

# China Auto Sector

## 2021 dual-credit takeaways and 2022 outlook

The Ministry of Industry and Information Technology (MIIT) released the preliminary results for so-called China's dual-credit scheme in 2021 for each automaker on 8 April 2022. Automakers in China generated about 6.0mn new-energy vehicle (NEV) credit surplus after meeting the nation's requirement in 2021. Corporate Average Fuel Consumption (CAFC) credits also turned from a deficit of 7.3mn in 2020 to a surplus of 9.4mn in 2021.

- Stronger-than-expected NEV sales volume in 2021 led to sufficient dual-credit surplus.** Despite higher NEV-credit requirement (14% of internal-combustion engine (ICE) vehicle production in 2021 vs 12% in 2020) and lower credit generated per NEV (cut by 30-50% YoY), the overall industry generated about 6.0mn NEV-credit surplus (+80% YoY) in 2021, driven by stronger-than-expected NEV production growth (+170% YoY). Meanwhile, the industry generated a surplus of 9.4mn for CAFC credits in 2021, from a deficit of 7.3mn in 2020, thanks to less stringent fuel consumption requirements and NEV boom. **Both credits are highly correlated with NEV production, as one BEV is treated as two vehicles with 0L/100km fuel consumption to lower average fuel consumption level.**
- Most automobile groups were self-compliant in 2021.** Great Wall, SAIC (600104 CH, NR), GAC and Changan (000625 CH, NR) were self-contained in the dual-credit scheme in 2021 with positive net CAFC and NEV credits last year. Geely, Brilliance (1114 HK, NR) and BAIC (1958 HK, NR) were in dual-credit deficits in 2021, but could still be compliant with the scheme with excess credits carried over from previous years, based on our calculation. **Dongfeng Motor Group (489 HK, NR) and FAW Group may need to purchase NEV credits from third parties,** despite their narrowed dual-credit deficits compared with 2020, based on our calculation. Foreign-brand joint ventures (JVs) are major buyers of NEV credits.
- 2022-23 outlook: Dual-credit surplus and falling credit prices.** NEV makers including Tesla (TSLA US, NR), NIO, Li Auto and SAIC-GM-Wuling had benefited from selling NEV credits in the past years. Such benefit could shrink substantially from 2021 as the rising industry-wide credit surplus mainly driven by the NEV boom. We expect the trading price per credit in 2022 (for 2021 deficits) to fall below RMB 1,000 from RMB 2,500-3,000 in 2021. Despite rising NEV credit requirements and more stringent fuel consumption targets in 2022-23, we expect NEV credit price to drop further, given the much higher NEV market share than what policymakers had expected in 2020. In addition, we expect lower motivation from automakers to produce mini battery-electric vehicles (BEVs) for the dual-credit purpose, should they already have sufficient dual-credit surplus.

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### China Auto Sector

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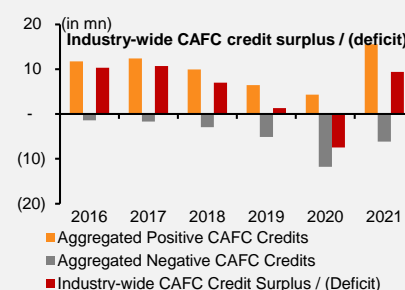
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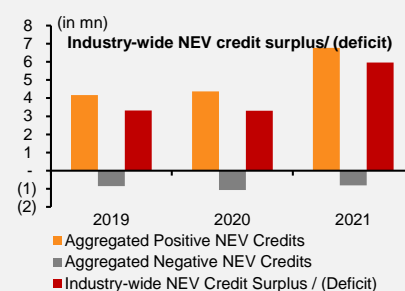
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Source: MIIT, CMBIGM



Source: MIIT, CMBIGM

#### Stocks Covered:

Name	Ticker	Rating	TP (LC)
Li Auto	LI US	BUY	48.00
Xpeng	XPEV US	BUY	67.00
NIO	NIO US	BUY	45.00
GWM	2333 HK	BUY	20.00
GAC	2238 HK	BUY	12.00
Meidong	1268 HK	BUY	48.00
BYD	1211 HK	HOLD	255.00
Geely	175 HK	HOLD	13.50

