

Before and After

At the tipping point of Taiwan's car industry

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Outline

1 The current situation

- Sales
- Taxes

2 Before: How we got here?

- The origin
- The groups

3 After: The electrified future?

- World trend
- Domestic opportunity

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Sales, FEB. 2021¹

2021年2月進口車型掛牌數排行榜

排名	車型	掛牌數	排名	車型	掛牌數
1	Toyota RAV4	1214	11	M.Benz GLB	255
2	Mazda CX-5	604	12	M.Benz GLE	247
3	Mazda 3	463	13	Suzuki Jimny	236
4	M.Benz GLA	431	14	Lexus NX	235
5	M.Benz GLC	419	15	Lexus RX	232
6	Tesla Model 3	416	16	BMW 3-Series	210
7	Lexus UX	375	17	VW T-ROC	204
8	Mazda CX-30	337	18	Kia Picanto	181
9	Subaru Forester	295	19	M.Benz C-Class	180
10	M.Benz E-Class	294	20	M.Benz A-Class	160

2021年2月國產車型掛牌數排行榜

排名	車型	掛牌數	排名	車型	掛牌數
1	Toyota Corolla Cross	2205	11	Mitsubishi Colt Plus	345
2	Honda CR-V	1402	12	Hyundai Venue	324
3	Toyota Corolla Altis	989	13	Toyota Vios	322
4	Nissan Kicks	919	14	Nissan X-Trail	243
5	Ford Kuga	799	15	Honda HR-V	225
6	Ford Focus	632	16	Mitsubishi Outlander	198
7	Nissan Sentra	509	17	Luxgen URX	143
8	Toyota Yaris	483	18	Honda Fit	131
9	Toyota Sienta	479	19	Hyundai Tucson	81
10	Nissan Tiida	423	20	Luxgen U6	77

國產 進口

XX XX

XX% XX%

¹Data: 交通部公路總局, Table: Mobile01

Sales by models: 2020

2020年台灣汽車掛牌數排行榜 (1~12月)

排名	車型	全年掛牌數
1	Toyota RAV4	31870
2	Toyota Corolla Altis	29153
3	Honda CR-V	16300
4	Nissan Kicks	15739
5	Ford Focus	13189
6	Toyota Yaris	12220
7	Ford Kuga	12091
8	Toyota Corolla Cross	12080
9	Toyota Sienta	11902
10	Lexus NX	9010
11	M.Benz GLC	8195
12	Honda HR-V	8000

- RAV4
- SUV
- Foreign brand

Sales by brand: 2020

2020年度台灣汽車市場 品牌銷售總排名

排名	品牌	2020年掛牌數	市佔率	2019年掛牌數	2019年排名	去年比
1	Toyota	126485	27.7%	123315	1	-2.6%
2	Mitsubishi (含中華)	49017	10.7%	47579	2	3%
3	Nissan	35177	7.7%	35793	3	-1.7%
4	Honda	30425	6.7%	33052	4	-7.9%
5	M.Benz	29640	6.5%	29249	5	1.3%
6	Ford	28884	6.3%	20791	7	38.9%
7	Lexus	22678	5.0%	22294	6	1.7%
8	BMW	18310	4.0%	16911	8	8.3%
9	Mazda	16260	3.6%	15369	9	5.8%
10	VW	13216	2.9%	15001	10	-11.9%
11	Hyundai	12384	2.7%	11268	11	9.9%
12	Suzuki	9765	2.1%	8008	12	21.9%
13	Volvo	7054	1.5%	6476	13	8.9%
14	Skoda	7041	1.5%	5768	15	22.1%
15	Tesla	5820	1.3%	3147	19	84.9%
16	Luxgen	4602	1.0%	4128	16	11.5%
17	Porsche	4354	1.0%	3782	18	15.1%
18	Kia	4133	0.9%	4056	17	1.9%
19	Subaru	3865	0.8%	6202	14	-37.7%
20	Audi	3017	0.7%	2464	20	22.4%

2020年台灣汽車市場總掛牌數：457444輛

Taxes

- 關稅: 17.5%
- 貨物稅: 25%
- 營業稅: 5%
- 奢侈稅: 10%

外匯車



< >

BMW M340i xDrive

標準車型

NT\$3,470,000 ⓘ

200 萬 &350 萬: arbitrage
Why taxes?



