

DO CAR INC'S PAST FINANCIAL RESULTS MAKE SENSE?

Inverse derivation from Car Inc's historical financial statements since 2013

APRIL 29, 2020

Background.....2

Model.....3

 General assumptions:.....3

 Knows:3

 Unknowns:.....3

 Inverse problem:.....3

Model fitting to the financial results4

Other matched reported results.....5

Computed operating metrics.....6

Summary of findings.....8

Sensitivity heat map in 5-year horizon9

Background

Following the news of Luckin Coffee's internal investigation on the potential fabrication of financial results from the company's two unaudited quarterly earnings releases, Car Inc. who shares the same chairman as Luckin (who is not implicated in the investigation) came immediately under fire for its guilt of association. Its stock price on the Hong Kong exchange fell over 50% and its two USD bonds due in 2021 and 2022 fell to \$40s and \$30s bid. Subsequently, both Moody's and S&P downgraded Car Inc. to Caa1 and CCC.

The sentiment behind the market's reaction is that Car Inc may have befallen to the same alleged shoddy practice when Mr. Jian Liu, Luckin's current COO who is under investigation, worked at Car Inc two years ago. Suspicion is all it needs to kick off the "shoot first ask question second" market reaction. Incredibly, rating agencies used market's reactions as the primary rationale for their rating decisions.

During this period of volatile sentiments, logical and quantitative analysis based on hard numbers and mathematical consistency is unfortunately missing. Qualitative assessment and primitive mathematical techniques such as ratio taking fall short of going past the snapshots of the financial statements to reveal the underlying operating conditions.

Modtris models are built on financing and operating actions and can recreate these conditions from the reported financial statements. In this report, Modtris model derives Car Inc's key performance metrics since 2013 using only the company's annual reports over the same period. Modtris results are not based on qualitative assessments or empirical ratios, but on hard mathematics. Investors can compare these results to the management's own narrative to ascertain their belief of the financial results' reasonableness and project the company's future based on hard numbers.

Model

General assumptions:

The primary action of Car Inc. is to purchase and rent out cars, which is modelled as capacity object in Modtris. The capacity is assumed to last for 7 years but is disposed long before it reaches the end of its life. The company continuously purchases and expands total capacity and furthermore supports these actions with debt financing.

Car Inc. also provides long-term car fleet service and car leasing, but the model assumes all cars are rental cars.

New cars are assumed to serve only half of the first year when they are purchased. When the company sells used cars, it first sells 4-year old cars if there is any, then the 3-year old cars and lastly the 2-year old cars. The book value of the cars is depreciated over 7 years. As car utilization rate and rental revenue per car cannot be solved separately, the car utilization rate is fixed at 60%. The resale price for 2-year and 4-year old cars are fixed at their depreciated book price, so that only the resale price of the 3-year old cars is solved from the reported resales revenue and cost of goods sold.

Knows:

From the balance sheet: cash; capacity; debt and maturity.

From the income statement: revenue from car rental; revenue from car sales; car rental operating cost; book value of the sold cars; depreciations; general administrative expense.

From the management discussion: total number of cars.

Unknowns:

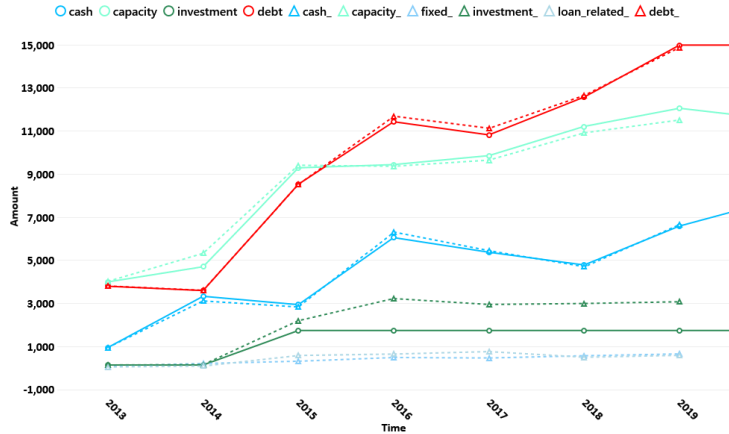
Capital ratio for purchase new cars; purchase price of new car; annual operating expense per car; annual revenue per car; car utilization rate (fixed at 60%); resale price of used car; percentage of used cars sold in each age category.

Outstanding debt and maturities.

Inverse problem:

Computing the unknowns from the reported knowns is a discrete and iterative inverse problem with Modtris' models. There are more knowns than unknowns to ensure that it is not always possible to find solutions. In the case that no solution exists, either the reported results are inherently inconsistent, or the model needs refinement by introducing more unknowns. The solution is always an approximation as the fit to the reported results are never perfect and minor items in the reports are omitted for purpose of capturing key aspects of the operating conditions.