Source: Bloomberg, CMBIGM

## Industry Overview

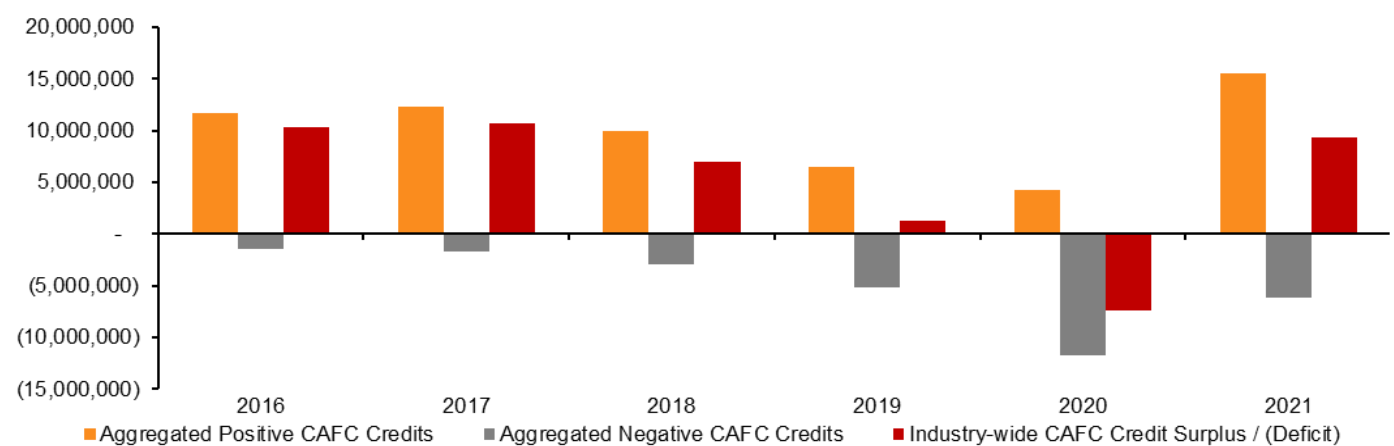
### Industry-wide CAFC-credit surplus in 2021

In 2021, the overall auto industry booked a large CAFC-credit surplus of 9.4mn, from an industry-wide deficit of 7.4mn in 2020 (see figure below). We attribute such change to two reasons.

1) Strong NEV sales as one BEV is treated as 0L/100km with a weight coefficient of 2 in the CAFC calculation in 2020-21. If we assume an automaker with 1mn ICE vehicle production and an average fuel consumption of 6.0L/100km, the automaker would end up with 1mn CAFC-credit deficit if its fuel economy requirement is 5.0L/100km, and an NEV-credit deficit of 0.14mn. By producing 10,000 units of BEVs (1% of total production) to replace the same amount of ICE vehicles in the portfolio, its CAFC-credit deficit would cut by about 0.12mn or 12% and NEV-credit deficit would cut by 0.03mn or 22%, based on our calculation.