< >

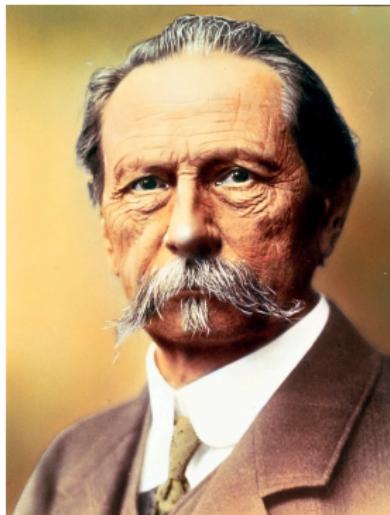
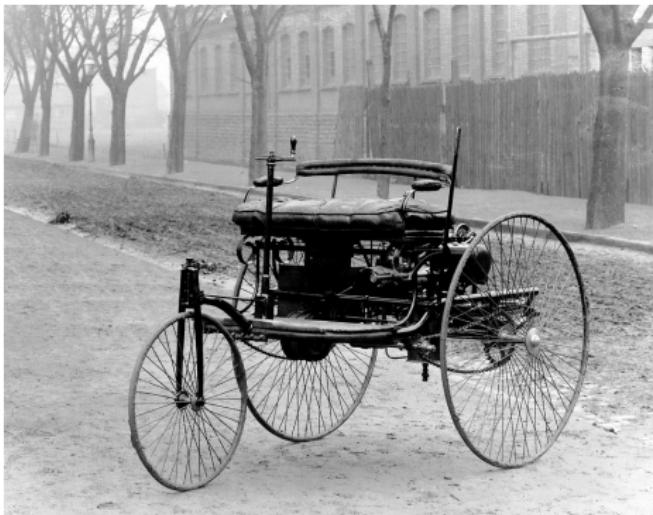
BMW M340i xDrive Saloon

M MODELS

€50,875.00 ⓘ

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The origin, 1885²



Benz Patent-Motorwagen ("patent motorcar"),
built in 1885 by Karl Benz

²[The fight over the birth of the modern automobile] (in German). German Patent and Trade Mark Office. 2014-12-22.

Mass production

Model T, Ford, 1913



moving assembly line

Toyota, 1950s



JIT

裕隆飛羚 101, 1986



The groups

- BIG group
- cross-country alliance
- resources share
- well-established industry
- hard to disrupt

- **Daimler:** M.Benz, M.Maybach, Truck
- **BMW Group:** BMW, Mini, Rolls-Royce
- **Volkswagen:** VW, Audi, Bentley, Seat, Bugatti, Lamborghini, Scoda, Porsche, Scania, MAN
- **Renault Nissan Mitsubishi**
- **Stellantis:** Maserati, Peugeot, Citroen, Alfa Romeo, Fiat, Chrystler
- **Jaguar Land Rover**
- **吉利沃爾沃**

Hyundai-Kia

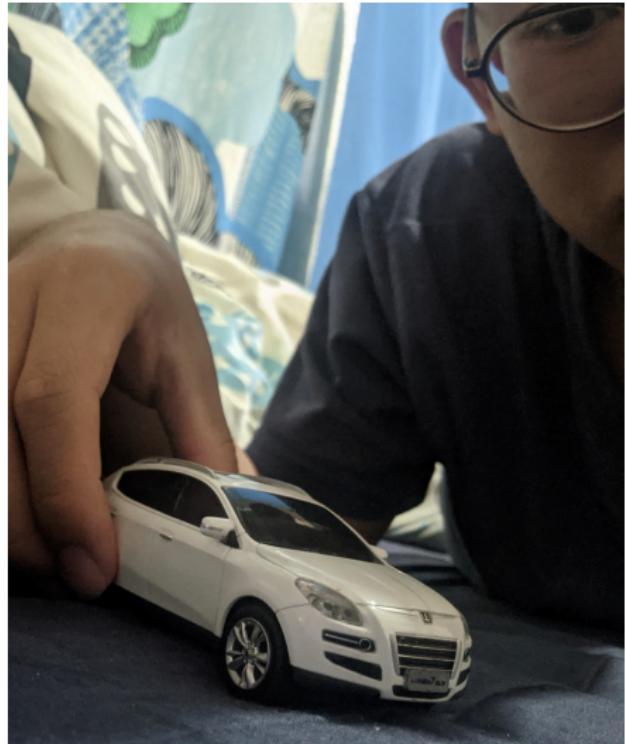


Domestic

- 裕隆: 裕日、中華、華創、東風裕隆
- 國瑞: 和泰、Toyota
- 台灣本田: Honda
- 福特六和: Ford
- 三陽工業: Hyundai

The tears

- Engine
- Gear box
- Market
- Government subsidy?