Model fitting to the financial results



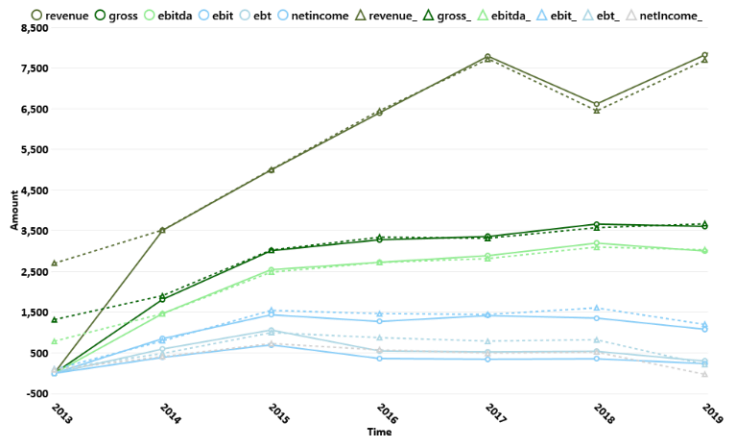
Main balance sheet items matched are **cash, debt, and capacity.**

Minor items such as dues from related parties etc. are ignored.

Cash are adjusted by including prepaid charges, restricted cash, AFS investment, and other receivables, and deducting other payables.

The market value gain of the company’s long-term investment is not matched as this is a non-cash gain irrelevant to our objective.

The worst fit point is for capacity in 2019 where the solution overshoots the reported capacity by roughly CNY 500mm, or 5% of the reported value.



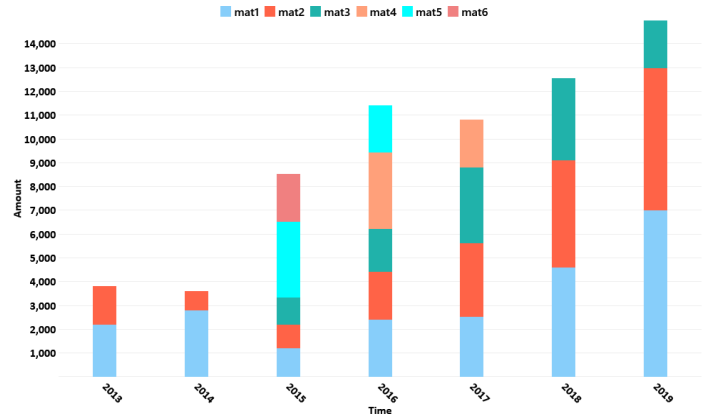
Main income items matched are **total revenue, revenue of rental car, gross income, EBITDA, and EBIT.**

Items including earning before tax and net income are not matched as they depend on the tax treatment the company utilizes and are not relevant for our objectives.

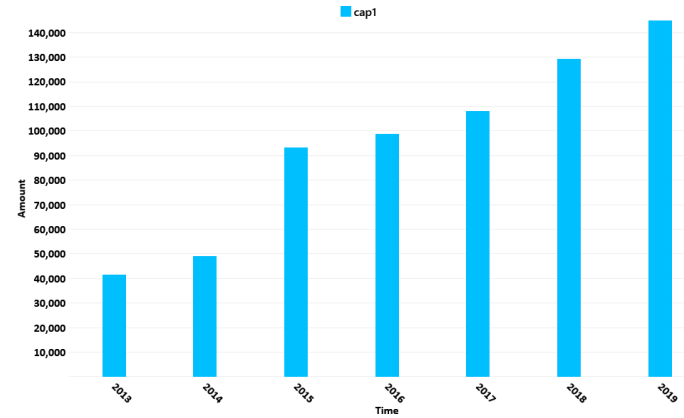
The solution fits the EBIT in 2016 and 2018 not as well as in the other years. Separate computation shows that an 8-year depreciation speed will fit the results. Because the difference does not make significant change in the solution, it is left unadjusted.

Other matched reported results

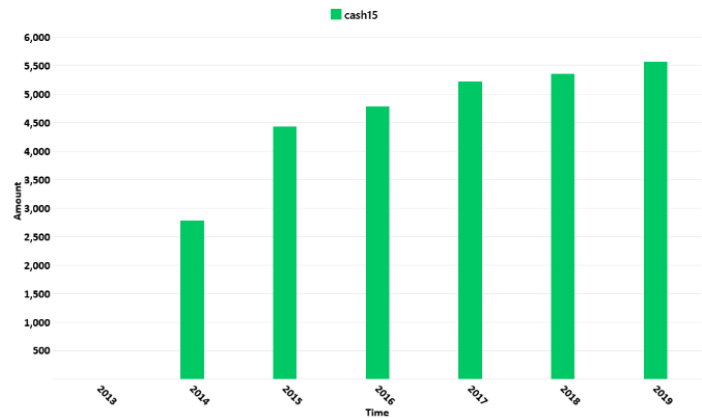
Outstanding debts (CNY mm) and maturities