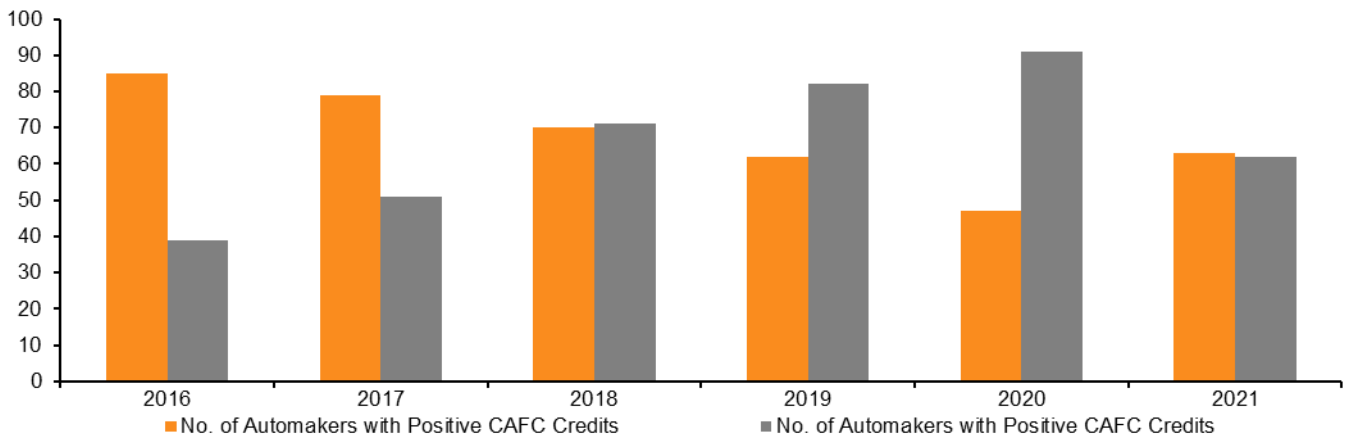
2) As the formula for fuel consumption has been changed since 2021, the required fuel economy target for some models was less stringent in 2021 than in 2020.

**Figure 1: Industry-wide CAFC credit surplus / (deficit)**



Source: MIIT, CMBIGM

Despite the large CAFC-credit surplus across the overall industry, number of automakers with CAFC-credit deficits (62) still accounted for about half of the total, as NEV sales are less fragmented than ICE vehicle sales. Large automakers with lagged NEV sales suffered the most: SAIC GM and FAW VW remained the bottom two position in both 2020 and 2021. Beijing Benz and Dongfeng Motor Limited (DFL, mainly Dongfeng Nissan) also remained at the bottom 10 in both years. Chongqing Changan and Great Wall moved up significantly with strong NEV sales growth in 2021.

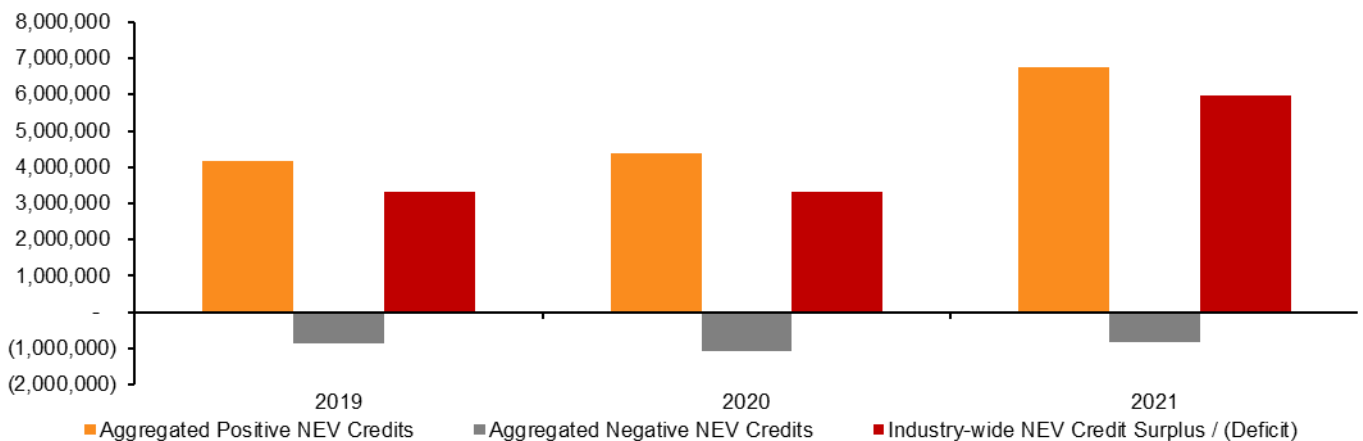
**Figure 2: Number of automakers with positive/negative CAFC credits**