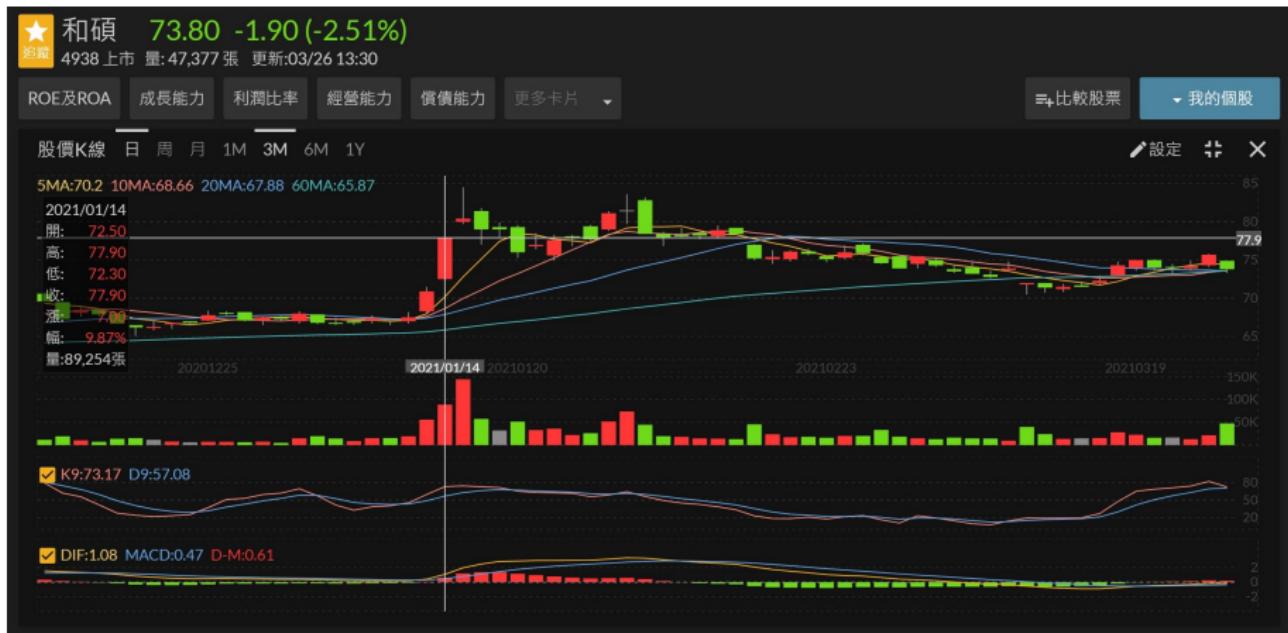
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The opportunity?

- No Engine
- No Gear box
- New market
- Government subsidy.



The tears



〈熱門股〉和碩搭上電動車快車周漲近 2 成飆三年新高³

³<https://news.cnnes.com/news/id/4561169>

The groups

- **Daimler:** By 2022 we will be bringing more than ten different all-electric vehicles to market. We will also be **electrifying the entire Mercedes-Benz portfolio** and our customers will thus have the choice of at least one electric alternative in every Mercedes-Benz model series, taking the total to 50 overall.⁴
- **BMW:** "50% PERCENT OF BMW GROUP VEHICLES IN EUROPE ELECTRIFIED by 2030."⁵
- **Volkswagen:** "By 2030 at the latest, Volkswagen Group brands will be **offering at least one all-electric or hybrid version of their entire portfolio, comprising some 300 different models.**"⁶

⁴Plans for more than ten different all-electric vehicles by 2022: All systems are go

