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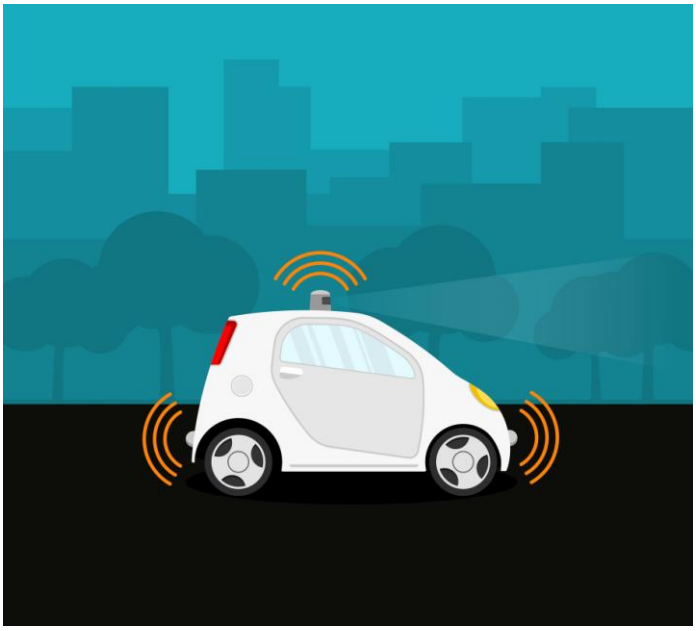

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F.I.T.T. for investors

ADAS - who has the credentials to succeed?

Six Chinese suppliers in a USD24bn market

Future auto technologies are easy to conceptualize but harder to quantify and evaluate. We examine what is currently realistic and achievable for the Chinese component makers and show that developments in Advanced Driver Assistance Systems (ADAS) are bringing much of that potential in scope within a reasonable timeframe. Using sensors as our foundation, we estimate a market size of USD24bn for ADAS products by 2025 and identify six companies capable of supplying that demand. Chinese manufacturers are developing and acquiring the technology to gain market share and we initiate coverage of Nexteer and Joyson as our top Buy recommendations.

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Future auto technologies are easy to conceptualize but harder to quantify and evaluate. We examine what is currently realistic and achievable for the Chinese component makers and show that developments in Advanced Driver Assistance Systems (ADAS) are bringing much of that potential in scope within a reasonable timeframe. Using sensors as our foundation, we estimate a market size of USD24bn for ADAS products by 2025 and identify six companies capable of supplying that demand. Chinese manufacturers are developing and acquiring the technology to gain market share and we initiate coverage of Nexteer and Joyson as our top Buy recommendations.

ADAS has become an emerging theme among Chinese auto part suppliers

With the advancement of auto electronics, the adoption rate of ADAS features has sped up as a means to enhance a car's appeal, with the ultimate goal of fully autonomous driving in the long run. While there are many types of ADAS features, the backbone components can be grouped into 1) sensors (e.g. camera), 2) controls (e.g. chips), and 3) execution (e.g. braking). While foreign suppliers still lead in these component markets, some Chinese suppliers already have the capability to establish a position in their domestic market.

Three key drivers of wider ADAS adoption in China

Although there are no regulatory requirements for ADAS adoption, the inclusion of ADAS features will boost scores in China's official safety rating (C-NCAP) starting 2018. Moreover, we note that local brand OEMs have been adding ADAS features in their new models, probably as a means to compete with similarly priced JV products, which lack those features. Last but not least, in China's "Made in 2025" master plan, the government highlights new auto technologies as a focus for the country's technology advancement, along with target ADAS penetration levels for local brands by 2020 and 2025. This gives China a more visible path for ADAS adoption growth than other countries.

We envision a long-term ADAS market of USD24bn

We have performed a proprietary ADAS market size analysis, mainly based on target ADAS levels and penetration across different timeframes. We use the sensor segment as an anchor to derive an overall ADAS demand forecast given the segment's higher transparency vs. other fragmented ADAS component segments. In summary, we estimate that the Chinese sensor market could reach USD6bn in 2020 (2025E: USD12bn) and the total ADAS market could be worth up to USD12bn (2025E: USD24bn).

A few Chinese companies expected to outshine many others

Currently, major global part suppliers dominate the ADAS market. We can identify at least c.30 Chinese suppliers involved in the space. However, most of these local companies still have too limited an exposure for ADAS to make a difference to their profit and outlook. In this report, we identify six companies that we believe can become meaningful players in various ADAS markets. We value them using forward P/E vs. their growth prospects. Our top Buys are Nexteer and Joyson considering their advanced ADAS knowhow, which can rival global peers'. Sector upside risks include faster-than-expected ADAS adoption and positive scale effects. Downside risks include a slow pick-up in ADAS sales and local players' inability to compete with foreign suppliers.

Key Changes

Company	Target Price	Rating
600699.SS	- to 35.00	- to Buy
0425.HK	- to 36.70	- to Buy
1316.HK	- to 14.60	- to Buy
002405.SZ	- to 14.90	- to Sell
601689.SS	- to 35.40	- to Buy
600741.SS	20.30 to 24.30(CNY)	-

Source: Deutsche Bank

Top picks

Ningbo Joyson Electronic Co (600699.SS),CNY30.19	Buy
Nexteer Automotive Group Li (1316.HK),HKD12.20	Buy

Source: Deutsche Bank

Companies Featured

Ningbo Joyson Electronic Co (600699.SS),CNY30.19			Buy
	2016A	2017E	2018E
P/E (x)	52.8	28.7	23.3
Tuopu (601689.SS),CNY31.30			Buy
	2016A	2017E	2018E
P/E (x)	28.0	29.1	23.0
Minth Group Limited (0425.HK),HKD32.30			Buy
	2016A	2017E	2018E
P/E (x)	12.5	15.7	13.0
Nexteer Automotive Group Li (1316.HK),HKD12.20			Buy
	2016A	2017E	2018E
P/E (x)	9.4	11.5	10.1
NavInfo Co., Ltd. (002405.SZ),CNY17.90			Sell
	2016A	2017E	2018E
P/E (x)	153.0	70.3	54.2
Huayu Automotive (600741.SS),CNY22.95			Buy
	2016A	2017E	2018E
P/E (x)	8.4	11.0	9.9

Source: Deutsche Bank

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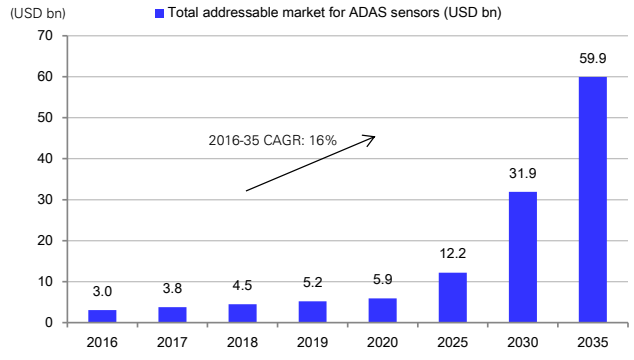
Executive summary

We forecast 16% China ADAS revenue CAGR in 2016-35

We have performed a proprietary China ADAS market size and growth analysis, mainly based on target ADAS level and penetration across different timeframes. We use the sensor segment as an anchor because we believe it is more transparent in terms of demand and pricing. In our analysis, we forecast that the China sensor market alone could reach a size of USD5.9bn in 2020 (2016: USD3.0bn; 2025E: USD12.2bn), while the total ADAS market could be twice as large, at USD11.8bn (2025E: USD24.4bn). We forecast a 16% CAGR in China's ADAS market during 2016-35, driven by 1) an increase in ADAS penetration; and 2) a rise in ADAS content per car. We also note that key barriers preventing autonomous vehicle adoption are gradually being lifted, as ADAS component prices are declining and regulators seem more open to autonomous driving tests on open public roads.

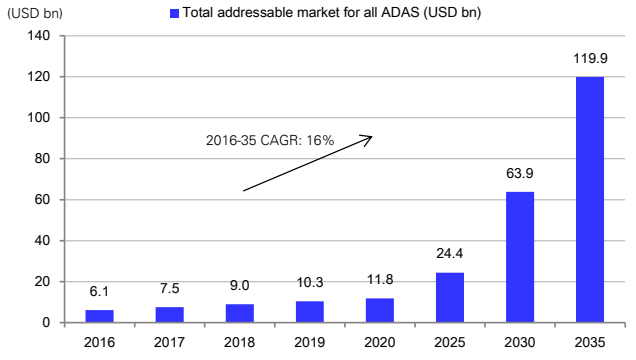
For more information on the global ADAS market, please also see our global auto team's FITT report, "*Pricing the Car of Tomorrow, Part II: Autonomous Vehicles, Vehicle Ownership, and Transportation*", dated 28 March 2016.

Figure 1: China – market size for ADAS sensors



Source: Deutsche Bank estimates

Figure 2: China – market size for all ADAS



Source: Deutsche Bank estimates

ADAS already in China, but still plenty of room for growth

With the advancement of auto electronics, the adoption rate of ADAS features, such as parking assistance, has sped up as part of OEMs' strategy to enhance a car's appeal. Although the ultimate goal in the long run is fully autonomous driving, China's level of ADAS adoption is still in its infancy at Level 1 based on SAE International's "Levels of Driving Automation for On-road Vehicles". In other words, there is still ample room to grow the ADAS market in China to higher Level 2/Level 3 adoption rates in the next 5-10 years.

There are already numerous types of ADAS features in the market, with more to come, but the backbone components for these systems can be grouped into 1) sensors (e.g. camera), 2) controls (e.g. chips), and 3) execution (e.g. braking). While foreign part suppliers still lead in these component markets, some Chinese suppliers already have the capability to establish a position in the Chinese market at least. In this report, we provide a supplier map (Figure 10 on page 9) for China's ADAS market with the help of Gasgoo, a leading Chinese auto part B2B platform and industry intelligence provider.

Figure 3: Major ADAS categories

Type	Sample components
Sensor layer	Camera
	Radar of various ranges
	LIDAR (Light Detection and Ranging)
Control layer	Sensor signal processor
	Machine vision software
	Electronic control unit (ECU)
Execution layer	Assistance system
	Warning system
	Brake control system

Source: Deutsche Bank

Figure 4: SAE's description of six levels of autonomous driving

	Human driver monitors the driving environment			Automated driving system monitors the driving environment		
SAE level	Level 0	Level 1	Level 2	Level 3	Level 4	Level 5
Level of automation	No Automation	Driver Assistance	Partial Automation	Conditional Automation	High Automation	Full Automation
Execution of steering and acceleration/deceleration	Human	Human and system	System	System	System	System
Monitoring of driving environment	Human	Human	Human	System	System	System
Fallback performance	Human	Human	Human	Human	System	System
Automated driving system capability	n/a	Some driving modes	Some driving modes	Some driving modes	Some driving modes	All driving modes
Examples of brands achieving this Level	All brands	Major Chinese brands	Major foreign brands; leading Chinese brands (e.g. SAIC Roewe, Geely)	Tesla	N/A	N/A

Source: SAE International, Deutsche Bank

Three key drivers of China's ADAS demand

Although there are no regulatory requirements for ADAS adoption in China (like the US's mandatory requirement of having rear-view cameras on all new cars by 2018E), the inclusion of ADAS features, such as active safety features, will boost scores in China's official safety rating (C-NCAP) starting 2018. Moreover, equipping a car with active safety features will be the only way to achieve a four-star rating or higher in China after 2018.

We note that local brand OEMs have been adding ADAS features in their new models, probably as a means to compete with similarly priced international brand products, which lack those features (possibly due to margin concerns).

Last but not least, in China's "Made in 2025" master plan, the government highlights the auto sector as a focus for the country's technology advancement. It has set targets for ADAS penetration levels for local brands by 2020E and 2025E, with as high as 40% penetration of Driver Assistance (DA) and Partial Automation (PA) in new local brand cars by 2020E. In our view, this gives China a more visible path of ADAS adoption growth than in other countries, where ADAS adoption by international brands is more on a voluntary basis.

Figure 5: Made in China 2025 plan – targets related to ADAS adoption

2020E

50% market share for local brand car informatics products

40% market share for DA/PA equipped local brand vehicles

Master key technology know-how in sensor and control units with production capacity matching local OEM demand

Start construction of intelligent city traffic infrastructure

2025E

60% market share for local brand car informatics products

50% market share for DA/PA/HA (High Automation) equipped local brand vehicles

World-leading technology in sensor and control units; master key technology in execution units

Source: China's State Council, Deutsche Bank

Global suppliers still rule, but Chinese are up and coming

While global auto parts suppliers still lead in ADAS technology development and applications given their longer R&D track record, local suppliers are investing heavily in R&D and overseas M&As in an attempt to catch up. In this report, we identify c.30 Chinese suppliers involved in the space. However, most of these local companies still have too limited an exposure to make a difference. In this report, we highlight six companies (including five initiations) that we believe can become meaningful competitors. Huayu, for example, will start to record revenue by selling radars for its parent's SAIC Roewe and SAIC Maxus products.

Figure 6: China auto part suppliers featured in this report – exposure to ADAS

Company	ADAS category		
	Sensor layer	Control layer	Execution layer
Joyson	√ (camera)	√ (human machine interface, etc.)	√ (active safety)
Tuopu			√ (braking)
Minth	√ (camera)		
Nexteer			√ (steering)
NavInfo	√ (mapping)		
Huayu	√ (radar)		

Source: Company data, Deutsche Bank

Our top Buys are Nexteer and Joyson

We compare Chinese auto part supplier stocks on a forward P/E basis relative to the stocks' EPS growth outlook and historical P/E trading range. We believe that P/E is an appropriate metric to value Chinese auto part supplier stocks in general because the sector is still in a growth phase and investors are likely to focus on the suppliers' near- to medium-term earnings momentum.

Considering the growth prospects, particularly in the ADAS area, and valuation, our top Buys are Nexteer and Joyson. Nexteer has long been a leading global steering system supplier and the company has also set up a JV with Continental (CONG.DE, Hold, EUR198.4) to develop steering-related ADAS. Joyson started as a local parts supplier but has expanded its product portfolio through a few overseas M&As. The company is now also involved in auto electronics and a wide spectrum of ADAS, and we believe that further consolidation of the acquired businesses will enhance its earnings outlook.

We also have a Buy on Minth considering its solid trim-and-body-part-related business and new opportunities in the camera module/motor businesses; and on Tuopu considering its market-leading Noise, Vibration and Harshness (NVH) system business and new opportunities in Intelligent Braking Systems. We maintain Buy on Huayu given its stable income stream from parent SAIC Motor (600104.SS, Hold, RMB30.09) and new business from third parties. Lastly, we have a Sell rating on NavInfo, despite its leading position in China's precision mapping market, on account of its 55x FY18E PER.

Figure 7: China auto part suppliers featured in this report – key valuation highlights (based on 8 June price)

Name	Ticker	DB Rating	TP	Upside	Target PE (x)	Trading PE (x)		EPS growth (%)	
			(Local $)		2018E	2017E	2018E	2017E	2018E
Joyson Electronics	600699.SS	Buy	35.0	16.9%	27.0	28.4	23.1	60.4%	23.1%
Tuopu	601689.SS	Buy	35.4	17.0%	26.0	29.3	23.1	13.2%	26.6%
Minth Group	0425.HK	Buy	36.7	10.6%	15.0	16.0	13.3	18.6%	20.5%
Nexteer	1316.HK	Buy	14.6	21.9%	12.0	11.3	9.9	15.9%	14.0%
NavInfo	002405.SZ	Sell	14.9	-17.5%	45.0	70.9	54.6	85.0%	29.7%
Huayu Automotive Systems	600741.SS	Buy	24.3	9.6%	10.5	10.7	9.6	14.2%	11.3%

Source: Reuters, Deutsche Bank

Compared to consensus, we have lower earnings forecasts for Joyson, Tuopu and NavInfo due to our more prudent margin assumptions for Joyson and Tuopu, and conservatism on NavInfo's sales growth. We have higher earnings forecasts on Huayu with more upbeat margin estimates.

Figure 8: China auto part suppliers featured in this report – Deutsche Bank's earnings forecasts vs. consensus

	DBe			Bloomberg consensus			% difference		
Net profit (RMBm)	2017E	2018E	2019E	2017E	2018E	2019E	2017E	2018E	2019E
Joyson Electronics	998.9	1,229.8	1,503.1	1,153.5	1,459.3	1,754.0	-13.4%	-15.7%	-14.3%
Tuopu	747.8	989.4	1,185.2	800.2	1,004.2	1,276.7	-6.6%	-1.5%	-7.2%
Minth Group	2,067.2	2,513.4	3,006.7	2,080.4	2,495.1	2,913.8	-0.6%	0.7%	3.2%
Nexteer	342.8	390.8	439.6	331.2	375.7	427.2	3.5%	4.0%	2.9%
NavInfo	316.4	428.8	516.2	391.9	517.7	678.4	-19.3%	-17.2%	-23.9%
Huayu Automotive Systems	6,962.1	7,724.2	8,528.1	6,448.5	7,089.8	7,840.4	8.0%	8.9%	8.8%

Source: Bloomberg Finance LP, Deutsche Bank

Risks

Key sector upside risks include faster-than-expected ADAS adoption and the consequent scale effects. Key downside risks include a slow pick-up in ADAS sales and local players' inability to compete with foreign suppliers.

So…what is ADAS?

Key points

- With auto OEMs planning for eventual autonomous driving, SAE International's "Levels of Driving Automation for On-road Vehicles" provides globally accepted definitions of autonomous driving.
- The most commonly discussed ADAS features include parking assistance, night vision, lane departure warning, forward collision warning, blind spot detection and adaptive cruise control.
- Components used in ADAS can be grouped into three categories: sensors, control units and execution units. We list major suppliers in Figure 10.