Source: MIIT, CMBIGM

**Industry-wide NEV-credit surplus in 2021**

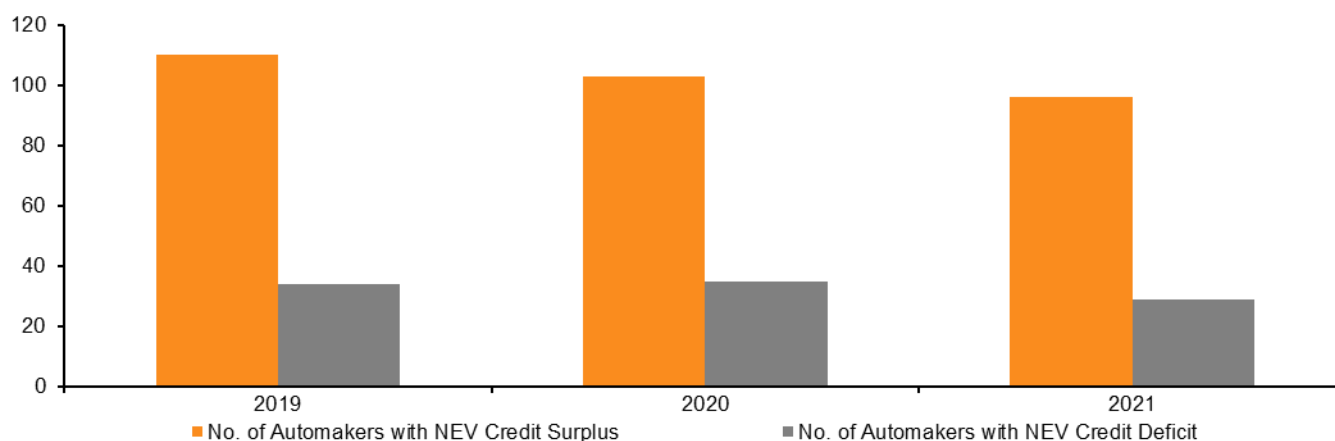
The NEV credit requirement started from 2019 (amounted to 10%/12%/14%/16%/18% of total ICE production in 2019-23, respectively) with each NEV generating a credit ranged from 1-6 for 2019-20 and 0.28-5.1 for 2021-23. The average NEV credit per vehicle was 4.9/4.4/2.5, respectively, during 2019-21, based on our calculation.

Despite the increasing NEV proportion requirements and lowered credit per NEV, the industry-wide NEV-credit surplus further rose to nearly 6.0mn in 2021 from 3.3mn in 2020, a larger surplus jump than our prior projection in April 2021, mainly driven by overall NEV production volume growth of over 150% YoY in 2021.

**Figure 3: Industry-wide NEV credit surplus / (deficit)**

Source: MIIT, CMBIGM

About three quarters of automakers met the NEV-credit requirement in 2019-21. Among the 29 automakers with NEV-credit deficits in 2021, 24 of them were foreign-brand JVs.

**Figure 4: Number of automakers with positive/negative NEV credits**

Source: MIIT, CMBIGM

### Dual-credit mechanism and NEV credit prices

Automakers with CAFC- and/or NEV-credit deficits in 2021 need to reset them to zero in 2022. The mechanism is a bit complicated but the simple idea is:

CAFC-credit deficit can be reset by 1) its own excess CAFC credits rolled over from previous three years (10% discount each year for the excess CAFC credits from 2019 and onwards and 20% discount each year prior to 2019); 2) CAFC credits transferred from affiliated companies; 3) excess NEV credits generated in the company or purchasing from third parties.

NEV-credit deficit can be reset by 1) its own excess NEV credits rolled over from previous years (discount of 50% each year for three years at maximum since 2020 and NEV credits in 2019 and 2020 are interchangeable); 2) NEV credits transferred from affiliated companies; 3) purchasing NEV credits from third parties.

We will go through major automakers in the 'Company Watch List' section to better illustrate these criteria given they still look vague above. Our calculations may not be 100% accurate given the complex mechanism and China's complicated JV regime.