⁵BMW GROUP E-MOBILITYSTRATEGY, 2019

⁶Roadmap E: full of energy!, 2020

The investor⁷

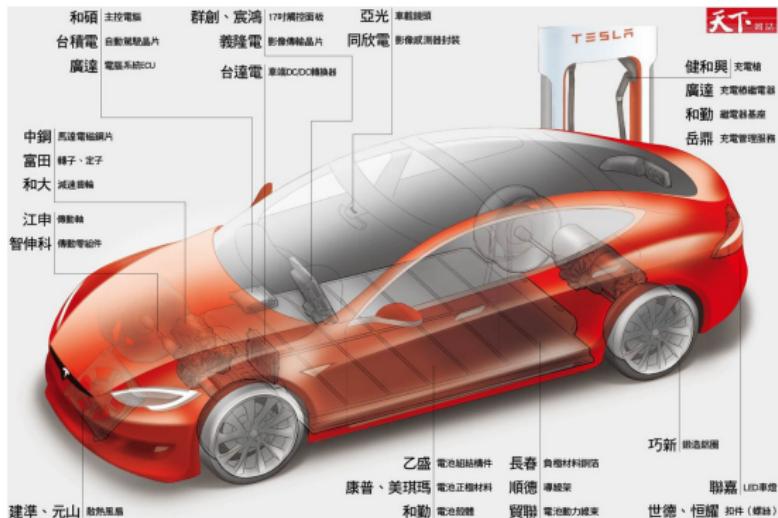


	2020	2025, Bear	2025, Bull
Cars Sold (millions)	0.5	5	10
Average Selling Price (USD)	50,000	45,000	36,000
Share Price (USD)	700	1500	4000

⁷ARK's Price Target for Tesla in 2025, Tasha Keeney, ARK Invest, 2021

Domestic opportunity

- 馬達: 富田電機
- 車用電子: 和碩
- 電供: 台達電、康舒
- 傳動: 和大
- 電網: 華城
- ...



Foxtron: MIH⁸

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本节练习题及解答参考答案

三、数据标注

卷八

大 尺 寸	車長*車寬*高 (mm) 軸距 (mm)	4410*1785*1605 2690
	可縮短面積*伸縮幅度 [mm]	1595~1540
車 型	曳引機型 電動機型	1625~1540 最大起重量 及起升速度 (kgf.s)
	為達控制範圍	最大工作電壓 400(V)
最 大 起 重 量	(N-m)	250
最 大 牽 引 力	(kN)	130
最 大 牽 引 速 度	(mm/s)	1520
最 大 牽 引 距	(mm)	3.3公尺電動 163
最 大 牽 引 角	(deg)	360
最 大 牽 引 重	(kN)	50
最 大 牽 引 斜 率	(mm) 20%~50%	48
	(mm) 50%~60%	408
輪 胎 規 格	前輪尺寸 後輪尺寸 拖鏈輪尺寸	無 無 無
	輪胎規格	無
輪 胎 規 格	前輪規格 (mm)	5.7
B-Package (One Package Drive)	●	
PRND 電子換檔系統	●	
多連杆扭力臂車身 (4+1)	12	
動力轉向系統	●	
動力轉向系統、動力分配器、 循環水冷、動力回收系統、電子手 動踏板	●	
	215/55 R17	
科 技		

