affected by the imposed disruption of ride-hailing services. In a high-disruption scenario, it would be its lowest with 33.04 RMB price per share. In median and low disruptions, the share price would be 37.74 RMB and 40.47 RMB, respectively. Hence, in all three scenarios, our SELL recommendation remains unaffected.

Alternative view

An alternative economic model could be constructed with simplified assumptions. In this framework, it was assumed: 1) only a primary (new vehicle) market for cars; 2) vehicles are purchased and driven until the end of their useful lifetime; 3) homogeneous owners drive homogeneous cars; 4) number of trips undertaken by a society is fixed and 5) one ride causes one unit of physical depreciation of the vehicle. If a consumer merely substitutes a journey taken in his/her private car by one taken in a ride-hailing service, the aggregated vehicle depreciation suffered by society will remain constant⁴.

Taking into consideration that the actual utilization of private cars in China is only 7%⁵ and that one ride-hailing car replaces at least seven privately owned vehicles, under initial assumptions, the total amount of depreciation units is unaffected, although concentrated in one-seventh as many vehicles as verified under the *status quo*. Given vehicles fixed lifetime (vehicle homogeneity), the ride-hailing will depreciate to its residual value seven times quicker than comparable privately owned cars.

⁴ Moody's Analytics Research (2019).

⁵ Accenture (2018). *Car Sharing Service Outlook in China*.

In terms of the effect on the automotive market, there will be one-seventh as many vehicles in service, but they will be refreshed seven times as often. Hence, implying that new vehicle sales volumes will be unaffected by the penetration of ride-hailing. Likewise, since the demand for units of vehicle depreciation is the same under both scenarios and since cars are assumed to be homogeneous with a fixed supply curve, prices for new vehicles will remain the same. To sum up, a potential decrease in cars on the road does not inevitably trigger a reduction in vehicle sales.

Conclusion

Summing up, in our model, we outlook the impact of ride-hailing services on the units of vehicles sold to be zero. On the one hand, the probability of median or highly disruptive scenarios is low, as the growth of the ride-hailing services does not necessarily trigger a decline in car ownership. Notably, in China, private car ownership is a symbol of status and wealth and, thus, cultural factors boost the demand for new private vehicles.

On the other hand, based on several studies, and given the alternative view detailed above, there will be no impact on automotive sales but rather a transformation of the mobility ecosystem and customers' behavioral patterns. Hence, BYD share performance is expected to remain unaffected by the ride-hailing penetration in the market. Likewise, our final recommendation is unaltered.