NEV makers such as Tesla, BYD, NIO and Li Auto do not need to worry about such scheme and in fact, they benefit from it by selling NEV credits. In 2021, the credit incomes for NIO and Li Auto were about RMB 500mn and RMB 200mn, respectively, implying an average selling price of RMB 2,500-2,800 per credit. We expect such price to drop to below RMB 1,000 for this year given the larger dual-credit surplus in 2021. The price could decline further in 2023, in our view, given the strong NEV sales volume right now.

**Figure 5: NEV-credit surplus of NEV makers**

	2020	2021
Tesla (China)	860,358	1,401,682
BYD	754,489	1,651,057
JAC (mainly NIO)	256,514	397,023
Xpeng	110,310	360,135
Li Auto	71,778	143,507

Source: MIIT, CMBIGM

## Company Watch List

We evaluate dual-credit scheme at group level for automakers because different entities in the group are defined as affiliated companies and can transfer CAFC credits and NEV credits (or trade NEV credits at a much lower price). In reality, automakers could buy (partial) NEV credits from third parties rather than simply transferring from affiliated companies.

### Geely and Great Wall Motor

Great Wall's case is straightforward as its both CAFC and NEV credits were positive in 2021 as shown below. Great Wall has been selling NEV credits to others since 2021, thanks to its Ora brand. Great Wall only bought NEV credits in 2018 to offset its negative CAFC credits in 2017.

Geely, on the other hand, followed an opposite trend. It generated a deficit of 0.28mn CAFC credits in 2021, after a deficit of 1.4mn in 2020. Its NEV-credit surplus in 2021 was not enough to offset the CAFC deficit. However, Geely still does not need to buy NEV credits from third parties, thanks to its sufficient CAFC credits during 2017-19 which could be rolled over to cover its CAFC deficits in 2020-21. Should Geely continue to generate a large amount of negative CAFC credits in 2022, it may need to purchase NEV credits from other automakers, as there were not many CAFC left over to roll over from 2019. That could explain why Geely is very aggressive in selling its Geometry BEVs.

**Figure 6: 2021 dual credits of Geely and Great Wall Motor**

Automakers	CAFC Credits	NEV Credits	CAFC + NEV Credits	Target Met or Not
<b>Geely</b>				
Zhejiang Geely	(440,453)	(28,550)	(469,003)	
Zhejiang Haoqing	80,921	133,062	213,983	
Daqing Volvo	30,455	(496)	29,959	
Lanzhou Zhidou	611	53	664	
Chongqing Livan	25,565	12,923	38,488	
Fengsheng	24,242	12,195	36,437	
<b>Total of 2021</b>	<b>(278,659)</b>	<b>129,187</b>	<b>(149,472)</b>	<b>No</b>
Carryover from 2020	-	-		
Carryover from 2019	86,806	21,529		
Carryover from 2018	216,907	-		
<b>2021 after Carryover</b>	<b>25,054</b>	<b>150,716</b>	<b>175,770</b>	<b>Yes</b>
<b>Great Wall Motor</b>				
Great Wall	370,330	265,999	636,329	
Rizhao Wey	22,594	3,579	26,173	
<b>Total of 2021</b>	<b>392,924</b>	<b>269,578</b>	<b>662,502</b>	<b>Yes</b>

Source: MIIT, CMBIGM

### SAIC, GAC and Changan

Based on our calculation, SAIC Group, GAC Group and Changan Group can be self-contained in the dual-credit scheme, despite large amount of negative CAFC credits generated by the JVs in the groups.

Unlike 2020 when SAIC Group was on the verge of buying NEV credits from third parties based on our calculation, it was better positioned in 2021. SAIC-GM-Wuling was again the biggest contributor to the group's dual-credit compliance. Such example again illustrates how important the NEV sales volume is even as NEV credits per vehicle were cut significantly for its mini BEV, *Wuling Hongguang Mini*. BEV production at SAIC-GM-Wuling

rose from 0.18mn units in 2020 to 0.46mn units in 2021, whereas its NEV-credit surplus fell from 0.49mn in 2020 to 0.12mn in 2021. Meanwhile, its CAFC-credit surplus rose from 0.44mn in 2020 to 2.33mn in 2021. The push of the *I.D.* series BEV sales at SAIC VW also helped it to narrow its CAFC-credit deficit in 2020. Therefore, SAIC Group's case is much more straightforward in 2021 versus 2020, as the huge CAFC surplus at SAIC-GM-Wuling was more than enough to offset the deficits from SAIC GM and SAIC VW.