From driving assistance to fully autonomous driving

In recent years, we have been hearing more news about global OEMs/suppliers and even internet companies assigning a meaningful portion of their R&D budgets to autonomous driving. While we admit that it will still be many years before we see widespread adoption of autonomous driving, we have already seen benefiting from intermediate products, namely various types of Advanced Driving Assistance Systems (ADAS).

Before further exploring the ADAS market, we need to be aware of various levels of autonomous driving. This is because the gradual evolution of autonomous driving will lead to increasing levels of ADAS-related component content in cars. At the moment, SAE International's "Levels of Driving Automation for On-road Vehicles" (J3016) offers globally accepted definitions of six levels of autonomous driving (Figure 9). In Level 0 (No Automation) to Level 2 (Partial Automation), humans still need to monitor the environment and drive, while in Level 3 (Conditional Automation) to Level 5 (Full Automation), autonomous driving systems perform the driving task.

At the moment, most foreign brands can achieve up to Level 2 automation, while most local Chinese brands lag slightly at Level 1.

Figure 9: SAE's description of six levels of autonomous driving

	Human driver monitors the driving environment			Automated driving system monitors the driving environment		
SAE level	Level 0	Level 1	Level 2	Level 3	Level 4	Level 5
Level of automation	No Automation	Driver Assistance	Partial Automation	Conditional Automation	High Automation	Full Automation
Execution of steering and acceleration/deceleration	Human	Human and system	System	System	System	System
Monitoring of driving environment	Human	Human	Human	System	System	System
Fallback performance	Human	Human	Human	Human	System	System
Automated driving system capability	n/a	Some driving modes	Some driving modes	Some driving modes	Some driving modes	All driving modes
Examples of brands achieving this Level	All brands	Major Chinese brands	Major foreign brands; leading Chinese brands (e.g. SAIC Roewe, Geely)	Tesla	N/A	N/A

Source: SAE International, Deutsche Bank

The US National Highway Traffic Safety Administration (NHTSA) used to have its own system of autonomous driving definitions with similar classifications but it adopted SAE's standards in 2016.

ADAS and required components for autonomous driving

ADAS is being developed to alert drivers of potential collisions and automate driving processes with active safety features. The ADAS features most well-known to the public include the following:

- ***Park-assist system (PA)***: Parking assist helps the driver with parallel, perpendicular and angle parking, while advanced automatic parking systems can park the vehicle automatically without human intervention.
- ***Night-vision system (NV)***: Night vision assist systems include a thermo graphic camera to extend drivers' vision distance beyond the reach of vehicle headlights in dark and harsh weather conditions.
- ***Lane departure warning (LDW)***: The LDW system warns the driver when the vehicle departs from its current road lane if no turn signal has been given.
- ***Forward collision warning (FCW)***: This is designed to avoid collisions or reduce the severity of collisions. The system deploys sensors to detect potential crashes and warns drivers of an imminent collision.
- ***Blind-spot detection (BSD)***: BSD detects other vehicles and obstacles that are located in the driver's blind spot on his/her side and rear and sends warnings of any potential crashes.
- ***Adaptive cruise control (ACC)***: This automatically adjusts vehicle speed in order to maintain a safe distance from other vehicles. ACC brakes the vehicle when it detects that it is approaching the vehicle in front and accelerates when appropriate.

The components used in ADAS systems can be grouped into three categories, namely sensors, control units and execution units.

- ***Sensor layer***: camera, short-/medium-range radar, long-range radar, LIDAR (for fully autonomous)
- ***Control layer***: processor for sensor signal, machine vision software, and electronic control unit (ECU)
- ***Execution layer***: assistance and warning system (such as lane departure warning) and brake control system (such as electronic stability control)

Taking Tesla's (TSLA.OQ, USD359.65, Hold) autopilot system as an example, it deploys eight surrounding cameras for 360 degrees of vision of up to 250m; 12 ultrasonic sensors for object detection at longer distances; and a forward radar to see through harsh weather. In addition, Tesla vehicles are equipped with a computer with great computing power for machine vision software.

In Figure 10 on Page 9, we provide a summary of the key ADAS components being used in the Chinese market, unit pricing for sensors, and lists of major suppliers for each component, with the help of Gasgoo, a leading Chinese auto part B2B platform and market intelligence provider.

For more information about the global ADAS market, please see our global auto team's FITT report, "*Pricing the Car of Tomorrow, Part II: Autonomous Vehicles, Vehicle Ownership, and Transportation*", dated 28 March 2016.

Figure 10: ADAS components and major suppliers (non-comprehensive)

	Major suppliers Foreign	Local		Major suppliers Foreign	Local
Sensor Layer			**Control Layer**		
Camera  *Price estimate: c.USD10-100*	Sony Magna Panasonic Valeo MCNEX Flex (Flextronics) Melexis Fujitsu SHARP ADASENS Stonkam OmniVision Toshiba	Tung Thih (TW) Hikvision Sunny Optical O-Flim Protruly Ultronix **Minth***	Chips/software 	Mobileye TI ADI Infineon NXP Toshiba ON Semiconductor Xilinx Intel STMicroelectronics Freescale Renesas Fujitsu NVIDIA	
Radar  *Price estimate: c.USD50-500*	Bosch Continenal Denso Delphi Autoliv Hella ZF TRW Hitachi Sensortec Fujitsu	Sincodest Whetron (TW) China Wanchao Xiamen BOD CUB* **Huayu Auto** **Joyson**	Integrated control 	Bosch Continental Denso Delphi ZF TRW Autoliv Hella Magna Valeo Mobileye	Tung Thih (TW) Whetron (TW) Hirain **Joyson**
LIDAR  *Price estimate: c.USD500-7,500*	Velodyne IBEO Quanergy Continenal LeddarTech Valeo 3D Laser Mapping		**Execution Layer**		
			Assist & Warning 	Valeo Gentex Mobileye Magna Panasonic	Tung Thih (TW) Whetron (TW) Hirain **Joyson**
GPS & Mapping 	TomTom HERE Google	**NavInfo** Baidu AutoNavi	Brake & Actuation 	Bosch Continental ZF TRW Autoliv Valeo Delphi Aisin Seiki	Showa (TW) **Tuopu***
			Steering 	ZF TRW Bosch	**Nexteer****

* Mass production expected by 2018.
** Mass production in future.
Source: Gasgoo, Deutsche Bank

Increasing ADAS adoption

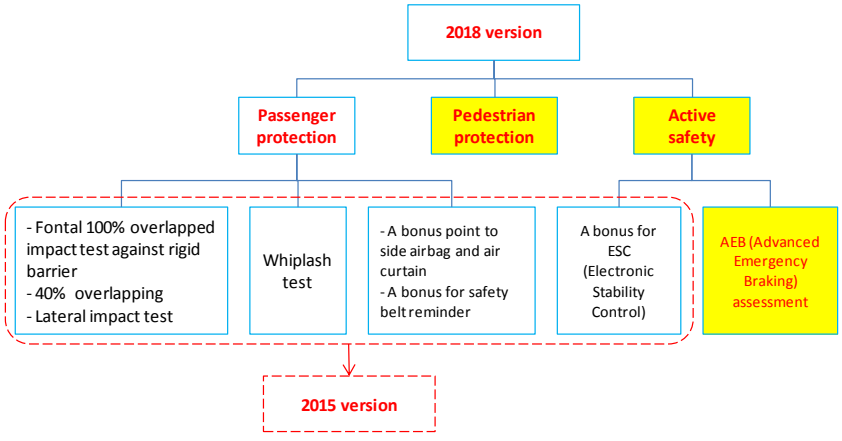
Key points

- Active safety functionality has been increasingly included in new car safety scores, such as C-NCAP. This incentivises OEMs to adopt more ADAS functionalities when launching new car models.
- Local brand OEMs have been gaining market share in the last two years and dominate low-end SUV sales. Now they are more likely to adopt advanced technology as a selling point to gain more share.
- Our comparison shows that local brands offer some major ADAS features for RMB100-150k price segment models, while JV brands only offer similar ADAS functions in the RMB200k and above segment.
- The country's "Made in China 2025" master plan also regards new auto technology as a means to catch up with the global auto industry.

ADAS included in new car safety score (C-NCAP)

The July 2018 official implementation of the new C-NCAP standard (The Chinese New Car Assessment Program) will push active safety adoption on new car launches in China. According to the latest 2018 version of C-NCAP Management Regulation, the new standard will introduce vehicle active safety into the 2018 version of C-NCAP assessment system.

Figure 11: C-NCAP standard content – 2015 version vs. 2018 version



Source: Cheyun.com, C-NCAP, Deutsche Bank

Active safety ADAS features will be awarded bonus points in the upcoming China car safety rating system revision.

The combination of passive and active safety technology forms the comprehensive vehicle passenger safety protection system. The 2018 version of the C-NCAP assessment includes active safety with a weight of 0.15. The other two sections are passenger protection and pedestrian protection, with weights of 0.7 and 0.15, respectively.

Moreover, equipping a car with active safety features will be the only way to achieve a rating of four stars or above in the new version.

Figure 12: C-NCAP (2018 version) minimum score percentage requirement

Star	Overal score percentage	The minimum score percentage of each section				
		Passenger protection	Pedestrian protection	Active safety		
				2018	2019	2020
5+（★★★★★☆）	≥ 90%	≥ 95%	≥ 75%	≥ 50%	≥ 55%	≥ 72%
5（★★★★★）	≥ 82% and ＜ 90%	≥ 85%	≥ 65%	≥ 26%	≥ 38%	≥ 55%
4（★★★★）	≥ 72% and ＜ 82%	≥ 75%	≥ 50%	≥ 26%	≥ 26%	≥ 26%
3（★★★）	≥ 60% and ＜ 72%	≥ 65%	≥ 40%	/	/	/
2（★★）	≥ 45% and ＜ 60%	≥ 55%	≥ 20%	/	/	/
1（★）	＜ 45%	＜ 55%	＜ 20%	/	/	/

Source: Cheyun.com, C-NCAP, Deutsche Bank

Starting 2018, only models with active safety ADAS features will be eligible for a rating of four stars or above

Since cars with higher safety ratings usually appeal more to consumers, we believe the new C-NCAP should further enhance OEMs' demand for ADAS-related active safety products, in particular ECS, laser radar, millimetre-wave radar, camera, thermal infrared sensor, etc. This phenomenon is likely to be more apparent amongst Chinese local brand OEMs given their lower scores vs. JV brands.

Figure 13: China – major JV brands' and local brands' average C-NCAP scores

JV brands	Average score*	Local brands	Average score*
FAW Volkswagen	4.91	SAIC GM Wuling	4.00
SAIC GM	4.46	Chongqing Chang'an	3.91
Chang'an Ford	5.00	Geely	4.55
Beijing Hyundai	4.71	Dongfeng	4.60
Dongfeng Honda	4.90	Great Wall	4.44
Average of above	**4.80 stars**	**Average of above**	**4.30 stars**

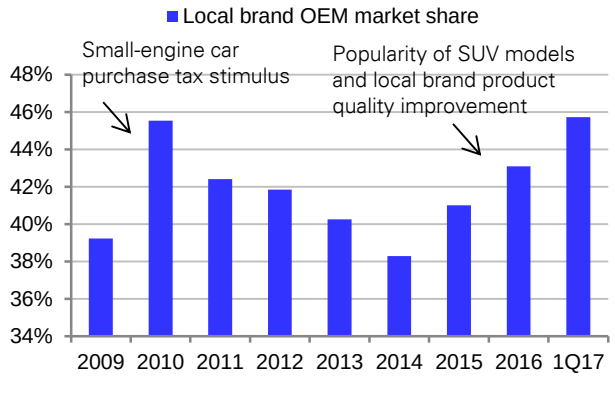
* Simple average star rating for latest models
Source: C-NCAP, Deutsche Bank

Local brands to adopt ADAS more aggressively

Local brands taking market share due to strong demand for SUVs

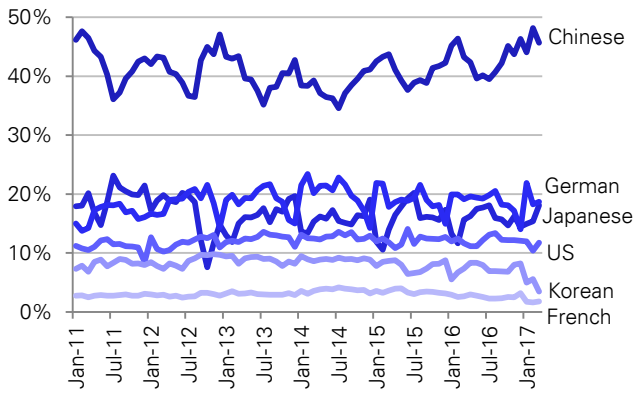
Driven by a quick response to Chinese drivers' preference for SUVs (Figure 16), especially in the lower-price range, local brand OEMs have taken 5ppt market share from JV brands in the past couple of years, to reach above 45%.

Figure 14: Local brand passenger vehicle market share



Source: China Association of Automobile Manufacturers (CAAM), Deutsche Bank

Figure 15: China passenger vehicle market share

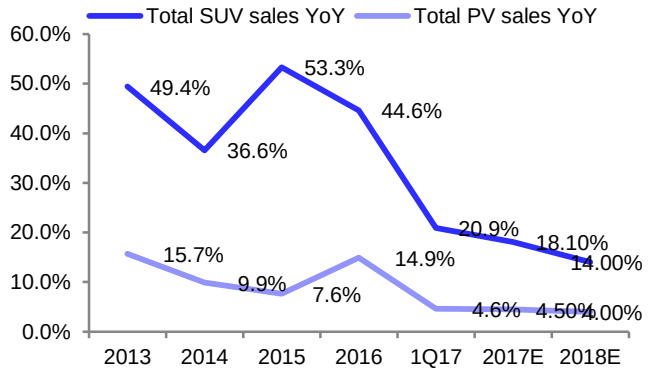


Source: CAAM

However, with the SUV sales growth rate on a downtrend and local brands' SUV market share already high at above 60% (Figure 17), it could become increasingly challenging for these brands to gain further market share by purely focusing on low-end SUV sales.

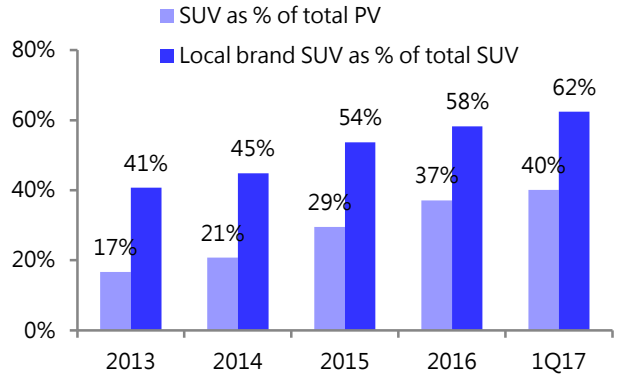
In order to better compete head-to-head with JV brands for more market share, local brands need to further enhance their product appeal to consumers, especially as these brands do not have long-established brand equity to compete effectively in the higher price segments.

Figure 16: China PV and SUV sales growth



Source: CAAM

Figure 17: Local brand market share in SUV segment



Source: CAAM

Local brands to adopt ADAS more aggressively

With the RMB50-100k price segment already crowded, local OEMs are launching new models/sub-brands to move up a price segment to compete head-to-head with JVs. Examples include Trumpchi GS8/GS7 SUVs from GAC (2238.HK, HKD13.18, Buy), the Lynk & Co 01 SUV from Geely (0175.HK, HKD13.96, Hold) and WEY VV7/VV5 SUVs from Great Wall Motor (2333.HK, HKD8.59, Hold).

As a result, we note that local brands are more aggressive than JV brands in adopting ADAS functions as selling points, given the former's relatively weak brand image among consumers. For instance, local brands offer ADAS in RMB100-150k price segment car models, while JV brands do not (Figure 18). Such ADAS features include blind-spot detection (BSD), lane departure warnings (LDW), forward collision warnings (FCW) and adaptive cruise control (ACC). In comparison, JVs only offer similar ADAS functions in the RMB200k and above price segment (Figure 19), probably due to cost and margin concerns.