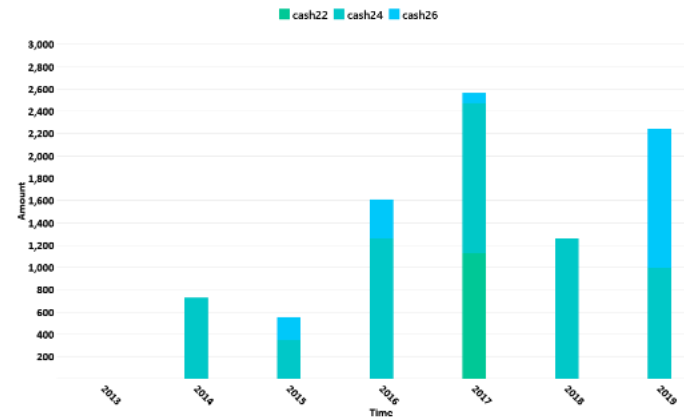
Total number of cars



Rental revenue (CNY mm)

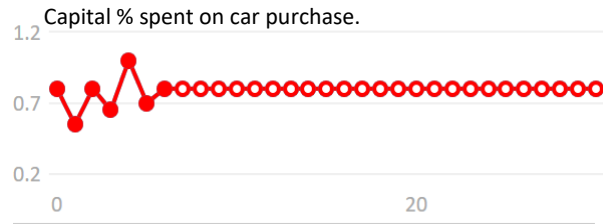


Used car resale in value (CNY mm)

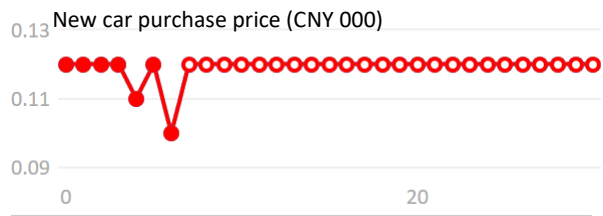
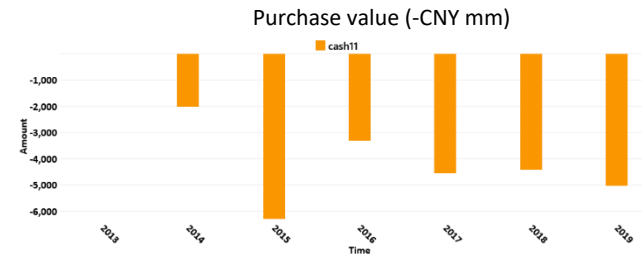


Computed operating metrics

In the red charts, solid points represent inversely solved historical values from 2013 to 2019. Hallow points are forward projections

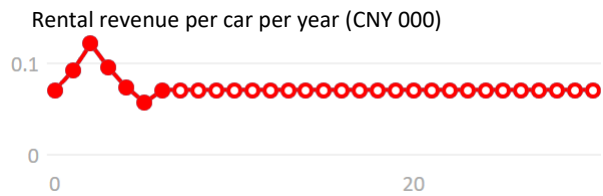


Expenditure on car purchase	2014	2015	2016	2017	2018	2019
Capital %	55%	80%	65%	100%	70%	80%
Purchase value (CNY mm)	2,020	6,290	3,318	4,537	4,409	5,033



Purchase price per car	2014	2015	2016	2017	2018	2019
CNY '000	120	120	120	110	120	100

Car purchase price is derived from the total purchase value and the total number of cars reported by the company.



Rental revenue per car year	2014	2015	2016	2017	2018	2019
CNY '000	93	122	96	74	57	71

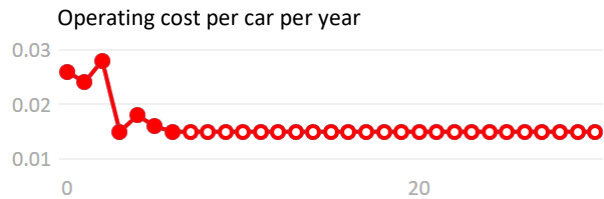
The rental revenue is averaged over all cars without separating long-term rental and short-term rental cars

Predict, Don't Extrapolate

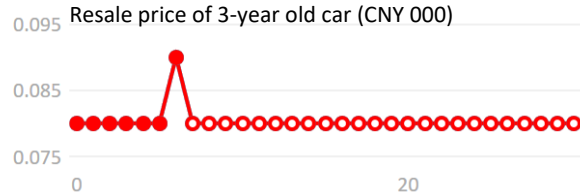


Car utilization rate	2014	2015	2016	2017	2018	2019
	60%	60%	60%	60%	60%	60%

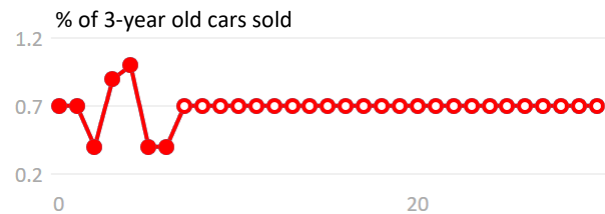
The car utilization rate and the rental revenue per car cannot be solved separately. Hence the utilization rate is set at 60% fixed.