GAC Group was also self-compliant in 2021 for two reasons: 1) large CAFC- and NEV-credit surplus from Aion; 2) relatively small CAFC- and NEV-credit deficits from GAC Honda and GAC Toyota given their strong HEV sales to lower fuel economy.

Changan improved the most among all the automakers in China in 2021 in terms of dual-credit compliance. Unlike buying NEV credits from others in 2020, it achieved self-compliance in 2021 by adopting a similar strategy as SAIC-GM-Wuling.

**Figure 7: 2021 dual credits of SAIC, GAC and Changan**

<b>Automakers</b>	<b>CAFC Credits</b>	<b>NEV Credits</b>	<b>CAFC + NEV Credits</b>	<b>Target Met or Not</b>
<b>SAIC</b>				
SAIC-GM-Wuling	2,330,578	119,568	2,450,146	
SAIC Motor	549,692	256,393	806,085	
SAIC Maxus	(3,915)	6,310	2,395	
SAIC GM	(714,682)	(65,960)	(780,642)	
SAIC GM Dongyue	(136,707)	(18,582)	(155,289)	
SAIC GM Beisheng	(101,150)	(11,703)	(112,853)	
SAIC VW	(174,804)	19,068	(155,736)	
<b>Total of 2021</b>	<b>1,749,012</b>	<b>305,094</b>	<b>2,054,106</b>	<b>Yes</b>
<b>GAC</b>				
GAC Motor	941,826	447,395	1,389,221	
GAC Motor (Hangzhou)	(74,684)	(2,620)	(77,304)	
GAC Toyota	82,408	(71,136)	11,272	
GAC Honda	(165,272)	(74,869)	(240,141)	
GAC Mitsubishi	(116,712)	(8,551)	(125,263)	
GAC FCA	(16,144)	394	(15,750)	
<b>Total of 2021</b>	<b>651,422</b>	<b>290,613</b>	<b>942,035</b>	<b>Yes</b>
<b>Changan</b>				
Chongqing Changan	497,265	145,014	642,279	
Hebei Changan	24,598	9,712	34,310	
Hefei Changan	(83,998)	3,777	(80,221)	
Changan Ford	(262,902)	(37,739)	(300,641)	
Changan Mazda	(48,696)	(18,368)	(67,064)	
<b>Total of 2021</b>	<b>126,267</b>	<b>102,396</b>	<b>228,663</b>	<b>Yes</b>

Source: MIIT, CMBIGM

### Huachen, BAIC, Dongfeng and FAW

Huachen group, or mainly BMW Brilliance (as other entities' sales volumes were insignificant in 2021), was in a similar situation as Geely in 2021. BMW Brilliance's excess CAFC credits in 2018-19 could offset its deficits in 2021 by rolling them over. Higher NEV sales at BMW Brilliance in 2021, especially from iX3, not only generated positive NEV credits, but also narrowed CAFC deficits compared with 2020.

BAIC Group's case is much more complicated given a large number of entities in the group, but it was essentially in a similar position as Huachen Group. Its NEV-credit surplus in 2021 could not offset its CAFC deficit in 2021. To make it more complicated, BAIC Group's excess CAFC credits in the previous three years still could not cover the 2021 CAFC deficit. Assuming no NEV credits were sold in 2020, the NEV credits rolled over from 2019-20 were more than enough to cover its CAFC deficit in 2021. Even if it sold a large amount of NEV credits to others in 2020, which resulted in a dual-credit deficit in 2021, it is still worthwhile because of lower NEV credit price in 2022 versus 2021.