Figure 18: ADAS functions comparison between local brand and JV brand SUV models in RMB100,000-150,000 range

Brand	Model	MSRP (RMB)	Engine size (L)	Wheelbase (mm)	ADAS/related technology functions					
					Automatic parking assist (PA)	Blind-spot detection (BSD)	Lane departure warning (LDW)	Forward collision warning (FCW)	Adaptive cruise control (ACC)	360 panoramic camera
Local brands										
SAIC Roewe	RX5	99,800-186,800	1.5T, 2.0T	2,700			v			v
Great Wall	WEY VV7	167,800-188,800	2.0T	2,950	v	v	v	v	v	v
Geely	Boyue	98,800-157,800	1.8T, 2.0	2,670			v	v	v	v
GAC Trumpchi	GS8	163,800-259,800	2.0T	2,800		v	v	v	v	v
Chang'an	CS95	159,800-229,800	2.0T	2,810	v	v	v	v	v	v
Great Wall	Haval H6	88,800-146,800	1.3T, 1.5T, 2.0T	2,680		v	v			
Chang'an	CS75	92,800-162,800	1.5T, 1.8T, 2.0	2,700		v			v	v
Geely	Vision SUV	74,900-101,900	1.3T, 1.8	2,661						v
GAC Trumpchi	GS4	99,800-161,800	1.3T, 1.5T	2,650						v
SAIC-GM Wuling	Baojun560	69,800-105,800	1.5T, 1.8	2,750						v
Great Wall	Haval H2s	83,800-102,800	1.5T	2,550						
JV brands										
GAC Honda	Vezel	128,800-189,800	1.5, 1.8	2,610						
Dongfeng Honda	XR-V	127,800-162,800	1.5, 1.8	2,610						
GAC FCA Jeep	Renegade	134,800-202,800	1.4T, 2.0	2,570						
Dongfeng Nissan	Qashqai	139,800-189,800	1.2T, 2.0	2,646	v	v	v	v		v

* Note: Most of ADAS functions mentioned above are only available on high-end trims.
Source: Autohome, Deutsche Bank

Figure 19: ADAS functions comparison for JV brand SUV models in above-RMB150,000 segment

Brand	Model	MSRP (RMB)	Engine size (L)	Wheelbase (mm)	ADAS/related technology functions					
					Automatic parking assist (PA)	Blind-spot detection (BSD)	Lane departure warning (LDW)	Forward collision warning (FCW)	Adaptive cruise control (ACC)	360 panoramic camera
GAC FCA Jeep	Compass	159,800-241,800	1.4T, 2.4	2,636	v	v	v	v	v	
BAIC Hyundai	Tucson	159,900-239,900	1.6T, 2.0	2,670	v	v	v			
SAIC GM Chevrolet	Equinox	174,900-249,900	1.5T, 2.0T	2,725	v	v	v			
Dongfeng Honda	CR-V	179,800-249,800	2.0, 2.4	2,620		v				
FAW Toyota	RAV4	179,800-269,800	2.0, 2.5	2,660		v		v	v	v
Dongfeng Nissan	Xtrail	179,800-268,800	2.0, 2.5	2,706		v	v	v	v	v
Chang'an Ford	Kuga	184,800-270,800	1.5T, 2.0T	2,690	v	v	v	v	v	
GAC FCA Jeep	Cherokee	209,800-315,800	2.0, 2.4	2,705	v	v	v	v	v	
SAIC GM Buick	Envision	209,900-349,900	1.5T, 2.0T	2,750	v	v	v	v	v	
GAC Honda	Avancier	220,000-329,800	1.5T, 2.0T	2,820		v				
SAIC VW	Tiguan	199,800-315,800	1.4T, 1.8T, 2.0T	2,684	v					
SAIC VW	Tiguan L	223,800-359,800	1.8T, 2.0T	2,791	v	v	v	v	v	v
SAIC VW	Teramont	308,900-518,900	2.0T, 2.5T	2,980	v	v	v	v	v	v
GAC Toyota	Highlander	239,800-422,800	2.0T, 3.5	2,790		v			v	
Chang'an Ford	Edge	249,800-449,800	2.0T, 2.7T	2,850	v	v	v	v	v	v

* Note: Most of ADAS functions mentioned above are only available on high-end trims.
Source: Autohome, Deutsche Bank

Made in China 2025 to further push ADAS development

The increasing adoption of ADAS by local brand cars is also driven by the State Council's "Made in China 2025" roadmap. With regard to intelligent and connected cars, the master plan estimates that cars with Driver Assistance (DA) and Partial Automation (PA) will take c.30% market share by 2020 and High Automation (HA) penetration will reach c.10-20% by 2025.

Figure 20: Autonomous driving classification of "Made in China 2025" plan

Level	Name	Brief description
1	DA: Driver Assistance	One to several ADAS functions such as ESC (Electronic Stability Control), ACC (Adaptive Cruise Control), AEBS (Advanced Emergency Braking System), etc.
2	PA: Partial Automation	Drivers can hand over vehicle control for a short period of time; warnings should be given for over 10 seconds.
3	HA: High Automation	Autonomous driving on highways and urban public roads; human drivers may be asked to take control under certain specific conditions.
4	FA: Full Automation	Driving systems take full control of vehicles under all road conditions.

Source: The State Council, Deutsche Bank

For local vehicle manufacturers and parts suppliers, the roadmap targets the following by 2020:

- 50% market share for local brand car informatics products (e.g. on-board computer system, navigation)
- 40% market share for DA/PA equipped local brand vehicles
- Master key technology know-how in sensor and control units, with production capacity matching local OEM demand
- Start construction of intelligent city traffic infrastructure

And by 2025:

- 60% market share for local brand car informatics products
- 50% market share for DA/PA/HA equipped local brand vehicles
- World-leading technology in sensor and control units; master key technology in execution units.

When we look at other major global auto markets, ADAS market growth is mainly driven by OEMs' voluntary R&D with limited policy guidance or push. In the US, for instance, there is only a mandatory requirement to have a rear-view camera in every new car by 2018 and emergency braking by 2022. In comparison, since the Chinese government is keen to catch up with global peers in auto technologies, we see a more visible growth trajectory in ADAS adoption for the next 10 years. Moreover, regulations on ADAS are not as tight as those for electric vehicle batteries (which are subject to government certification in China), and hence the lead time for bringing new products to market could be shorter.

The growth outlook

Key points

- We believe China OEMs are mostly at Level 1-2 automation stage, implying significant potential for ADAS players to catch the growth when the country moves to higher Level 2-3 automation by 2025E.
- We estimate Level 2 ADAS system costs to be c.USD700-800 per vehicle, while ADAS in Level 3 autonomous vehicles costs c.USD1,000-1,500. This implies significant revenue upside potential with driving automation upgrade.
- Our proprietary penetration model estimates China's ADAS market will expand by 16% CAGR during 2016-35, driven by 1) increase in ADAS penetration; and 2) rise in ADAS content per car.

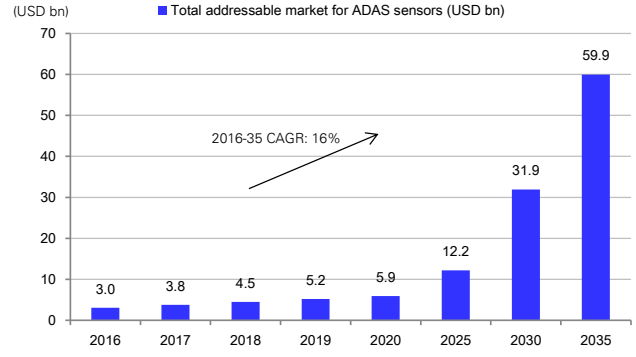
USD6bn sensor market by 2020E and double for ADAS

In summary, we foresee significant growth opportunity for part suppliers. We estimate that China's ADAS sensor market will reach USD5.9bn in 2020 and USD12.2bn in 2025, with 16% 2016-35E CAGR (Figure 21).

Since sensors usually account for about half of ADAS costs, according to Gasgoo, we estimate that the ADAS market size could grow to an USD11.8bn market by 2020 and c.USD24.4bn by 2025. Besides sensors, the remaining components are more fragmented and related to processors, sensor fusion software, wiring and actuation/braking, etc.

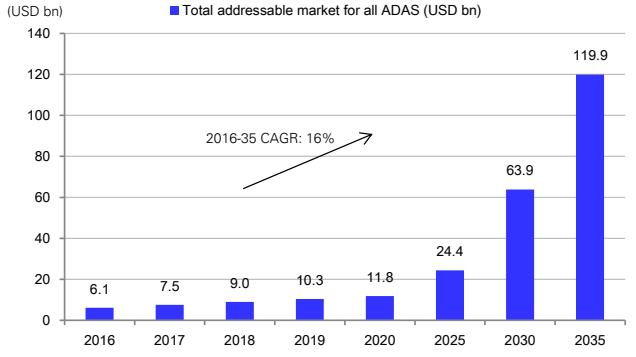
In terms of profitability, we believe that sensors' margin will be lower in general with increase in supply by various suppliers. However, suppliers with high sales volume should still benefit from scale effects. Meanwhile, margin for control/execution components, e.g. ADAS control units, should be more stable.

Figure 21: China – market size for ADAS sensors



Source: Deutsche Bank estimates

Figure 22: China – market size for all ADAS



Source: Deutsche Bank estimates

Details on our forecast model and assumptions

Our proprietary penetration model is driven by 1) increase in ADAS sensor penetration; and 2) rise in ADAS sensor content per car with adoption of high automation level, as targeted by China's "Made in China 2025" plan. We use sensor as an anchor to our overall ADAS demand forecast because this is the most scalable and transparent segment within ADAS, with more readily available pricing data and volume estimates. In comparison, other ADAS components (e.g. system control and execution modules) are more fragmented in terms of pricing range and market size.

In terms of forecast time span, we extended our forecast to 2035 as, according to many OEMs, 2035 is likely to be the time for a meaningful level of fully autonomous driven vehicles, or Level 5 automation vehicles for sale. Therefore, this is a good long-term reference point of ADAS adoption growth trajectory.

We assume penetration of Driver Assistance (Level 1) and Partial Automation (Level 2) to reach 30% and 20%, respectively, of new car sales in China by 2020 and Conditional Automation (Level 3) to reach 10% by 2025 (Figure 23). This is in line with the government's "Made in China 2025" roadmap. It is worthwhile noting that although fully autonomous driving still appears to be out of reach with the underlying technologies and components still under development, we believe the higher Level 2/Level 3 penetration is attainable based on existing technology levels. More importantly, reaching Level 2/Level 3 automation should provide strong ADAS demand growth opportunities to part suppliers, including sensor suppliers such as Joyson and Huayu.

Figure 23: Deutsche Bank proprietary model for China ADAS sensors market

	2016	2017	2018	2019	2020	2025	2030	2035
ADAS level mix (%)								
Level 0	70%	65%	60%	55%	50%	20%	0%	0%
Level 1	20%	23%	25%	28%	30%	40%	30%	10%
Level 2	10%	13%	15%	18%	20%	30%	40%	30%
Level 3						10%	20%	30%
Level 4							10%	20%
Level 5								10%
Local supplier market share (%)	*<5%*	*6%*	*9%*	*12%*	*15%*	*40%*	*50%*	*60%*
Number of new cars equipped with ADAS (m units)								
Level 0	19.6	19.0	18.2	17.1	16.0	7.0	0.0	0.0
Level 1	5.6	6.6	7.6	8.5	9.6	14.0	11.3	4.0
Level 2	2.8	3.7	4.6	5.4	6.4	10.5	15.0	12.0
Level 3	0.0	0.0	0.0	0.0	0.0	3.5	7.5	12.0
Level 4	0.0	0.0	0.0	0.0	0.0	0.0	3.8	8.0
Level 5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0
Total addressable market for ADAS sensors (USDm)								
Level 0	0	0	0	0	0	0	0	0
Level 1	897	1,032	1,167	1,284	1,417	1,868	1,357	436
Level 2	2,130	2,723	3,325	3,881	4,486	6,653	8,592	6,213
Level 3	0	0	0	0	0	3,677	7,122	10,300
Level 4	0	0	0	0	0	0	14,866	28,666
Level 5	0	0	0	0	0	0	0	14,333
Total market size for sensors (USDm)	**3,027**	**3,755**	**4,491**	**5,164**	**5,903**	**12,198**	**31,936**	**59,948**

Source: Deutsche Bank estimates

Level 4/5 automation will likely induce price jump, but upgrade to Level 2/3 already implies ample upside potential for 2017-25E

Based on our estimates, a Level 2 ADAS sensor system can cost c.USD700-800 per vehicle, while sensor content at Level 3 autonomous vehicles is c.USD1,000-1,500. Adding LiDAR to a Level 3 ADAS system could cost c.USD5,000 (Level 4/5). While we believe that we are a way off from seeing the rollout of Level4/5 automation vehicles, an upgrade from Level 1 to Level 2/3 already represents ample revenue upside potential for part suppliers, even with our assumption that component price could come down c.2% a year.

Figure 24: Deutsche Bank proprietary model for sensor content per vehicle

	Level 0	Level 1	Level 2	Level 3	Level 4	Level 5
ADAS sensor content per car (USD)	**0**	**160**	**760**	**1,260**	**5,260**	**5,260**
- HD Mapping	0	0	0	500	500	500
- Sensor-Camera	0	60	60	60	60	60
- Sensor-Ultrasonic sensor	0	100	100	100	100	100
- Sensor-Short/medium-range radar	0	0	400	400	400	400
- Sensor-Long-range radar	0	0	200	200	200	200
- Sensor-LiDAR	0	0	0	0	4,000	4,000
Number of ADAS sensors required (units)						
- HD Mapping	0	0	0	1	1	1
- Sensor-Camera	0	6	6	6	6	6
- Sensor-Ultrasonic radar	0	2	2	2	2	2
- Sensor-Short/medium-range radar	0	0	4	4	4	4
- Sensor-Long-range radar	0	0	1	1	1	1
- Sensor-LiDAR	0	0	0	0	2	2
ADAS sensors ASP (USD)						
- HD Mapping	0	0	0	500	500	500
- Sensor-Camera	0	10	10	10	10	10
- Sensor-Ultrasonic radar	0	50	50	50	50	50
- Sensor-Short/medium-range radar	0	0	100	100	100	100
- Sensor-Long-range radar	0	0	200	200	200	200
- Sensor-LiDAR	0	0	0	0	2,000	2,000

Source: Deutsche Bank estimates

Local suppliers to catch up with policy support

Local ADAS parts suppliers are mostly involved with entry-level low-value components at the moment, while a large slide of China's ADAS market is still dominated by foreign players, such as Bosch and Continental (CONG.DE, EUR198.4, Hold).

However, we believe local suppliers will catch up by 2020E and grab meaningful market share of c.15% in ADAS-related components. This will be mainly driven by "import substitution", in our view, similar to the current trend for traditional auto parts taking share from foreign brands.

In addition, policy support should help. As specified in "Made in China 2025" for intelligent and connected cars, the government has laid out a market share target for local parts suppliers for different ADAS components (Figure 25). This represents an opportunity for local suppliers since we estimate their current market share is below 5%, except for low-tech parts, e.g. rear-view camera. On

the other hand, there could also be challenges along the way, mainly because local parts suppliers are still relatively inexperienced vs. foreign brands in high-tech component R&D. Some possible solutions could include JVs with foreign peers and overseas M&A, and we will present some examples for Joyson and other featured suppliers.

Figure 25: Local parts suppliers' market share in ADAS

ADAS related parts	Local brand market share target (2025E)
Camera	80%
Radar/Lidar	40%
High precision positioning	60%
Car Infotainment System	70%
Remote communication module	60%
Close communication module	90%
Integrated control system	50%

Source: The State Council

Figure 26: Key strengths and weaknesses of local brand auto suppliers vs. foreign peers

Strengths
Generally leaner cost structure, especially for entry-level ADAS components, e.g. camera
Closer ties to Chinese local brand OEMs
Capability to sale ADAS in a module (e.g. Minth's plan to sell camera embedded in front grilles made by the company)
Weaknesses
Inexperienced in high-tech R&D
Lack of high-tech component supply track record

Source: Deutsche Bank

Companies involved

Key points

- We identified at least 30 companies listed below with direct exposure or plans in this area. However, most of these companies do not yet have scalable sales from ADAS-related business, and/or their related business contributes only a small portion of overall sales.
- As autonomous cars are viewed as the next generation computing platform and online traffic entrance, various internet giants are pouring resources into the autonomous driving field.
- Apart from local parts suppliers, we also observe that key global suppliers have also set up plans to test autonomous vehicles in China.

Locals still at low end

Among the ADAS/autonomous driving supply chain, we notice that most Chinese suppliers cluster in rear-view camera and parking radar sensors, which are at the low-end of the chain in terms of technology level. On the other hand, in the control and execution units, the market is still largely dominated by foreign players.

The Gasgoo expert also believes that major products of local ADAS component suppliers mainly focus on low-end hardware that is less technology intense, while the driving algorithm and processing capability are more crucial in autonomous vehicles and more value-added. However, it requires rich experience to integrate different control units into an autonomous system. In our view, foreign auto part suppliers possess better experience on these topics, given their much longer history in auto-related R&D and more extensive driving pattern database.

In addition, the expert comments that higher-level autonomous driving (i.e. Level 3-5) will take longer to hit the road in China than in some other countries. This is mainly due to China's road regulations and its complex road conditions and driving habits.

All in all, we feel that the fastest way for the more financially resourceful Chinese parts suppliers to catch up in the ADAS field is via overseas M&A or setting up joint entities with global suppliers. Such examples include:

- Joyson Electronics bought KSS to enter active safety;
- Huayu set up JV with Cammsys for front-view camera algorithm;
- Minth acquired SPTek and set up JV with Fujitsu to sell auto camera.

Many parts suppliers involved, but limited pure play

Within the autonomous driving supply chain are many listed companies involved in making various ADAS parts. We identify 30 companies in Figure 27-Figure 28 with direct exposure or plans in this area, along with brief business descriptions. However, investors should note that this list is by no means comprehensive. What is more, most of these companies do not yet have scalable sales from ADAS-related business, and/or their related business contributes only a small portion of overall sales.

Apart from these companies, we also highlight six other companies in the next section, as we believe that these companies (most of them being established in conventional auto components already) have a strong chance in becoming viable players in the ADAS market.

Internet giants present for autonomous driving algorithm/platform

As autonomous cars are viewed as the next generation computing platform and online traffic entrance, various internet giants are pouring resources into the autonomous driving field.

One notable example is Baidu (BIDU.OQ, USD187.53, Hold) with its Apollo plan unveiled in April. The Apollo open source plan is Baidu's attempt to build an algorithm platform for autonomous driving cars. It will share with partners its self-driving technologies that the companies started to invest in since 2015. In addition, Baidu is also one of the three high-precision mapping data providers in China for Bosch's autonomous driving solution.

Chinese car hauling service provider Didi set up an AI lab in California for their autonomous transportation system research.

We believe the algorithm for fully autonomous cars is still at its initial development stage. A large amount of road and traffic data still needs to be accumulated in order to test and improve the system. As these companies' self-driving car development is for smart car products that will be released a few years later, we are unlikely to see positive financial contribution from their initiatives for now.