本节练习题及解答参考答案

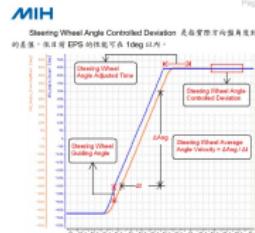
MIH

第二部分

ESC 硬件控制码	功能描述	端口	状态
AD45_DevReq_A	Vehicle Description Request	I8 读多个字节	Ts
AD45_SetReq_A	Vehicle Description Request Application	I8 写一个字节	Ts
AD45_ADRReq_A	AER Request	I8 读一个字节	Ts
AD45_ADRSet_A	AER Request Application	I8 写一个字节	Ts
AD45_LocAcel_V	Longitudinal Acceleration Validity	I8 读一个字节	Rw
AD45_LatAcel_V	Lateral Acceleration Validity	I8 读一个字节	Rw
YawRate_V	Yaw Rate Validity	I8 读一个字节	Rw
TrueSph_V	True Spherical Signal Status	I8 读一个字节	Rw
Blink_V	Brake switch signal validity	I8 读一个字节	Rw
KRAZDE_V	Surface Grade Validity	I8 读一个字节	Rw
Roader_Visual_A	Roader Visual Lane Readiness to Activate	I8 读一个字节	Rw
Master_Cylinder_Pressure_V	Master Cylinder Pressure Validity	I8 读一个字节	Rw
MCPression_V	Master Cylinder Pressure Validity	I8 读一个字节	Rw
PMS_Fault_A	PMS Fault Active	I8 读一个字节	Rw
PMS_Fault_Accel_Failed	PMS Fault Active Acceleration Failed	I8 读一个字节	Rw
ABS_Active	Antilock Brake System Active	I8 读一个字节	Rw
EDD_Engine	EDD Engine	I8 读一个字节	Rw
EDD_System	EDD System	I8 读一个字节	Rw
RR_RearWheelSpeed_V	Right Rear Wheel Speed Limit Resolution	I8 读一个字节	Rw
RR_RearWheelSpeedL_V	Right Rear Wheel Speed Limit Resolution Value	I8 读一个字节	Rw
RR_RearWheelDir_V	Right Rear Wheel Rotation Direction	I8 读一个字节	Rw
RR_RearWheelDirL_V	Right Rear Wheel Rotation Direction Value	I8 读一个字节	Rw
RR_RearWheelSpeed_R	Right Rear Wheel Speed Limit Resolution	I8 读一个字节	Rw
RR_RearWheelSpeedL_R	Right Rear Wheel Speed Limit Resolution Value	I8 读一个字节	Rw
RR_RearWheelDir_R	Right Rear Wheel Rotation Direction	I8 读一个字节	Rw
RR_RearWheelDirL_R	Right Rear Wheel Rotation Direction Value	I8 读一个字节	Rw
RR_WheelWiggleL_V	Left Front Right Wheel Speed Limit Resolution	I8 读一个字节	Rw
RR_WheelWiggleR_V	Left Front Right Wheel Speed Limit Resolution Value	I8 读一个字节	Rw
RR_WheelDir_L	Left Front Right Wheel Rotation Direction	I8 读一个字节	Rw
RR_WheelDir_R	Left Front Right Wheel Rotation Direction Value	I8 读一个字节	Rw
RR_WheelPc_U	Right Front Right Wheel Pulse Counter Validity	I8 读一个字节	Rw
RR_WheelPc_V	Right Front Right Wheel Pulse Counter Validity	I8 读一个字节	Rw
RR_WheelDir_U	Right Front Right Wheel Rotation Direction	I8 读一个字节	Rw
RR_WheelDir_V	Right Front Right Wheel Pulse Counter Validity	I8 读一个字节	Rw
RR_WheelDir_R	Right Rear Left Wheel Rotation Direction	I8 读一个字节	Rw
RR_WheelDirL_R	Right Rear Left Wheel Rotation Direction Value	I8 读一个字节	Rw
RR_WheelPc_C	Left Rear Right Wheel Pulse Counter Validity	I8 读一个字节	Rw
RR_WheelPc_D	Left Rear Right Wheel Pulse Counter Validity	I8 读一个字节	Rw
RR_WheelDir_C	Left Rear Right Wheel Rotation Direction	I8 读一个字节	Rw
RR_WheelDir_D	Left Rear Right Wheel Rotation Direction Value	I8 读一个字节	Rw

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卷之三



ERP 教育概念模型

EPG 檢索和本地化問題與工具的卷二

诊断名称	现象	措施	状态
ADAS_Status	ADAS 状态	通过 CAN 总线读取 ADAS 状态	正常
ADAS_Shifting	ADAS 状态 Request	通过 CAN 总线向 ADAS 提交请求	正常
ADAS_Shifting_V	ADAS 状态 Request.Vehicle	通过 CAN 总线向 ADAS 提交请求	正常
ADAS_SetReq	ShowCurrent Torque Required	向驾驶者显示当前扭矩需求	正常
ADAS_SetReq_A4	Show Current Torque Required_A4	向驾驶者显示当前扭矩需求	正常
CurSteering_A4	Current Steering Torque Request Application	向驾驶者显示当前方向盘扭矩需求	正常
DirDemand	Driver Desired	从驾驶员处获取方向盘扭矩需求	正常
EPS_ADS_Status	EPS ADS Status	通过 CAN 总线读取 EPS ADS 状态	正常
EPS_ADS_Status_Historian	EPS ADS Status Historian	通过 CAN 总线读取 EPS ADS 历史状态	正常
FwdFwded	Fwd Fwded	将前方车辆前向行驶信息转发	正常
Steering_1D_Failed	Steering 1D Failed	检测转向 1D 失败	故障
Steering_1D_Success	Steering 1D Success	检测转向 1D 成功	正常

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未満供給和應得供給者證明

⁸<https://www.honhai.com/zh-tw/mih-ev-open-platform>

Foxtron: MIH

**4個級距
模組彈性客製**



	B+ 軸距2750	C 軸距2860	D 軸距2950	E 軸距3100	
3種 驅動	前驅	●	○	●	●
	後驅	○	●	●	●
	四驅	○	●	●	●
3種 電池包	小 ~93kWh	●			
	中 ~100kWh		●	●	
	大 ~116kWh				●
前懸吊		麥花臣	雙A臂	雙A臂	雙A臂
後懸吊		拖曳臂	多連桿	多連桿	多連桿
電機規格		前電機單速95kW~200kW，後電機單速150kW~240kW及2速340kW			

Thanks!