Operating cost per car year	2014	2015	2016	2017	2018	2019
CNY '000	24	28	15	18	16	15



Car resale price (CNY'000)	2014	2015	2016	2017	2018	2019
2-year old cars	86	86	86	86	86	86
3-year old cars	80	80	80	80	80	90
4-year old cars	53	53	53	53	53	53



Resale percentage	2014	2015	2016	2017	2018	2019
2-year old cars	0%	0%	0%	25%	0%	0%
3-year old cars	70%	40%	90%	100%	40%	40%
4-year old cars	100%	100%	100%	100%	100%	100%

Resale value (CNY mm)	2014	2015	2016	2017	2018	2019
2-year old cars				1,127		
3-year old cars	728	352	1,260	1,347	1,258	995
4-year old cars		206	349	92		1,250
Total	728	558	1,609	2,566	1,258	2,245

Summary of findings

- The results have generally agreed with the management's discussion of business operations made in the annual filings.
- Company's expenditure in new car purchase rocketed in 2015 because of the record issuance of USD bond that year. The expenditure in the past three years have been relatively steady but below the 2015 record level.
- New car price has been generally around 120K CNY but lower in 2019 in order to match the reported total number of cars.
- Rental revenue per car year has been declining in the recent years possibly due to two artificial modeling factors: 1. The company historically had long-term leasing business that presumably contributed higher revenue per car than rental, but this line of business has been reduced significantly over time. 2. The rental utilization rate in the past may have been above the 60% utilization rate fixed in the model.
- The 2019 level of revenue per car year agrees with the company's description for rental car only.
- Majority of the used car sold each year by the management is 3-year old. However, in 2017, there was significant amount of sales of 2-year old cars, and in 2019, there was significant sales of 4-year old cars.
- The resale price of cars in each age category has been generally close to the depreciation price over 7-year vehicle life.
- The debt maturity profile has significantly shortened over time. The majority of debt now is in 1 or 2-year maturity.

In the next report, Car Inc's future financials will be forecasted under different scenarios of the key drivers.

Sensitivity heat map in 5-year horizon

Heat map shows the percentage changes to the 5-year future values (2025) of the column variables caused by the change from the row variables over 5-year horizon.

	Cash	EBITDA	Equity	Fleet size	Debt/EBITDA
Cash expenditure ratio: +5%	-01.9%	03.2%	02.1%	02.7%	-02.9%
Car price: +\$5k	-04.5%	-10.7%	-08.0%	-03.0%	14.3%
Ann. income per car: +\$5k	11.5%	22.4%	22.4%	09.0%	-17.1%
Car utilization rate: +5%	13.7%	26.7%	26.7%	10.7%	-20.0%
Ann. op cost per car: +\$5k	-21.1%	-33.9%	-41.2%	-16.6%	54.3%
Resale price: +\$5k	03.7%	07.4%	07.2%	02.8%	-05.7%
Resale percentage: +5%	03.2%	03.4%	04.3%	01.1%	-02.9%
Cash expenditure ratio: -5%	02.0%	-03.4%	-02.2%	-02.8%	05.7%
Car price: -\$5k	05.0%	12.0%	08.8%	07.5%	-08.6%
Ann. income per car: -\$5k	-11.7%	-21.1%	-23.4%	-09.1%	28.6%
Car utilization rate: -5%	-14.5%	-25.1%	-28.6%	-11.0%	34.3%
Ann. op cost per car: -\$5k	18.4%	35.7%	35.7%	13.5%	-25.7%
Resale price: -\$5k	-03.7%	-07.3%	-07.1%	-02.7%	08.6%
Resale percentage: -5%	-03.1%	-03.3%	-04.3%	-00.5%	05.7%

Modtris quantifies corporates in action-based iterative models that integrate financial and operating modeling. Modtris' main objective is to turn a company's financial statements into computable models so that the critical factors underlying the company's performance can be discovered and the medium and long-term fate of the company can be simulated.

Modtris deploys two steps in making financial projections.

1. Retrofit the model to a company's reported financial statements to derive the historical operating and financing conditions of the company.
2. Compute the future balance sheet and income statements based on the historically derived conditions and the initial financial conditions.

For questions, software download, assistance, and quantitative modelling service, please write to contact@modtris.com