Another thing to note is that some of the Chinese internet giants have already created tie-ups with local parts suppliers. For instance, Tencent (0700.HK, HKD272.8, Buy) is a stakeholder of NavInfo, while Baidu also utilizes mapping data by NavInfo.

Figure 27: Examples of major A/H/TW listed ADAS part suppliers in China with involvements in ADAS market

Company's full name	Name in Chinese	Ticker (Reuters)	Key business profile	Intelligent vehicle / ADAS-related business highlights/products
Tianjin Xinmao Science & Technology	鑫茂科技	000836.SZ	The company mainly engages in telecommunication software and equipment manufacturing	Invested in Nullmax, and aims to develop into autonomous driving (AD) technology
Shenzhen Deren Electronic	得润电子	002055.SZ	The company manufactures and markets electronic connectors used for home appliances.	Cooperates with Mobileye (MBLY.N) to jointly develop and promote ADAS, AD, connected car in China market
Qiming Information Technology	启明信息	002232.SZ	The company develops, manufactures, sells and supports software products. The company's main software products are used in auto industry management, manufacturing and individual auto drivers.	Focuses on development of intelligent driving, intelligent parking lot, green commuting, car-sharing, intelligent traffic network, intelligent logistics and intelligent lifestyle
Zhejiang Asia-Pacific Mechanical & Electronic	亚太股份	002284.SZ	The company manufactures automobile parts. The company produces brake drums, vacuum boosters, master and wheel cylinders, clutch operating and slave cylinders, and suspension parts.	Manufactures products that has ADAS features, i.e. ACC (Adaptive Cruise Control), AEB (Adaptive Cruise Control), LDWS (Lane Departure Warning System), and FCWS (Forward Collision Warning System). The company also cooperates with FAW VW on developing AD featured wire braking system.
Zhejiang Yongtai Technology	永太科技	002326.SZ	The company produces fluorine series pharmaceuticals, agrochemical and liquid crystals.	Signed strategic cooperation agreement with BAIC Capital to focus on connected car field
Wuhan Guide Infrared	高德红外	002414.SZ	The company develops, manufactures and sells infrared camera and thermal imaging systems. The company's products are used in surveillance equipment and medical inspection equipment.	Products with ADAS features
Guangdong Shenglu Telecommunication Tech	盛路通信	002446.SZ	The company develops, manufactures and sells communications antenna and radio frequency products. The company's products are communication base station antennas, high-performance microwave communication antennas, terminal antennas, radio frequency devices and radio frequency equipment.	Its subsidiary Shenzhen Hezheng Electronics (002446.SZ) manufactures CarPC and DA connected system, and it has set up a vision technology company (深圳市合正视觉科技有限公司) to develop ADAS system
ZYNP Corp	中原内配	002448.SZ	The company develops, manufactures and sells auto parts. The company's product is vehicle internal combustion engine cylinder liner.	Aims to enter into intelligent driving field and AD
Shenzhen O-film Tech	欧菲光	002456.SZ	The company manufactures precision optical thin-film components. The company's products include infrared cut-off filters and mirror block components, and flat panel touch screens.	O-film has product layout from sensors (cameras, radar), controller (high definition panoramic view systems, ADAS advanced auxiliary driving system), and so on. In the aspect of prospective such as emergency avoidance, automatic parking, low-speed following, high-speed unmanned etc.,
Zhejiang Jingu	金固股份	002488.SZ	The company is engaged in research, development, manufacture and distribution of steel wheels. The Company mainly operates through two segments. The Steel Wheels segment mainly provides steel wheels. The Automotive Aftermarket segment is mainly engaged in the automotive aftermarket Internet business.	Invested in Suzhou Invo, and aims to develop into radar automatic parking and cameras.
Zhejiang Vie Science & Technology	万安科技	002590.SZ	The company develops, manufactures and sells automotive brake systems. The company's main products are air brake valves, air disc brakes, air pressure ABS, vacuum boosters, hydraulic brake master cylinders, air brake proportioning valves, clutch booster etc.	Established a JV with Haldex to break into ADAS; Its wholly-owned subsidiary Vie Pump specializes in researching and developing EVP and hydraulic steering pump.
United Electronics	荣之联	002642.SZ	The company provides data centers of large and medium enterprises with system integration and related technical services. The company's main products include system integration and technical services.	The company has been building "cloud computing+big data" platform. Currently the revenue of car interconnectivity and technical services accounts for more than 50% of total revenue.
Shenzhen Soling Industrial	索菱股份	002766.SZ	The company manufactures and sells car informatics devices. The company integrates wireless communication, mobile networks, and satellite navigation into its devices. Soling is striving to become not only a hardware manufacturer but also a car network service provider.	Acquired Tricheer and Rock-chips to break into operational industrial chain for car interconnectivity. The company is investing in R&D for mm Radar and ADAS system.
Ningbo Shuanglin Auto Parts	双林股份	300100.SZ	The company develops and manufactures automobile spare parts and mold. The company's product include vehicle driver, car door, potentiometer.	The company invested RMB100mn to establish a foreign JV specializing in ADAS.
Leshi Internet Information & Technology Corp Beijing	乐视网	300104.SZ	The company researches and develops Internet video and mobile networking video technology. The company's service includes network infrastructure services and the services for video platform.	Leshi's LeDashCam (car recorder) has ADAS function.

Source: Deutsche Bank

Figure 28: Examples of major A/H/TW listed ADAS part suppliers in China with involvements in ADAS market (cont'd)

Company's full name	Name in Chinese	Ticker (Reuters)	Key business profile	Intelligent vehicle / ADAS-related business highlights/products
Beijing E-Hualu Information Technology	易华录	300212.SZ	The company operates intelligent transportation systems application and produces intelligent transport and professional security products and systems. The company also provides packaged solutions on police mobile systems and traffic information systems.	Signed i-Vista strategic co-operation to research on intelligent transportation and autonomous driving.
Hongli Zhihui Group	鸿利智汇	300219.SZ	The company operates as an appliance manufacturer. The company develops, produces, and sells LED products and other related items, and also operates in the internet of vehicles industry. Hongli Zhihui markets worldwide.	Acquired Shenzhen Suyi Network Technology and enter car interconnectivity field; The company also established JV for electric machine, electric control and autonomous driving.
Jiangsu Protruly Vision Technology Group	保千里	600074.SH	The company's main business is the development of electronic video products, design, production and sale of a wide range of product application and specific system including car camera, commercial video, special video, video security, video intelligence & apps for smartphones.	The company's active safety system has ADAS function including LDW/RCW and FCW. The company is a leader in night vision active safety system.
Shanghai Shenhua Holdings	申华控股	600653.SH	The company is an investment holding company. Through its subsidiaries, the company trades automobiles, manufactures motor vehicle parts, and develops real estate. The company also has operation in travel and food and entertainment industry.	The company has car inter connectivity function.
Neusoft Corp	东软集团	600718.SH	The company designs, develops, licenses, and supports a variety of computer software products, and provides system integration solutions. The company also provides medical systems solutions.	The company provides a variety of products for ADAS including anti-collision warning and lane assistance.
Changzhou Xingyu Automotive Lighting Systems	星宇股份	601799.SH	The company develops, produces and sells automotive lightings. The company produces headlamps, rear combination lamps, fog lights, warning triangle and other automotive lamps.	The company developed ADB Intelligent Light to strengthen image recognition capability at night for ADAS system.
TUS International	启迪国际	0872.HK	The company is principally engaged in the design, research and development, manufacture and sale of automotive electronic products and automotive safety spare parts, the premium car (including classic car) trading business, investment business in property, and automobile financial leasing businesses in China	Invested in Suzhou Invo, and aims to break into ADAS.
Zhejiang Shibao	浙江世宝	1057.HK	The company develops, designs, manufactures and sells Automobile Steering and steering system parts. The company's main products are Hydraulic power recirculating ball steering and steering boosters, Rack & pinion steering, and Control Valves.	The company's automated steering products will be used in autonomous driving.
MediaTek Inc	联发科	2454.TW	The company is a fabless semiconductor company for wireless communications and digital multimedia solutions. The company provides SOC system solutions for wireless communications, high-definition TV, optical storage, DVD and Blu-ray products.	The company has been investing heavily in telematics, infotainment and safety ADAS.
Innodisk Corp	宜鼎国际	5289.TW	The company's business includes the manufacturing of Embedded Memory such as Flash module IDE 40/44pin, Industrial CF, 2.5 inch SSD, Embedded USB Storage, SATADOM, Industrial DRAM Module and Information Appliance such as USB Drive, Flash Card.	The company has developed storage plan for Internet of Vehicle and ADAS.
Etron Technology Inc	钰创科技	5351.TW	The company develops, manufactures and markets fabless memories. The company's products include synchronous dynamic random access memory(SDRAM), synchronous graphics random access memory(SGRAM), wide bus fast page mode(FPM), extended data out(EDO) DRAM, and high speed synchronous and asynchronous static random access memory(SRAM).	The company's RAM products have been authorized by Japan OEMs, entering ADAS field.
Weltrend Semiconductor	伟诠电	2436.TW	The company develops, manufactures, tests, and markets integrated circuits (ICs).	The company has a series of products under developments for other ADAS functions such as BSD, LDW, Moving-Object Detection (MOD), Active High Beam (AHB), and etc.
Winbond Electronics Corp	华邦电子	2344.TW	The company designs, manufactures, and sells integrated circuits (IC) and related products. The company sells its products in Taiwan, the United States, and Hong Kong.	The company is the top.10 electric RAM supplier globally.
Integrated Service Technology Inc	宜特	3289.TW	The company provides verification and quality assurance services for IC (integrated circuit) components and modules. The company's customers are mainly IC design companies.	The company is expanding its ADAS business and entering authentication services for vehicle modules.
Macronix International	旺宏	2337.TW	The company. designs, manufactures, and markets integrated circuits (ICs) as well as memory products. The company's products include nonvolatile memory integrated circuits, mask ROM (Read Only Memory), EPROM (Erasable Programmable ROM), and flash memory products. Macronix also produces logic ICs for audio, clock generators, and graphic application devices.	The company is a major supplier for flash memory products for ADAS.

Source: Deutsche Bank

Foreign companies also making big plans for China market

Apart from local parts suppliers, we also observe that key global suppliers have also set up plans to test autonomous vehicles in China and add capacities for mass production when the market is ready.

For instance, Delphi Automotive (DLPH.N, USD88.2, Buy) demonstrated its autonomous vehicle solutions in April this year in Shanghai. The system is built on the CSLP platform (capable of Level 4-5 automation), co-developed with Mobileye (MBLY.N, USD61.82, Buy). According to Delphi, the company will build a local R&D team in Suzhou, Jiangsu province, for its autonomous solution localization. In the meantime, a local production plant is also under planning.

In April, Bosch (private) announced in Suzhou that it had teamed up with Baidu, AutoNavi and NavInfo to co-develop a high-definition map, an essential element for autonomous driving. Through the cooperation, Bosch will build a cloud platform to store the data gathered from its cameras and radars on vehicles and the three mapping companies can use the data for road updates. Apart from this project, Bosch has also set up a testing center for active safety and ADAS functions in Lianyungang, Jiangsu province.

For a more detailed discussion on global auto parts suppliers' development on autonomous driving initiatives, please refer to our global auto team's FITT report "*Pricing the Car of Tomorrow, Part II: Autonomous Vehicles, Vehicle Ownership, and Transportation*", dated 28 March 2016.

Stock implications

Key points

- We believe the market typically values Chinese auto part supplier stocks on a forward P/E basis relative to the stocks' EPS growth outlook and historical P/E trading range. Therefore, we base our target prices on a P/E basis.
- Our top Buys are Nexteer and Joyson.

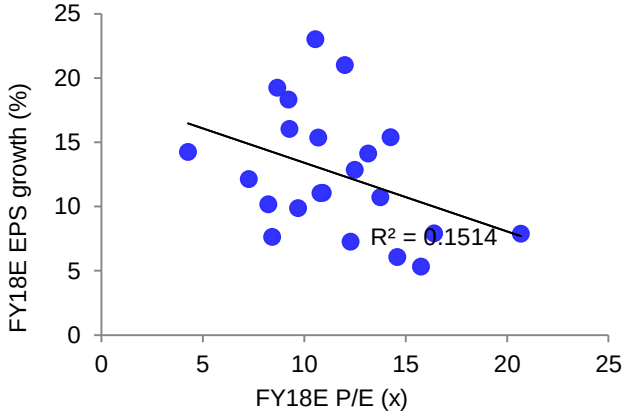
Generally positive correlation between P/E and growth

We compare Chinese auto part supplier stocks on a forward P/E basis relative to the stocks' EPS growth outlook and historical P/E trading range. We believe that P/E is an appropriate metric to value Chinese auto part supplier stocks in general because the sector is still in a growth phase, and investors are likely to focus on suppliers' near- to medium-term earnings momentum.

Global auto parts suppliers are trading in a wide valuation range of 4-43x FY18E P/E (Figure 29 and Figure 30). We also see a wide spectrum of earnings growth for these component manufacturers regardless of where they are based (i.e., in developed markets or emerging markets). In general, we find a positive correlation between P/E and forward earnings growth. In other words, suppliers with better growth prospects should theoretically command a higher P/E ratio vs. peers.

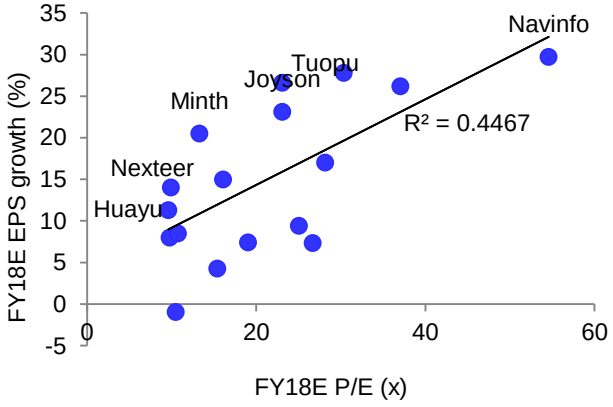
The average FY18E P/E for global peers in each major region ranges from 10-19x (excluding outliers), with FY18E earnings growth ranging from 11-19%.

Figure 29: Europe/US auto parts suppliers – 2018E P/E vs. EPS growth



Note: Excluding outlier for US
Source: Bloomberg Finance LP, Deutsche Bank estimates

Figure 30: Asia auto parts suppliers – 2018E P/E vs. EPS growth



Note: Excluding outlier for China
Source: Bloomberg Finance LP, Deutsche Bank estimates

Top Buys are Nexteer and Joyson

Considering the growth prospects, particularly in the ADAS area, and valuation, our top Buys are Nexteer and Joyson. Nexteer has been a leading global steering system supplier, and the company has also set up a JV with Continental (CONG.DE, EUR198.4, Hold) to develop steering-related ADAS. Joyson started as a local auto parts producer, but has expanded its product portfolio through a series of overseas M&As. The company is now also involved in auto electronics and ADAS, and we believe that further consolidation of the acquired business will enhance its earnings outlook.

Figure 31: China auto part suppliers featured in this report – exposure to ADAS

Company	ADAS category		
	Sensor layer	Control layer	Execution layer
Joyson	√ (camera)	√ (human machine interface, etc.)	√ (active safety)
Tuopu			√ (braking)
Minth	√ (camera)		
Nexteer			√ (steering)
NavInfo	√ (mapping)		
Huayu	√ (radar)		

Source: Deutsche Bank

For more details on each company's valuation, please refer to the initiation reports of these companies.

Nexteer (1316.HK)

Nexteer ranks third globally in the field of electronic power steering (EPS) with a very strong track record based on its history as part of GM and then Delphi. The shift in focus from hydraulic to electronic systems and an increased proportion of revenue from China has consistently raised margins from 11% to 17%, while maintaining its record of a high ROE. Current operations will generate 14% earnings CAGR in FY16-19E and with a wider customer and geographic business mix plus new business solutions in the ADAS field can support a 12x multiple. We initiate coverage with a Buy rating and a target price of HKD14.6.

Our TP is set at a target 12.0x FY18E P/E. We expect Nexteer to deliver a 14% three-year earnings CAGR in FY16-19E, driven by solid EPS growth. We are optimistic on the company's growth potential in ADAS-related products. Key downside risks: weaker-than-expected global auto sales; revenue dependency on GM and unexpected increases in raw material prices.

Joyson (600699.SS)

Since 2009, Ningbo Joyson has committed to a series of acquisitions which have transformed its business mix away from functional parts to higher growth areas in safety equipment and Human-Machine Interaction (HMI) products. Over 70% of revenue is derived from these deals and this will continue to generate the major share of future earnings growth. Key Safety Systems (KSS), the fourth ranked global airbag manufacturer is the most important addition and will drive our forecast of 34% EPS CAGR for 2016-19E. Integration has been successful to date and opens up new potential markets in ADAS and safety products. We initiate coverage with a BUY and RMB35.0 target price.

Our target price is set at 27.0x FY18E P/E. We expect Joyson to deliver a 34% FY16-19 EPS CAGR driven by robust growth at Preh and the consolidation of KSS, with a margin improvement. Key downside risks: weaker-than-expected auto sales; failure to consolidate KSS/TS; future capital raising to fund potential M&As; unexpected increase in raw material prices.

Minth (0425.HK)

Minth, one of the world's leading auto trim and body parts suppliers, has consistently seen robust new order intake and order backlog. We expect Minth to deliver a solid 19% EPS CAGR in FY17-19 based on strong growth of aluminium products, an improving product mix and a secure order backlog of RMB79bn. Looking ahead, we anticipate new business initiatives related to ADAS cameras and new energy vehicles given Minth's strong integration capabilities. We are initiating coverage on the company with a Buy rating and a target price of HKD36.7.