Both Dongfeng Group and FAW Group may need to purchase NEV credits from third parties for its 2021 dual-credit deficits, as shown in the table below. Both groups failed to generate enough NEV credits to cover their CAFC deficits in 2021 and both groups had dual-credit deficits in 2020. Should their homegrown brands fail to lift NEV sales volumes significantly in 2022, Dongfeng Group and FAW Group may continue to buy NEV credits from third parties in 2023. Dongfeng Nissan and FAW VW's CAFC deficits are difficult to be offset within a year.

Figure 8: 2021 dual credits of Huachen, BAIC, DMG and FAW

<b>Automakers</b>	<b>CAFC Credits</b>	<b>NEV Credits</b>	<b>CAFC + NEV Credits</b>	<b>Target Met or Not</b>
<b>Huachen Group</b>				
Brilliance Xinyuan	5,461	11,392	16,853	
Huachen Auto	10,581	5,896	16,477	
Brilliance Renault Jinbei	(20,753)	-	(20,753)	
BMW Brilliance	(81,269)	45,877	(35,392)	
<b>Total of 2021</b>	<b>(85,980)</b>	<b>63,165</b>	<b>(22,815)</b>	<b>No</b>
Carryover from 2020	-	8,448		
Carryover from 2019	132,851	9,767		
Carryover from 2018	108,308	-		
<b>Total of 2021 after Carryover</b>	<b>155,179</b>	<b>81,380</b>	<b>236,558</b>	<b>Yes</b>
<b>BAIC Group</b>				
Beijing Auto	126,888	52,700	179,588	
BAIC BluePark Magna	45,414	25,220	70,634	
BAIC Yunnan	33,954	17,236	51,190	
Beijing Auto Manufacturing	8,797	3,625	12,422	
BAIC NEV	717	333	1,050	
BAIC Foton	(4,283)	1,681	(2,602)	
BAIC Ruixiang	(3,692)	-	(3,692)	
BAIC Guangzhou	(13,688)	2,291	(11,397)	
BAIC Off-road Vehicles	(52,303)	-	(52,303)	
Beijing Hyundai	(224,469)	(40,922)	(265,391)	
Beijing Benz	(335,327)	(31,550)	(366,877)	
Fujian Benz	(36,377)	(5,197)	(41,574)	
<b>Total of 2021</b>	<b>(454,369)</b>	<b>25,417</b>	<b>(428,952)</b>	<b>No</b>
Carryover from 2020	-	36,724		
Carryover from 2019	100,343	285,666		
Carryover from 2018	203,844	-		
<b>Total of 2021 after Carryover</b>	<b>(150,183)</b>	<b>347,807</b>	<b>197,624</b>	<b>Yes</b>
<b>Dongfeng</b>				
Dongfeng Motor	398,879	142,699	541,578	
Chongqing Jinkang	56,704	12,814	69,518	
Dongfeng Liuqi	(12,795)	26,945	14,150	
Dongfeng Sokon	(24,807)	1,861	(22,946)	
Dongfeng Honda	(84,095)	(52,952)	(137,047)	
Dongfeng Nissan	(446,716)	(102,810)	(549,526)	
Zhengzhou Nissan	(51,509)	1,024	(50,485)	
Dongfeng Yueda Kia	(40,612)	4,116	(36,496)	
Dongfeng PSA	6,823	(529)	6,294	
<b>Total of 2021</b>	<b>(198,128)</b>	<b>33,168</b>	<b>(164,960)</b>	<b>No</b>
<b>FAW</b>				
FAW Motor	104,245	97,888	202,133	
Tianjin FAW Toyota	88,191	(55,590)	32,601	
Sichuan FAW Toyota	58,505	(26,896)	31,609	
FAW Jilin	(3,021)	-	(3,021)	
FAW Haima	(8,634)	2	(8,632)	
FAW VW	(567,765)	(13,780)	(581,545)	
<b>Total of 2021</b>	<b>(328,479)</b>	<b>1,624</b>	<b>(326,855)</b>	<b>No</b>

Source: MIIT, CMBIGM



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