We have a target PE of 15x, supported by EPS growth of 19%.This is above the stock's historic multiple on account of both improving earnings mix and the potential from diversification into new product areas. Key downside risks: weaker-than-expected auto sales affecting demand for auto parts and unexpected increase in raw material prices.

Tuopu (601689.SS)

Tuopu is a leader in China's Noise, Vibration and Harshness (NVH) market and is a main supplier to Geely. New initiatives in ADAS/autonomous driving will start to feature from 2018 with Intelligent Braking System (IBS) products currently at the testing stage with JV OEMs. This diversification will be funded with RMB2.4bn from a private placement to build capacity and mass production will begin in late FY18. We estimate it should deliver a 24% FY16-19E net profit CAGR, mainly driven by robust growth momentum in NVH and IBS/Electric Vacuum Pump (EVP) projects in FY19E. We initiate with a Buy and RMB35.4 target price.

Our TP is set at a target 26.0x FY18E P/E, on par with the historical average. We expect Tuopu to deliver a 24% FY16-19E profit CAGR, driven by robust growth in NVH products and a stable margin outlook. Key downside risks: failure to record new order awards for IBS/EVP products; weaker-than-expected auto sales and unexpected increases in raw material prices.

NavInfo (002405.SZ)

NavInfo's appeal lies in three key areas. First, its 40% share in pre-installed navigation system, a high margin but maturing business, along with its ongoing investment in HD mapping. Second, is the recent RMB3.9bn acquisition of Jiefa which supplies SoC solutions for infotainment systems. Thirdly, is its position as an investment within Tencent group. While we see consistent growth of 7% for the former operation and the major contribution that Jiefa already generated, the RMB18bn market cap and 2018 PER of over 50x is above our expectations for developments in the ADAS field on a 2-3 year time horizon and we initiate coverage with a SELL and RMB14.9 valuation.

Our target price is set at 45x FY18E P/E. We expect NavInfo to deliver a 39% FY16-19 EPS CAGR, driven by the consolidation of Jiefa and growth in the connected car business, but offset partly by heavy investment in ADAS projects. Key upside risks: stronger-than-expected China auto sales and faster-than-expected growth from Jiefa.

Huayu (600741.SS)

Huayu is one of China's largest auto parts suppliers by market cap and the world's leading auto interior trim supplier. The interior and exterior trims segment is the largest earnings contributor, accounting for 44% of net profit in FY16 (including JV contribution). We think that the stable sales growth outlook at SAIC (600104.SS, Hold, CNY30.09) will continue to ensure a solid revenue source for Huayu in FY17-19E. In addition, the expanding overseas sales of its interior trim subsidiary Yanfeng should provide an additional growth driver.

Despite limited near-term contribution, Huayu's preparation in ADAS will sustain its competitiveness longer term, in our view. Huayu has been investing in ADAS related fields since 2011-12. The ADAS R&D centre plans to tap the market through radar and sensor fusion systems. While Huayu hasn't teamed up with any OEMs at the moment for the development of ADAS, the company will start delivering low-frequency radars to one of its customers in 2017 on a small scale, i.e. very limited revenue contribution.

We raise our FY17-19E revenue by 0.0-2.3% to reflect stronger-than-expected overseas revenue growth. Together with slightly higher margin assumptions, we lift our FY17-19 earnings forecasts by 2.2-3.1%. Our TP of RMB24.3 is based on 10.5x FY18E P/E (rolling forward from 10.0x FY17E P/E), about 12% below Huayu's mid-cycle P/E of 12x. This is supported by a 12.0% FY16-19E three-year EPS CAGR. We maintain Buy given attractive FY18E P/E of 9.6x and 5.5% FY18E dividend yield. Key downside risks: weaker-than-expected auto sales volume, an inability to acquire new customers and market share loss.

Figure 32: Valuation of major Chinese automotive component manufacturers (as of 8 June 2017)

Name	Ticker	DB Rating	TP	Price	Mkt cap	PE (x)		EPS growth (%)		P/BV (x)		EV/EBITDA (x)		ROE (%)	
			Local	Local	USDm	2017	2018	2017	2018	2017	2018	2017	2018	2017	2018
China/HK															
Huayu	600741.SS	Buy	24.30	22.17	10,288	10.7	9.6	14.2	11.3	1.67	1.51	3.9	3.6	17.4	17.5
Joyson	600699.SS	Buy	35.00	29.93	4,182	28.4	23.1	60.4	23.1	2.06	1.88	8.7	7.1	7.5	8.5
Minth Group	0425.HK	Buy	36.70	33.00	4,786	16.0	13.3	18.6	20.5	2.74	2.42	11.5	9.2	18.3	19.6
Nexteer	1316.HK	Buy	14.60	11.98	3,845	11.3	9.9	15.9	14.0	2.86	2.31	6.0	5.1	28.5	26.0
NavInfo	002405.SZ	Sell	14.90	18.06	2,835	70.9	54.6	85.0	29.7	3.39	3.24	49.4	34.8	6.6	6.1
Tuopu	601689.SS	Buy	35.40	31.46	3,006	29.3	23.1	13.2	26.6	3.64	3.28	17.7	14.3	15.5	14.9
Weichai Power	2338.HK	Sell	10.60	12.20	6,259	16.0	15.4	8.6	4.3	1.27	1.22	5.0	4.7	8.1	8.1
Fuyao Glass	3606.HK	Hold	27.00	31.30	10,074	20.5	19.0	22.4	7.4	3.59	3.27	12.1	11.1	18.0	18.0
Xinyi Glass	0868.HK	Hold	6.50	7.82	3,935	10.4	10.5	-2.3	-1.0	1.92	1.75	8.7	8.4	20.0	17.9
Fuyao Glass-A	600660.SS	NR	n.a.	24.87	9,630	18.5	16.1	11.7	15.0	3.2	3.0	11.7	10.0	18.5	18.6
Weifu High-Tech	000581.SZ	NR	n.a.	22.53	3,195	11.7	10.8	18.1	8.5	1.6	1.4	19.9	18.7	14.4	13.9
Unweighted average						**22.1**	**18.7**	**24.2**	**14.5**	**2.5**	**2.3**	**14.1**	**11.5**	**15.7**	**15.4**

Source: Company data, Bloomberg Finance LP, Deutsche Bank estimates

Sector risks

Upside risks – rapid adoption of ADAS and scale effects

While we anticipate a 16% 2016-35E CAGR for the China ADAS market, there is always upside potential driven by factors such as technology advancement and competition amongst OEMs to include as many ADAS features as possible.

If ADAS demand is stronger than expected, the consequent scale effect could also help to lower the price of ADAS components and/or enhance suppliers' margins. Reduction in ADAS component price could also further drive ADAS penetration.

Downside risks – slow pick-up in ADAS penetration

ADAS sales could also grow below our expectations if OEMs believe that the features are not essential to attract customers, and if ADAS component prices are high. There are also risks of local suppliers' inability to catch up with global peers, and risk of sudden change in technology direction (which could lead to waste of R&D and sudden loss in market share).

Heavy investment and competition could erode margins

As mentioned in the previous section, we believe autonomous driving is still at its initial development stage in China, and that it requires heavy investment in early stage R&Ds without near-term meaningful revenue contribution.

In addition, traditional auto parts suppliers and internet companies are involved in the development of autonomous driving, with even more new products to come out from non-traditional players.

As such, hefty R&D investment and crowding in the products space could lead to margin pressure before production costs are able to come down.

Other general risks for the auto part sector

Volatility in raw material prices and availability of materials

Raw materials and components are major risks on the cost side. Even though the company may be able to pass some of the raw material price increases on to OEMs, we believe the chance of a comprehensive and effective pass-through is limited, given market competition and the time lag in passing through.

Labor cost increase

In recent years, average salaries in China have been increasing at 10% or more annually, in our estimates. In the event of future labor shortages, parts suppliers may have difficulty recruiting or retaining labor for production facilities or may face increasing labor costs. If they fail to mitigate the labor cost increase by any means, such as an appropriate level of automation, or if the labour cost increases faster than expected, that would represent worse-than-expected margin pressure.

Risks to auto parts exports to the US

While Chinese auto manufacturers' production and sales are highly localized, auto part suppliers' business is more global, with either export sales from China or component production facilities overseas. As many suppliers have export sales to the US and/or have production facilities in Mexico for sales to the US, trade tension triggered by the upcoming new US government would imply downside risk to sales.

Weaker-than-expected auto sales

We expect China passenger vehicle (PV) sales YoY growth to grow mildly in 2017E, despite a high base, on improving macroeconomic development. Should the macro environment improve more slowly than we expect, thereby depressing consumption sentiment, we could see downside potential to PV sales growth, and hence demand growth for auto components.

Rating
Buy

Asia
China

Automobiles & Components

Company
Nexteer Automotive

Reuters	Bloomberg
1316.HK	1316 HK

Price at 9 Jun 2017 (HKD)	12.20
Price target - 12mth (HKD)	14.60
52-week range (HKD)	13.20 - 6.88
HANG SENG INDEX	26,063

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Next steps into ADAS solutions; initiate as BUY

Leading steering supplier with increasing ADAS focus

Nexteer ranks third globally in the field of electronic power steering (EPS) with a very strong track record based on its history as part of GM and then Delphi. The shift in focus from hydraulic to electronic systems and an increased proportion of revenue from China has consistently raised margins from 11% to 17%, while maintaining its record of a high ROE. The current operations will generate 14% earnings CAGR in FY16-19E and with a wider customer and geographic business mix plus new business solutions in the ADAS field can support a 12x multiple. We initiate coverage with a Buy and a TP of HKD14.6.

Dedicated steering supplier with rising EPS and China contribution

Steering is the largest revenue contributor, accounting for 83% of FY16 revenue. Nexteer has been shifting focus from hydraulic power steering (HPS) to EPS amid an increasing requirement for improved fuel economy globally. EPS contributed 62% to total revenue in FY16 (FY11: 34%), while HPS revenue accounted for only 5% vs. 24% in FY11. Revenue from GM fell from 54% in FY14 to 42% in FY16. Meanwhile, China's contribution was up from 16% in FY14 to 22% in FY16, driven by increasing EPS penetration, to 60-70% from 30-40% a few years ago.

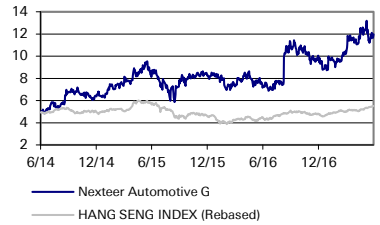
EPS solutions for ADAS and automated driving for new business expansion

Nexteer has focused on the development of ADAS solutions by introducing in-house-developed ADAS products and cooperating with leading global companies in the autonomous driving field. While near-term revenue or earnings contribution will be limited, we believe this will translate into Nexteer's backlog in FY17-19E and further enhance long-term earnings growth.

Initiating with Buy and target price at 12x FY18E P/E; risks

Our TP of HKD14.6 is set at a target 12.0x FY18E P/E. We expect Nexteer to deliver a 14% three-year earnings CAGR in FY16-19, driven by solid EPS growth. We are optimistic on the company's growth potential in ADAS-related products. Downside risks: weaker-than-expected global auto sales; revenue dependency on GM and unexpected increases in raw material prices.

Price/price relative



Performance (%)	1m	3m	12m
Absolute	-0.8	16.2	70.6
HANG SENG INDEX	4.7	10.9	22.4

Source: Deutsche Bank

Forecasts And Ratios

Year End Dec 31	2015A	2016A	2017E	2018E	2019E
Sales (USDm)	3,360.5	3,842.2	4,287.7	4,636.7	4,945.9
EBITDA (USDm)	455.4	578.1	651.8	733.7	808.1
Reported NPAT (USDm)	205.4	294.7	342.8	390.8	439.6
Reported EPS FD (USD)	0.08	0.12	0.14	0.16	0.17
DB EPS FD (USD)	0.08	0.12	0.14	0.16	0.17
DB EPS growth (%)	27.1	43.3	15.9	14.0	12.5
PER (x)	12.4	9.4	11.5	10.1	8.9
EV/EBITDA (x)	6.1	5.0	6.1	5.2	4.5
DPS (net) (USD)	0.02	0.02	0.03	0.03	0.04
Yield (net) (%)	1.6	2.1	1.8	2.0	2.2

Source: Deutsche Bank estimates, company data

[1] DB EPS is fully diluted and excludes non-recurring items

[2] Multiples and yields calculations use average historical prices for past years and spot prices for current and future years, except P/B which uses the year end close

Model updated: 05 June 2017

Running the Numbers

Asia

China

Auto/Motor Vehicle

Nexteer Automotive Group Limited

Reuters: 1316.HK Bloomberg: 1316 HK

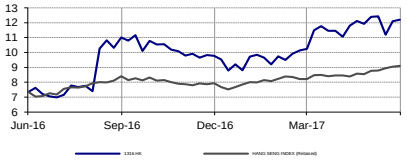
Buy

Price (9 Jun 17)	HK$ 12.20
Target price	HK$ 14.60
52-week Range	HK$ 6.88 – 13.20
Market Cap	HK$ 30,522m
	US$ 3,914m

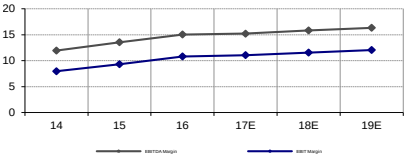
Company Profile

Nexteer Automotive principally engaged in the design and manufacture of steering and driveline systems and components for automobile manufacturers and other automotive-related companies. Its products mainly include electric power steering, hydraulic power steering, steering columns and intermediate shafts, front wheel drive half shafts, intermediate drive shafts, rear wheel drive half shafts and propeller shaft joints.

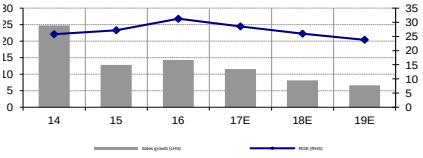
1yr Price Performance



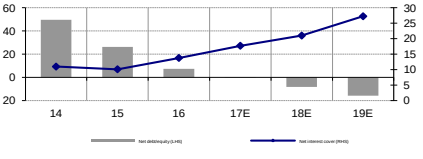
Margin Trends



Growth & Profitability



Solvency



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Fiscal year end 31-Dec	2014	2015	2016	2017E	2018E	2019E
Financial Summary						
DB EPS ($)	0.06	0.08	0.12	0.14	0.16	0.17
Reported EPS ($)	0.06	0.08	0.12	0.14	0.16	0.17
DPS ($)	0.01	0.02	0.02	0.03	0.03	0.04
BVPS ($)	0.27	0.33	0.42	0.54	0.67	0.81
Weighted average shares (m)	2,498	2,498	2,500	2,502	2,502	2,502
Average market cap (US$m)	1,787	2,538	2,778	3,914	3,914	3,914
Enterprise value (US$m)	2,162	2,790	2,889	3,956	3,819	3,641
Valuation Metrics						
P/E (DB) (x)	11.1	12.4	9.4	11.5	10.1	8.9
P/E (Reported) (x)	11.1	12.4	9.4	11.5	10.1	8.9
P/BV (x)	3.04	3.29	2.80	2.91	2.35	1.93
FCF Yield (%)	nm	7.7	8.2	4.2	6.2	7.4
Dividend Yield (%)	1.8	1.6	2.1	1.8	2.0	2.2
EV/Sales (x)	0.73	0.83	0.75	0.92	0.82	0.74
EV/EBITDA (x)	6.1	6.1	5.0	6.1	5.2	4.5
EV/EBIT (x)	9.1	8.9	7.0	8.3	7.1	6.1
Income Statement (US$m)						
Sales revenue	2,978	3,361	3,842	4,288	4,637	4,946
Gross profit	420	545	662	750	835	915
EBITDA	356	455	578	652	734	808
Depreciation	119	142	163	177	198	212
Amortisation	0	0	0	0	0	0
EBIT	237	313	415	475	536	596
Net interest income(expense)	-22	-31	-30	-27	-26	-22
Associates/affiliates	-1	1	1	1	1	1
Exceptionals/extraordinaries	0	0	0	0	0	0
Other pre-tax income/(expense)	0	0	0	0	0	0
Profit before tax	215	283	386	449	511	575
Income tax expense	51	73	84	99	112	127
Minorities	2	5	7	7	8	9
Other post-tax income/(expense)	0	0	0	0	0	0
Net profit	161	205	295	343	391	440
DB adjustments (including dilution)	0	0	0	0	0	0
DB Net profit	161	205	295	343	391	440
Cash Flow (US$m)						
Cash flow from operations	254	468	509	486	538	587
Net Capex	-272	-274	-283	-322	-297	-297
Free cash flow	-18	194	227	164	241	290
Equity raised/(bought back)	0	0	0	0	0	0
Dividends paid	-4	-33	-40	-59	-69	-78
Net inc/(dec) in borrowings	341	-91	-80	7	-47	-86
Other investing/financing cash flows	-252	-33	-39	-28	-27	-24
Net cash flow	66	37	68	84	98	101
Change in working capital	*-45*	*69*	*19*	*-69*	*-87*	*-99*
Balance Sheet (US$m)						
Cash and other liquid assets	380	417	484	569	667	768
Tangible fixed assets	626	685	779	886	953	1,012
Goodwill/intangible assets	344	408	450	488	520	547
Associates/investments	0	0	0	0	0	0
Other assets	872	947	980	1,116	1,244	1,386
Total assets	2,222	2,457	2,693	3,058	3,383	3,712
Interest bearing debt	731	642	564	571	524	438
Other liabilities	783	961	1,038	1,105	1,147	1,192
Total liabilities	1,514	1,602	1,602	1,676	1,671	1,630
Shareholders' equity	684	827	1,059	1,343	1,665	2,027
Minorities	24	27	32	39	47	56
Total shareholders' equity	708	854	1,091	1,382	1,712	2,083
Net debt	*351*	*225*	*80*	*3*	*-142*	*-330*
Key Company Metrics						
Sales growth (%)	24.8	12.8	14.3	11.6	8.1	6.7
DB EPS growth (%)	10.5	27.1	43.3	15.9	14.0	12.5
EBITDA Margin (%)	11.9	13.6	15.0	15.2	15.8	16.3
EBIT Margin (%)	8.0	9.3	10.8	11.1	11.6	12.1
Payout ratio (%)	20.0	20.0	20.0	20.0	20.0	20.0
ROE (%)	25.8	27.2	31.2	28.5	26.0	23.8
Capex/sales (%)	9.4	8.3	7.4	7.6	6.5	6.1
Capex/depreciation (x)	2.3	2.0	1.8	1.8	1.5	1.4
Net debt/equity (%)	49.5	26.3	7.3	0.2	-8.3	-15.8
Net interest cover (x)	11.0	10.1	13.8	17.7	21.0	27.2

Source: Company data, Deutsche Bank estimates

Investment Thesis

Leading steering supplier with increasing ADAS focus

Nexteer ranks in electric power steering (EPS) globally in terms of market share. The steering business is the largest revenue contributor, accounting for 83% of FY16 revenue. Over time, Nexteer has been shifting its focus from HPS to EPS, amid higher emission standards and an increasing requirements for improved fuel economy globally and by 2016, EPS accounted for 62% of total revenue.

General Motors (GM.N, Hold, USD34.34) has been Nexteer's largest client, driving stable growth for Nexteer for many years. However, Nexteer has become less dependent on GM. The revenue contribution from GM has reduced from 53.9% in FY14 to 42.0% in FY16. Meanwhile, China's contribution has risen from 15.7% in FY14 to 22.3% in FY16.

Nexteer has been focusing on the development of ADAS solutions by introducing in-house-developed ADAS products (such as "Steering on Demand" and "Quiet Wheel Steering") and cooperating with global leading companies in the autonomous driving field (such as Google and Continental). While the near-term revenue or earnings contribution may be limited, we believe that this should translate into Nexteer's backlog in FY17-19E and further enhance long-term earnings growth.

We expect Nexteer to deliver 8.8% FY16-19E revenue CAGR and 14.3% earnings CAGR, driven by robust growth in EPS products. We expect gross margin to remain on a mild expanding trend to 17.5-18.5% in FY17-19E from 17.2% in FY16. As a result, we estimate a stable net profit margin of 8.0-8.9% in FY17-19.

Risks

Key downside risks include: (1) weaker-than-expected China and US auto production, affecting demand for auto components; (2) a dependent relationship with GM; (3) the inability to gain new customers; (4) any market share loss at Nexteer's clients; and (5) an unexpected increase in raw material prices.

Steering towards EPS and ADAS technology

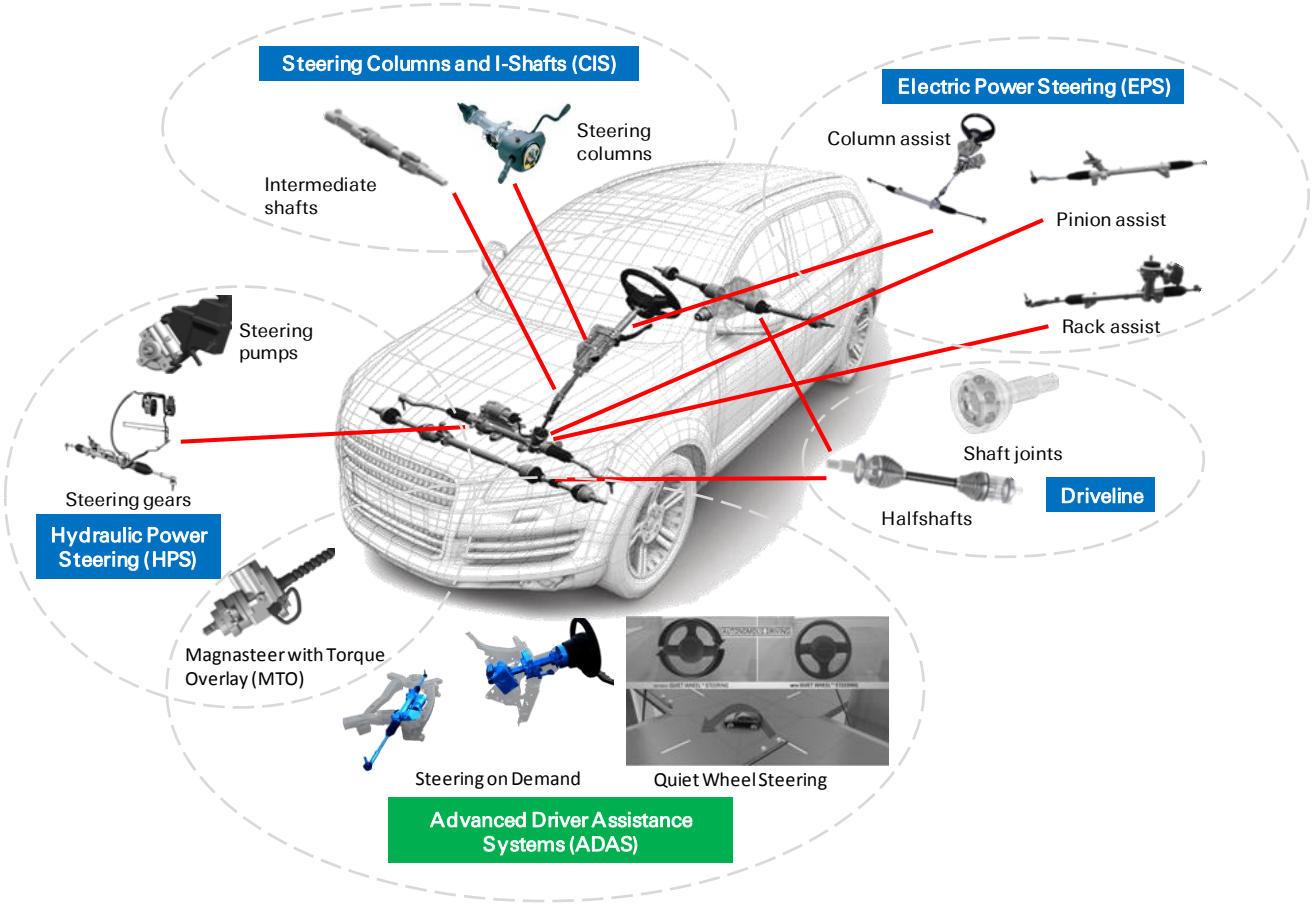
Key points

- Nexteer has focused on the steering business since its establishment. Over time, it has shifted its focus from hydraulic power steering (HPS) to Electric power steering (EPS).
- EPS sales accounted for 62% of total revenue in FY16 (FY11: 33.9%), while HPS revenue accounted for only 4.9% vs. 24% in FY11.
- As of the end of 1Q17, 72% of the total USD26.2bn backlog was from EPS programs. We believe this will ensure steady sales growth for Nexteer in FY17-19E.
- Nexteer is becoming less dependent on GM. The revenue contribution from GM fell from 53.9% in FY14 to 42.0% in FY16. Meanwhile, China's contribution rose from 15.7% in FY14 to 22.3% in FY16.
- Nexteer has been focusing on the development of ADAS solutions. While the near-term revenue or earnings contribution would be limited, we believe that this will translate into Nexteer's backlog in FY17-19 and further enhance long-term earnings growth.

Shifting business focus to EPS from HPS

Nexteer is a leading global auto parts supplier, which is primarily involved in advanced steering and driveline systems. Its main products include EPS, HPS, steering columns, driveline and halfshafts.

Figure 33: Nexteer – core business and major product portfolio and key technologies



Source: Company data, Deutsche Bank

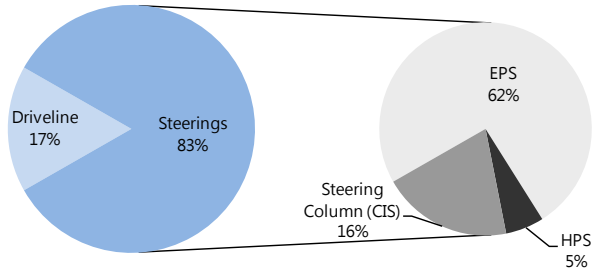
Figure 34: Nexteer – features of major products and its application

Key products	Features	Applied make/model
Steering		
Electric power steering (EPS)	**Uses an electric motor to assist driver steering**	
Column-assist EPS (CEPS)	Integrates system electronics (motor, controller and sensor) and the assist mechanism with the steering column	GM: various small cars, such as the Aveo SAIC GM: Sonic and the Captiva SUV FCA: various small cars such as the Fiat 500
Brush motor column-assist EPS (BEPS)	A type of CEPS, mainly for entry-level vehicles and emerging markets	SGMW: Wuling Hongguang S minivan SGMW: Bao Jun 560 SUV
Rack-assist EPS (REPS)	Integrates the required electric assist mechanism with the steering rack	Ford: F-150 pickup truck FCA: Ram pickup truck GM: various half-ton trucks and SUVs
Single pinion-assist EPS (SPEPS)	Integrates the electric assist mechanism with the steering gear pinion shaft	PSA: Citroen C3 and DS3 Dongfeng PSA: Citroen C-Elysee and the Peugeot 2008 BMW: 1-series, the i3 and the Mini Cooper line
Hydraulic power steering (HPS)	**Uses high pressure fluids to assist driver steering**	**FCA; GM; and PSA**
Magnasteer with Torque Overlay (MTO)	Consists of an HPS gear equipped with an integrated electromagnetic actuator with ADAS features	Exclusively on GM three-quarter ton trucks: the GMC Sierra; and the Chevrolet Silverado.
Steering columns and intermediate shafts (CIS)	**Connect the steering wheel to the steering mechanism**	**GM: various full-size trucks and large vans**
		GM Chevrolet: Impala and the all new Camaro GM Cadillac: ATS Ford: F-150 pickup trucks
Driveline systems	**Transfer power from the transmission and deliver it to the drive wheels**	
Halfshafts	Transmits torque at constant velocity from the transmission to drive wheels	FCA; GM; PSA; Volkswagen and a number of China and India domestic OEMs
Intermediate drive shafts	Works in conjunction with the halfshafts to improve vehicle handling and eliminate driveline disturbance issues on front wheel drive vehicle, with unequal length axles, higher torque and running angles	GM: various crossover utility vehicles
Propeller shaft joints	Complete propeller shaft assembly that transmits torque from the transmission or transfer case to the front and rear axles	Ford: Taurus, Flex and Fusion
Advanced driver assistance systems (ADAS) and automated driving (AD)		
Steering on Demand System	Enables the transition between driver and automated driving control; capable of SAE Level 3, Level 4 and Level 5 automated driving.	Development contract with several existing customers and potential new target customers
Quiet Wheel Steering	Modifies the steering wheel rotation when a vehicle completes an automated directional change	Development contract with several existing customers and potential new target customers

Source: Company data, Deutsche Bank

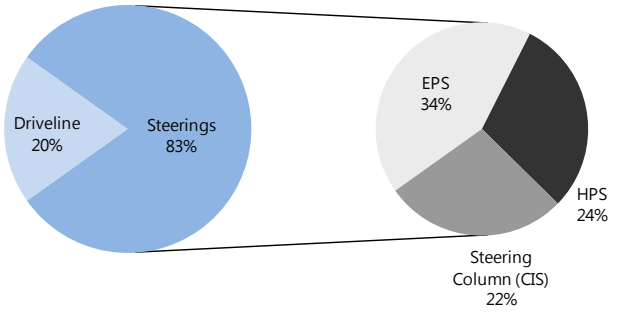
The company has been shifting focus from HPS to EPS over the years, amid higher fuel emission standards and an increasing requirement for improved fuel economy globally. Indeed, Nexteer's revenue from EPS sales accounted for 62.0% of total revenue in FY16, up from 33.9% in FY11, while revenue from HPS accounted for only 4.9% of total revenue, vs. 24.0% in FY11.

Figure 35: Nexteer – revenue breakdown by segment (2016)



Source: Company data

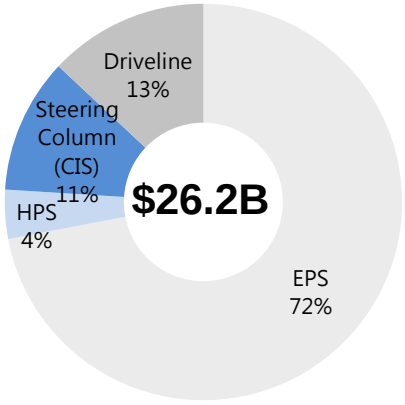
Figure 36: Nexteer – revenue breakdown by segment (2011)



Source: Company data

Meanwhile, as of the end of March-17, 72% of Nexteer's total USD26.2bn backlog (order to delivery) was from EPS programs (c.USD18.9bn). We believe this will ensure steady sales growth for Nexteer in FY17-19.

Figure 37: Nexteer – order backlog as March 31, 2017



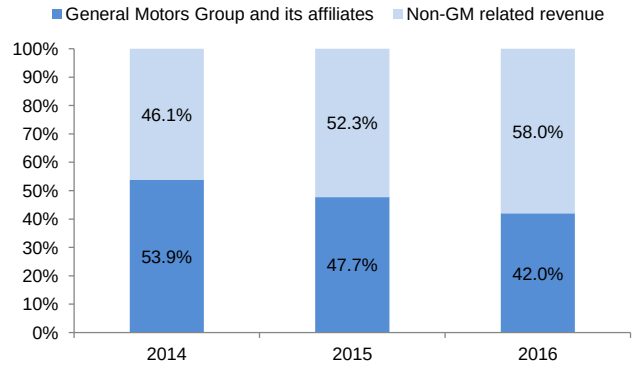
Source: Company data

Established global customers with rising China contribution

As Nexteer's predecessor was a subsidiary of General Motors before it was acquired by PCM China, Nexteer has established a strong and long-term relationship with GM. Thus, revenue generated from GM has been over 40% since FY11, and we believe that GM will remain Nexteer's top revenue contributor in FY17-19. Therefore, North America (US and Mexico) will remain the company's largest revenue source geographically.

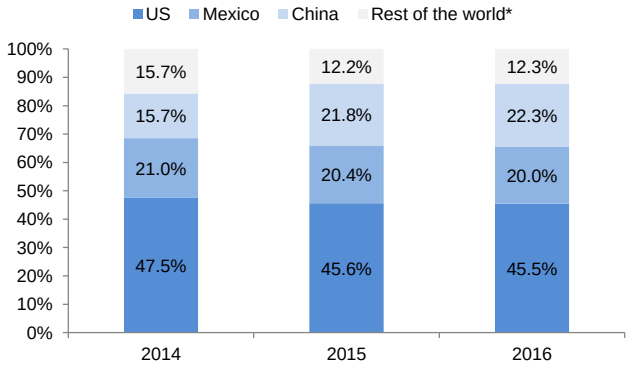
Over the years, it has also established relationships with other non-GM and non-US OEMs, which diverted Nexteer's product portfolio and expand its market globally. Indeed, the revenue contribution from GM has fallen from 53.9% in FY14 to 42.0% in FY16. Moreover, the revenue contribution from North America decreased from 68.8% in FY14 to 65.4% in FY16 (with revenue from the US declining from 47.5% in FY14 to 45.5% in FY16).

Figure 38: Revenue contribution by GM and its affiliates



Source: Deutsche Bank

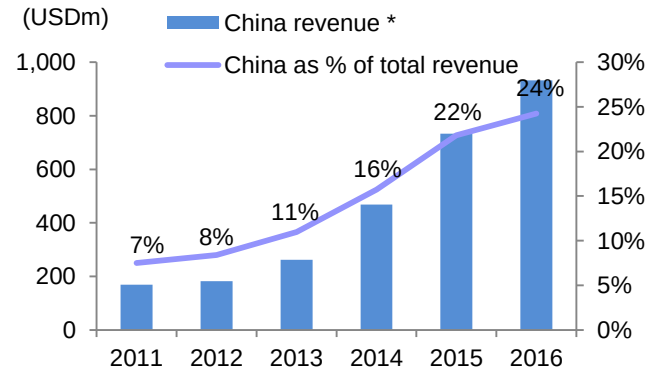
Figure 39: Revenue breakdown by region



* China FY16 revenue does not include Chongqing JV
* Rest of the world include Europe, South America, Brazil, India, Korea and Australia
Source: Company data, Deutsche Bank

Meanwhile, the revenue contribution from China grew from 15.7% in FY14 to 22.3% in FY16. Including Chongqing JV revenue, which started in FY16, total China revenue was c.24% of the total revenue.

Figure 40: Nexteer – China revenue exposure



** China FY16 revenue including Chongqing JV revenue*
Source: Company data

Figure 41: Nexteer – China plants' footprint

Source: Company data

Apart from the launch of new customer programs in China, Nexteer seeks the opportunity to cooperate with local OEMs to develop more brand-specific products.

- Nexteer established a JV (Chang'an JV) with Chongqing Jiansha Industry in 2016 to mainly focus on the production of brush and brushless CEPS for Chang'an brand vehicles.
- Nexteer also established a 50:50 auto parts JV (Dongfeng JV) with Dongfeng Components (subsidiary of Dongfeng Motor) recently, to develop, manufacture, assemble, and sell EPS products and related auto components.

Figure 42: Nexteer – customer programs that were launched or began production in 2016

OEMs	Vehicle nameplate	Nexteer products
North America		
Ford	F250/F350 Super Duty Truck	Column
	F150 Raptor	Rack-assist EPS (REPS)
GM	Cadillac XT5, GMC Acadia	REPS, Driveline
	Chevrolet Cruze	Driveline
	Chevrolet Express, GMC Savana	Hydraulic Steering Pump
Fiat Chrysler Automobiles N.V. (FCA)	Chrysler Pacifica	REPS, Column
Europe & South America		
FCA	Fiat Uno, Fiat Mobi	Column-assist EPS (CEPS)
PSA	Citroën C3 (Europe)	Single pinion-assist EPS (SPEPS)
Asia Pacific		
*Chang'An	CS15, CX70, Changan Oushang	Brush motor column-assist EPS (BEPS)
*BAIC Motor Corporation Ltd.	Huansu H3	BEPS
Chery	Arrizo 7	CEPS
Dongfeng Liuzhou (DFLZ)	Fengxing SX6, S500, F600	CEPS
	Dongfeng SX6	CEPS
GM	Opel Mokka, Chevrolet Trax,	CEPS
	Buick Encore, Chevrolet Bolt	CEPS
Mahindra & Mahindra	XUV500	Driveline
Renault Nissan	Nissan March	Driveline
SGM	Cadillac XT5	REPS, Driveline
SGMW	Baojun 510 (SUV)	BEPS
Tata	Indigo	Driveline
FAW-VW	Cross Golf	Driveline

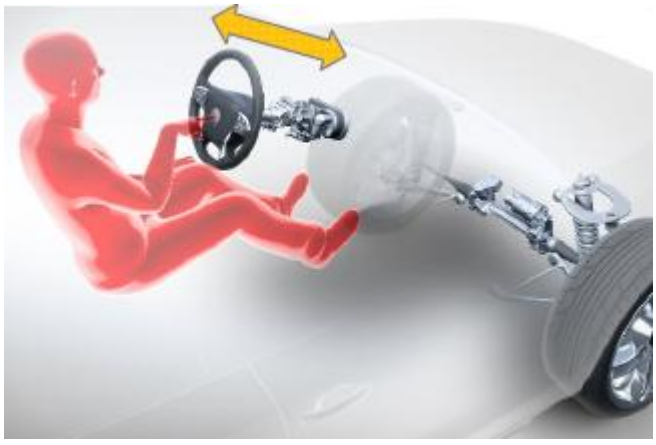
* Related to non-consolidated joint venture
Source: Company data

ADAS and automated driving for new business expansion

Nexteer has been focusing on the development of products with ADAS and autonomous driving technologies. Nexteer introduced in-house ADAS products, Nexteer Steering on Demand System and Nexteer Quiet Wheel Steering, this year. The two new products have led to development contracts with several existing OEM clients and opportunities for potential new customers.

While the near-term revenue or earnings contribution will be limited, we believe that this will translate into Nexteer's backlog in FY17-19E. The Steering on Demand enables automated driving control for vehicles capable of SAE (Society of Automotive Engineers) level 3, level 4 and level 5 automated driving features. Meanwhile, the Quiet Wheel Steering system is able to eliminate the rotation of steering wheel on a directional change when automated driving is activated and the steering wheel can be retracted into the dashboard with a towable column.

Figure 43: Nexteer "Steering on Demand" system



Source: Company data

Figure 44: Nexteer "Quiet Wheel Steering" system

Source: Company data

In addition, Nexteer is working with Waymo, Google's self-driving car project, on the lateral directional control of its autonomous vehicle of ADAS level 4 capability. Although this may have limited impact on revenue or earnings, management believes it is strategically important to the company. According to Nexteer, it has a full redundant system in development for Waymo, primarily electronic, with dual sensors, dual controllers, and dual motors. Management expects to ship 500 REPS units in 2Q17-3Q17 and foresees more orders for 2018-19 deliveries.

In addition, Nexteer has signed a JV agreement with Continental AG (CONG.DE, Hold, EUR198.4) in January 2017 to focus on the R&D for the advancement of ADAS motion control systems. The JV will integrate Nexteer's ADAS technologies with Continental's portfolio of autonomous driving and advanced braking technologies to accelerate advancements in vehicle motion control systems. We believe this will enhance Nexteer's experience in ADAS-related technology and bring further opportunities to record new orders.

Figure 45: Nexteer REPS for ADAS Level 4

Source: Company data

Rating
Buy

Asia
China

Automobiles & Components

Company
Ningbo Joyson

Reuters	Bloomberg
600699.SS	600699 CH

Price at 9 Jun 2017 (CNY)	30.19
Price target - 12mth (CNY)	35.00
52-week range (CNY)	40.50 - 28.26
Shanghai Composite	3,151

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Taking a bold step into ADAS safety; Buy

HMI electronics to sustain growth; KSS acquisition for active safety initiatives

Since 2009, Ningbo Joyson has committed to a series of acquisitions which have transformed its business mix away from functional parts to higher growth areas in safety equipment and Human-Machine Interaction (HMI) products. Over 70% of revenue is derived from these deals and this will continue to generate the major share of future earnings growth. Key Safety Systems (KSS), the fourth ranked global airbag manufacturer is the most important addition and will drive our forecast of 34% EPS CAGR for 2016-19E. Integration has been successful to date and opens up new potential markets in ADAS and safety products. We initiate coverage with a BUY rating.

Successful M&As transformed local supplier into global auto electronics player

Five acquisitions with a c.Rmb11bn investment have materially altered the group's scale and business mix. Revenue this year will be nearly four times the scale of 2014. Business lines now include, connectivity, automatic safety, power controls for new energy vehicles and HMI. Consolidation of these assets has been successful – for example, after acquiring Preh, net margin improved from 1% to 5+% through penetration into China and reductions in sourcing and production costs. Funding has been largely completed after a Rmb8.3bn issue in 2016 and the balance sheet gearing will be under 20% by end 2017.

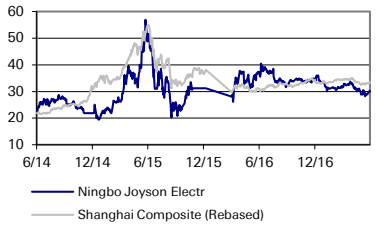
Autonomous driving the next driver, with new products in active safety

We expect Joyson to will deliver 24% FY16-19 revenue CAGR, driven mainly by the consolidation of KSS and an 18% CAGR from HMI. EPS after dilution is expected to more than double by 2019. In addition, KSS and TechniSat will allow the company to explore opportunities in auto safety and ADAS, a market in China that could grow to c.USD11bn by 2020.

Initiating with a Buy rating and target price set at 27x FY18E P/E; risks

Our target price (TP) of RMB35.0 is set at 27.0x FY18E P/E. We expect Joyson to deliver a 34% FY16-19 EPS CAGR driven by robust growth at Preh and the consolidation of KSS, with a margin improvement. Key downside risks: weaker-than-expected auto sales; failure to consolidate KSS/TS; future capital raising to fund potential M&As; unexpected increase in raw material prices.

Price/price relative



Performance (%)	1m	3m	12m
Absolute	0.3	-4.0	-19.2
Shanghai Composite	2.3	-2.0	7.7

Source: Deutsche Bank

Forecasts And Ratios

Year End Dec 31	2015A	2016A	2017E	2018E	2019E
Sales (CNYm)	8,082.5	18,552.4	25,907.6	30,485.7	35,435.3
EBITDA (CNYm)	1,193.3	2,356.7	3,816.5	4,562.4	5,433.8
Reported NPAT (CNYm)	399.9	453.7	998.9	1,229.8	1,503.1
Reported EPS FD (CNY)	0.61	0.66	1.05	1.30	1.58
DB EPS growth (%)	12.3	7.1	60.4	23.1	22.2
PER (x)	52.0	52.8	28.7	23.3	19.1
EV/EBITDA (x)	17.0	12.5	8.7	7.2	5.9
DPS (net) (CNY)	0.00	0.20	0.42	0.52	0.63
Yield (net) (%)	0.0	0.6	1.4	1.7	2.1

Source: Deutsche Bank estimates, company data

[1] DB EPS is fully diluted and excludes non-recurring items

[2] Multiples and yields calculations use average historical prices for past years and spot prices for current and future years, except P/B which uses the year end close

Model updated: 08 June 2017

Running the Numbers

Asia

China

Auto/Motor Vehicle

Ningbo Joyson Electronic Corp

Reuters: 600699.SS Bloomberg: 600699 CH

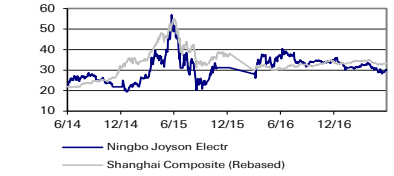
Buy

Price (9 Jun 17)	CNY 30.19
Target price	CNY 35.00
52-week Range	CNY 28.26 – 40.50
Market Cap	CNY 28,659m US$ 4,218m

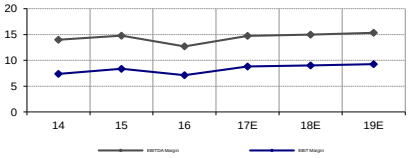
Company Profile

Ningbo Joyson Electronic Corp. is engaged principally in the research, manufacturing, production and distribution of automobile parts and components. Through its subsidiaries, the company mainly offers engine air inflow boosters, automobile body electronic controlling systems, automobile rearview mirrors, molds, plastic products, and automobile accessories, among others. The company distributes its products in both the domestic and overseas markets.

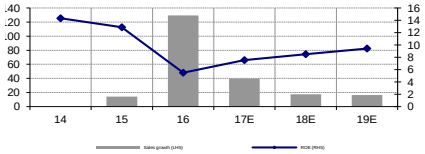
1yr Price Performance



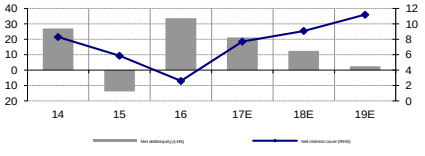
Margin Trends



Growth & Profitability



Solvency



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Fiscal year end 31-Dec	2014	2015	2016	2017E	2018E	2019E
Financial Summary						
DB EPS (CNY)	0.55	0.61	0.66	1.05	1.30	1.58
Reported EPS (CNY)	0.55	0.61	0.66	1.05	1.30	1.58
DPS (CNY)	0.11	0.00	0.20	0.42	0.52	0.63
BVPS (CNY)	3.80	5.50	13.38	14.53	15.94	17.66
Weighted average shares (m)	636	653	692	949	949	949
Average market cap (CNYm)	15,068	20,781	23,967	28,659	28,659	28,659
Enterprise value (CNYm)	15,779	20,330	29,518	33,298	32,801	31,873
Valuation Metrics						
P/E (DB) (x)	43.4	52.0	52.8	28.7	23.3	19.1
P/E (Reported) (x)	43.4	52.0	52.8	28.7	23.3	19.1
P/BV (x)	5.11	5.68	2.47	2.08	1.89	1.71
FCF Yield (%)	nm	nm	nm	3.5	2.3	4.2
Dividend Yield (%)	0.5	0.0	0.6	1.4	1.7	2.1
EV/Sales (x)	2.23	2.52	1.59	1.29	1.08	0.90
EV/EBITDA (x)	15.9	17.0	12.5	8.7	7.2	5.9
EV/EBIT (x)	30.3	30.2	22.4	14.6	12.0	9.7
Income Statement (CNYm)						
Sales revenue	7,077	8,083	18,552	25,908	30,486	35,435
Gross profit	1,843	2,259	4,507	6,818	8,073	9,488
EBITDA	990	1,193	2,357	3,816	4,562	5,434
Depreciation	303	338	684	1,001	1,182	1,398
Amortisation	165	181	353	536	638	759
EBIT	522	674	1,320	2,279	2,743	3,276
Net interest income(expense)	-63	-115	-510	-296	-302	-293
Associates/affiliates	0	0	0	0	0	0
Exceptionals/extraordinaries	0	0	0	0	0	0
Other pre-tax income/(expense)	0	0	0	0	0	0
Profit before tax	459	559	809	1,982	2,441	2,983
Income tax expense	109	142	134	496	610	746
Minorities	3	17	222	488	601	734
Other post-tax income/(expense)	0	0	0	0	0	0
Net profit	347	400	454	999	1,230	1,503
DB adjustments (including dilution)	0	0	0	0	0	0
DB Net profit	347	400	454	999	1,230	1,503
Cash Flow (CNYm)						
Cash flow from operations	738	585	674	2,803	2,649	3,381
Net Capex	-758	-853	-2,012	-1,812	-1,980	-2,171
Free cash flow	-21	-268	-1,338	992	669	1,210
Equity raised/(bought back)	1	1,147	8,250	0	0	0
Dividends paid	-59	-154	-528	-400	-492	-601
Net inc/(dec) in borrowings	1,076	2,520	11,518	0	0	0
Other investing/financing cash flows	-846	-2,925	-13,200	-6,512	101	234
Net cash flow	151	321	4,702	-5,920	278	843
Change in working capital	*-131*	*-400*	*-1,295*	*-1,254*	*-1,001*	*-1,014*
Balance Sheet (CNYm)						
Cash and other liquid assets	558	3,425	9,191	3,591	4,189	5,351
Tangible fixed assets	2,439	2,921	6,650	6,457	6,155	5,714
Goodwill/intangible assets	752	1,152	9,807	9,953	10,096	10,231
Associates/investments	5	81	245	245	245	245
Other assets	2,506	3,830	11,340	13,075	14,980	16,934
Total assets	6,259	11,409	37,233	33,321	35,665	38,475
Interest bearing debt	1,225	2,873	13,845	6,845	6,345	5,845
Other liabilities	2,564	4,560	9,543	11,056	11,960	12,899
Total liabilities	3,789	7,433	23,388	17,901	18,305	18,744
Shareholders' equity	2,420	3,794	12,703	13,791	15,129	16,766
Minorities	50	182	1,141	1,629	2,230	2,965
Total shareholders' equity	2,470	3,976	13,845	15,420	17,360	19,730
Net debt	*667*	*-552*	*4,654*	*3,254*	*2,157*	*494*
Key Company Metrics						
Sales growth (%)	na	14.2	129.5	39.6	17.7	16.2
DB EPS growth (%)	na	12.3	7.1	60.4	23.1	22.2
EBITDA Margin (%)	14.0	14.8	12.7	14.7	15.0	15.3
EBIT Margin (%)	7.4	8.3	7.1	8.8	9.0	9.2
Payout ratio (%)	20.2	0.0	30.5	40.0	40.0	40.0
ROE (%)	14.3	12.9	5.5	7.5	8.5	9.4
Capex/sales (%)	10.7	10.6	10.8	7.0	6.5	6.1
Capex/depreciation (x)	1.6	1.6	1.9	1.2	1.1	1.0
Net debt/equity (%)	27.0	-13.9	33.6	21.1	12.4	2.5
Net interest cover (x)	8.3	5.9	2.6	7.7	9.1	11.2

Source: Company data, Deutsche Bank estimates

Investment thesis

Auto electronics supplier tapping autonomous driving

Joyson Electronics is a global tier-1 auto parts supplier headquartered in Ningbo. Joyson started out as a local auto parts producer, but soon expanded its product portfolio through a series of overseas M&As. M&A strategy is the major growth driver of Joyson, with acquisitions contributing more than c.70% of Joyson's total revenue from FY12 to FY16.

Joyson has demonstrated its capability to consolidate M&As. It acquired Preh in 2011 to enter the auto electronics field, and Preh's net margin improved from 1% to 5+% post the acquisition.

The recent acquisitions of Key Safe Systems (KSS) and TechniSat (TS) allow Joyson to explore opportunities in the ADAS field. We expect KSS to support Joyson's growth in the next three years with new product offerings, especially in active safety. KSS recorded rapid new order growth after being acquired.

We expect Joyson to deliver a 24% FY16-19 gross revenue CAGR, driven mainly by a 41% CAGR in revenue from the consolidation of KSS and an 18% revenue CAGR in Human-Machine Interaction (HMI). We estimate a stable gross profit margin of 20.4-20.7% in FY17-19, with product upgrades and margin improvements at KSS and TS post the mergers offsetting pricing pressure from OEMs. With a decrease in financing costs post the private placement in late 2016, we forecast a 49% earnings CAGR for FY16-19, and 34.2% EPS CAGR after factoring in private placement dilution.

Risks

Key downside risks include 1) weaker-than-expected auto sales volume, affecting demand for auto components; 2) failure to consolidate KSS/TS or improve profitability; 3) future capital raising to fund potential acquisitions; and 4) an unexpected increase in raw material prices.

Taking a bold step into ADAS safety

Key points

- M&A strategy is the major growth driver of Joyson, as its acquisitions contributed more than c.70% of its total revenue from FY12 to FY16.
- Joyson has proven its capability to consolidate its M&As. Preh's net margin improved from 1% before the acquisition to 5+% post the acquisition.
- The recent acquisitions of KSS and TS allow Joyson to explore opportunities in the ADAS field.
- We expect KSS to support Joyson's growth in the next three years with new product offerings, especially in active safety. KSS recorded rapid new order growth after being acquired.

M&A the major driver for rapid growth

Considering the high costs associated with R&D in China a few years ago, Joyson implemented an M&A strategy in 2009. In the following few years, Joyson successfully expanded its product portfolio through overseas M&As.

This includes acquisition of Preh GmbH to enter the HMI business in 2011 and QUIN GmbH in 2015 to complement its HMI products. It moved into industrial automation industry through acquisition of IMA Automation Amberg GmbH in 2014. For ADAS and active safety, Joyson acquired KSS and TS in 2016.

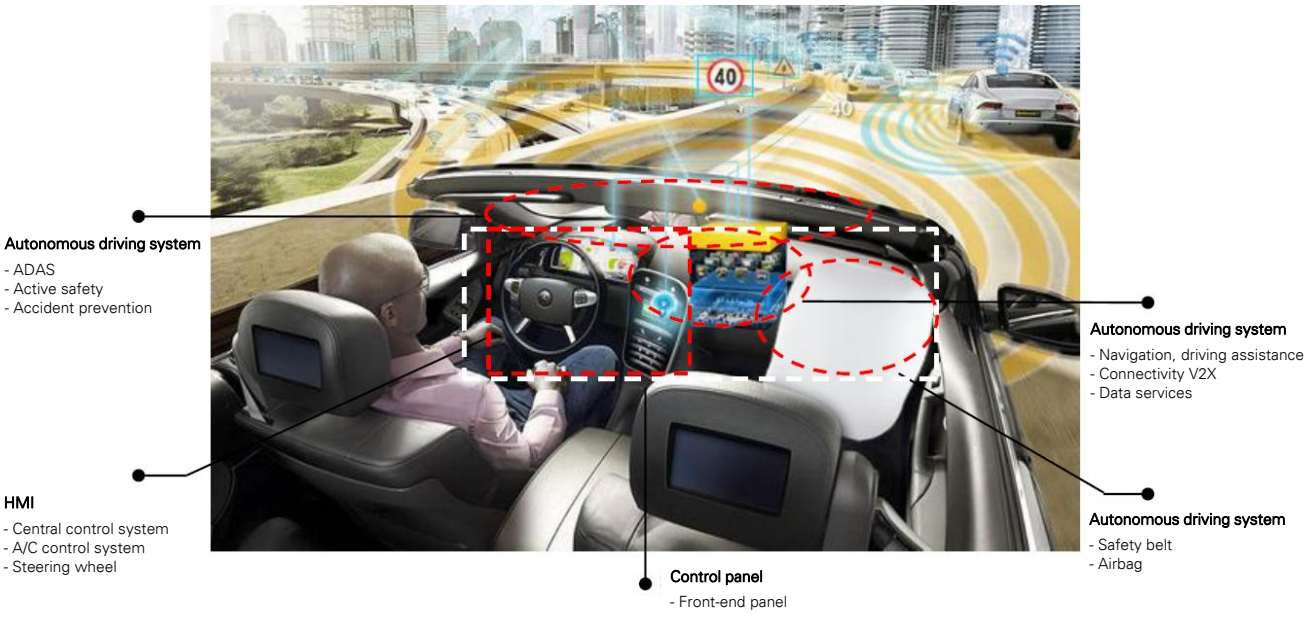
Joyson sold Huade Plastic Products in 2015, due to the low margins of the business. It transferred IMA to the parentco in 1H17 and plans to spin off the industrial automation business to avoid direct competition with customers.

Figure 46: Joyson Electronics – major M&As

Year	M&A	Product type	Total consideration	P/B	Note
2009	Huade Plastic Products Co., Ltd	Functional parts	RMB92.8m (95% stake)	n.a	Transferred to Ningbo Shengfeite in 2015
2011	Preh Holding GmbH	HMI/NEV power control	RMB2,046m	3.4	100% of Preh Holding GmbH and 5.1% of Preh GmbH
2014	IMA Automation Amberg GmbH	Industrial automation	EUR14m	n.a	Transferred to parentco in 2017
2015	Quin GmbH	Functional parts/interior trims	EUR96m	3.6	Completed acquiring a 75% stake for stage 1.
2016	KSS Holdings, Inc	Safety system	USD920m	13.5	
2016	TechniSat Digital GmbH	Car Interconnect/HMI	EUR180m	2.1	
2016	EVANA	Industrial automation	USD19.5m	1.1	Plan to transfer to parentco

Source: Company data, Deutsche Bank

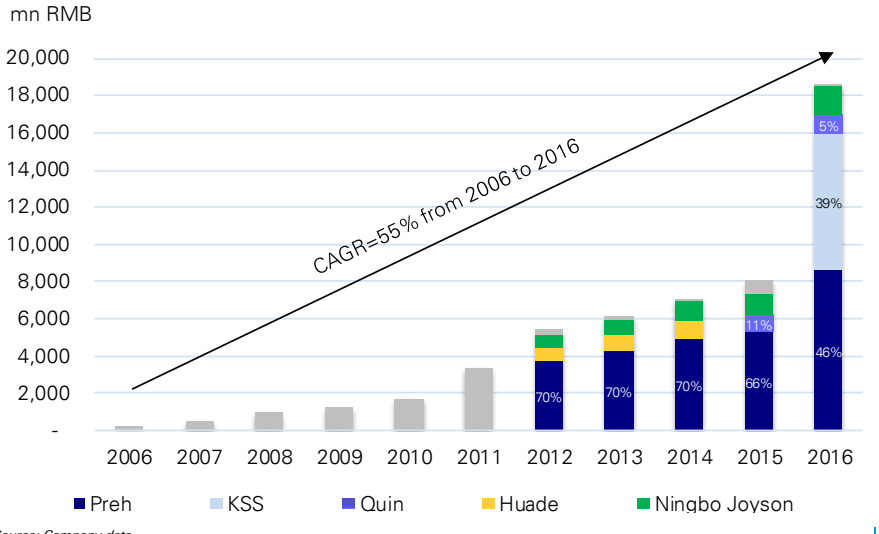
Figure 47: Joyson Electronics – major product portfolio



Source: Company data, Deutsche Bank

M&A strategy is the major growth driver of Joyson, as its acquisitions contributed more than c.70% of its total revenue from FY12 to FY16. We expect the acquisitions of KSS and TS in FY16 to support Joyson's revenue growth in the next three years, driven by 1) new orders for customers' new vehicle platforms, and 2) new product offerings, especially in the active safety and ADAS fields.

Figure 48: Joyson – revenue breakdown and YoY growth



Source: Company data

Joyson's proven track record of consolidating large M&As

Joyson has proven its capability to acquire and consolidate large-sized global companies. Preh is a leading global auto electronics supplier. At the time of the acquisition, Preh had six production and sales bases – in Germany, Portugal, Romania, Mexico, the US and China. The major products were auto electronics, driving control panels, air conditioning systems, sensors and electronic control units.

After its acquisition, Preh's net profit margin improved from 1% to 5+%. We contribute the success to the following:

- The acquisition helped Preh to break into new markets in Asia and North America.
- Joyson consolidated Preh's R&D resources and improved its R&D efficiencies.
- A reduction in sourcing and production costs.

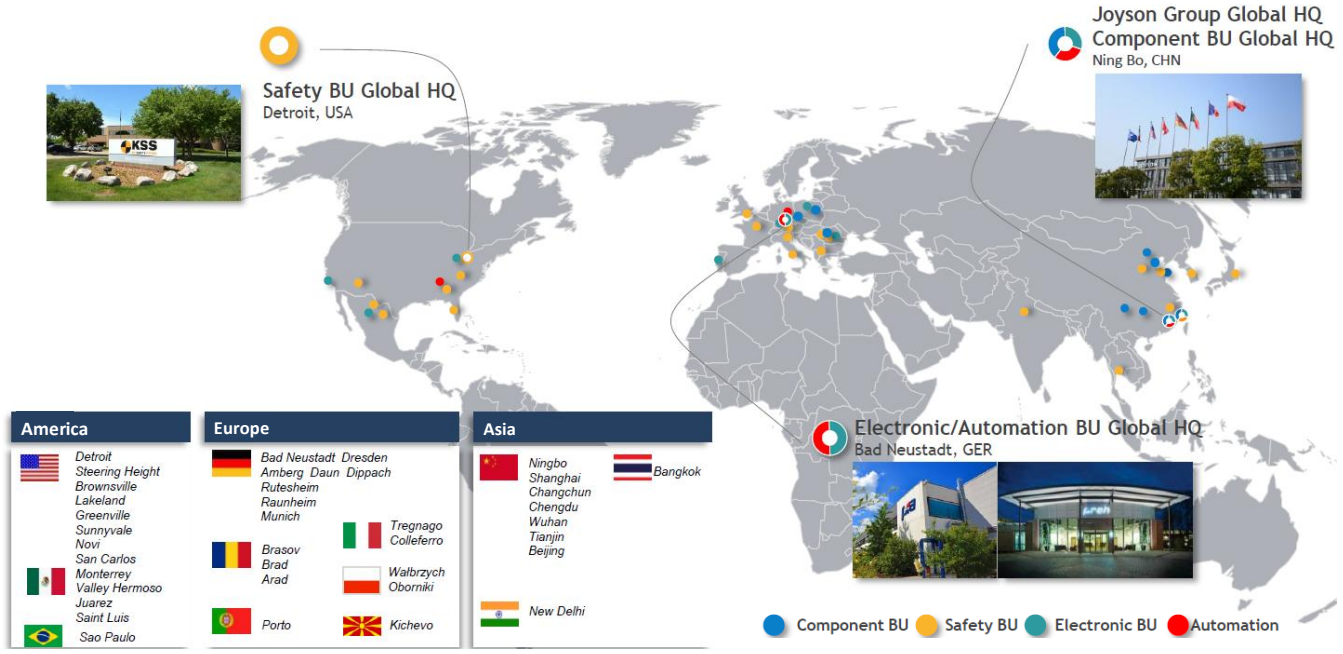
The next potential M&A is in the passive safety airbag business

According to Reuters, Takata Corp (7312.T; NR; JPY472.00) has selected KSS as the final bidder to extend financial support for the Japanese airbag maker. Takata is the world's third-largest airbag producer in terms of market share. If the M&A is successful, Joyson will gain not only the lost market share by Takata but also Japanese clientele from Takata.

Global landscape and solid customer base

Joyson is a global company, with global headquarters and component headquarters in Ningbo, safety product headquarters in Detroit and electronic/automation headquarters in Bad Neustadt.

Figure 49: Joyson – global footprint



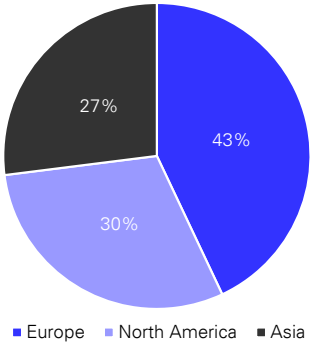
Source: Company data

Establishing global client network through M&As

The M&As have brought Joyson not only cutting-edge technology in segments like HMI, vehicle safety systems and connected cars, but have also helped Joyson build a global customer base.

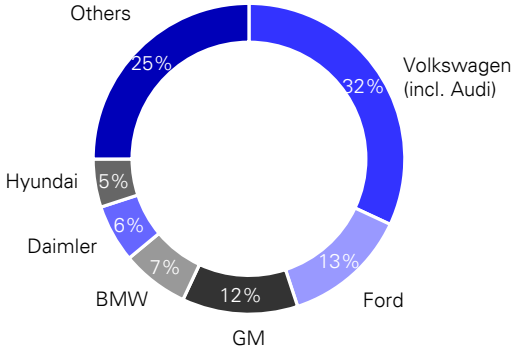
As of 1H16, Joyson has a balanced revenue stream distributed among North America, Europe and Africa. As shown in Figure 51, Joyson's top client is Volkswagen, followed by Ford and General Motors (GM).

Figure 50: Revenue breakdown by region



Source: Company data

Figure 51: Revenue breakdown by customer



Source: Company data

Figure 52: Joyson's major clients by product category

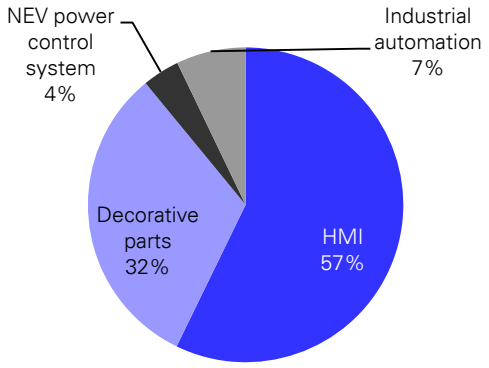
Product type	Origin	VW	Ford	BMW	Benz	GM	Chrysler	Hyundai	SAIC VW	SAIC	Fiat	Chang'an	Peugeot	Isuzu	Makita
HMI & Connectivity*	Preh	15%	25%	23%	5%	9%									
Car Safety System	KSS	15%	14%	2%		6%	13%	11%	9%	8%	5%	3%	1%	2%	
Functional Parts	Quin&Joyson	33%	2%	3%**	30%	17%							2%***		2%

Numbers represent revenue contribution within each product segment.
**9% of revenue is R&D expense paid by clients; 12% revenue is from PIA*
***BMW, FAW, Nissan and Dongfeng jointly contribute to 3% of total functional parts revenue*
****Peugeot and Citroen jointly contribute to 2% of total functional parts revenue*
Source: Company data

Entering ADAS business via KSS and TS

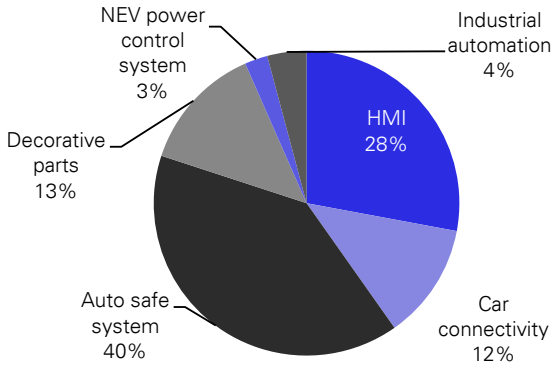
In 2016, Joyson acquired KSS, a global leader in car safety products, and the auto electronics department of TS. Through these M&As, Joyson is making significant commitment into the auto safety and ADAS businesses, which accounted for 40% and 12% of total revenue in FY16, respectively.

Figure 53: Joyson – 2015 revenue breakdown



Source: Company data

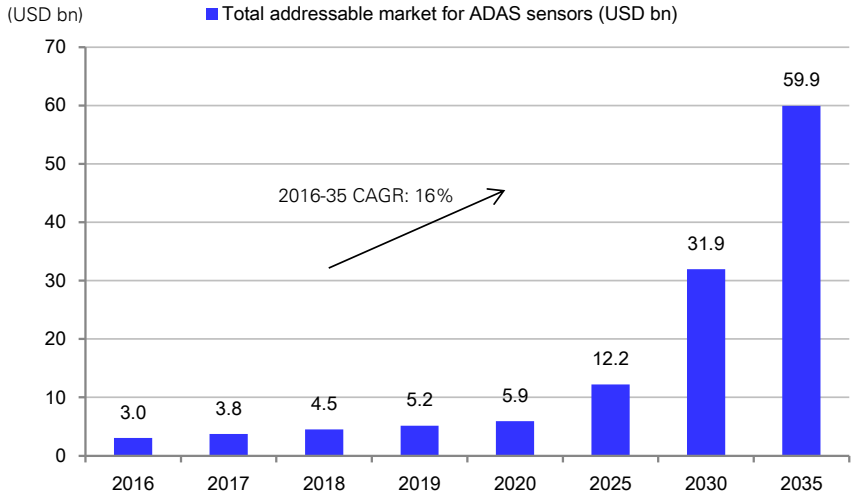
Figure 54: Joyson – 2016 revenue breakdown



Source: Company data

Our China ADAS penetration model indicates a significant growth opportunity for parts suppliers including Joyson. We estimate China's ADAS sensor market will reach USD5.9bn in 2020 and USD12.2bn in 2025. In addition, we forecast that the sensor market will register a 16% CAGR during 2016-35 (Figure 55). Total ADAS could grow to a c.USD12bn market by 2020 (doubling of sensor market size) and c.USD24bn by 2025.

Figure 55: USD6bn sensor market by 2020 and USD12bn by 2025



Source: Company data, Deutsche Bank estimates

Entering car safety system through acquiring KSS

The KSS acquisition has not only shifted Joyson's revenue mix, it has significantly altered the risk profile of the group. With a USD920m price tag and a 13.5x P/BV valuation, this is now by far the largest part of the balance sheet which now shows RMB7.5bn in goodwill. Joyson has funded the deal via an equity issue, increasing the share count by 38% which raised RMB8.3bn. It is critical that the venture delivers the expected technology and revenue benefits.

According to management, Joyson was willing to pay a high premium for KSS because of the auto safety system industry's high technology entry barriers and as KSS is a key player in this field. To elaborate, KSS produces active safety products, passive safety products and specialty products. KSS's products are installed on more than 300 vehicle models worldwide.

After acquiring KSS, Joyson invested heavily to help KSS expand globally. In summary, KSS formed three R&D centres globally in the active safety and ADAS businesses; this is summarized in Figure 56. The new factory in Macedonia and the technology centre in India have been put into operation. The active safety R&D centre in China is expanding, and the new factory in China is under construction.

Figure 56: Overall structure of ADAS business in KSS

Source: Company data

The post-M&A consolidation has proved to be effective. KSS recorded close to USD5bn new orders in FY16, and 40% of the orders were from the Asia region. Joyson became a supplier of Tesla (TSLA.OQ, Hold, USD370.00) and broke into the global supplier systems of Japanese clients. In terms of active safety products, KSS has accumulated more than USD0.1bn in new orders and signed new contracts with local OEM clients such as Geely (0175.HK, Hold, HKD15.14), NextEV and Changfeng Motor.

TS to complete auto information products

Apart from KSS, Joyson also acquired the auto information business of TS. The strategy behind this was to supplement Joyson's in-dash auto parts business, as TS has been a core supplier for VW. It has advanced technology in both connectivity and car infotainment.

After being acquired, TS secured new orders from new OEM customers, including BMW and Benz, although its contract size is limited. A new JV has also been established to introduce TS's technology to the domestic market and to corporates with local OEMs, such as Geely and Borgward.

Rating
Buy

Asia
Hong Kong

Automobiles & Components

Company
Minth Group Limited

Reuters	Bloomberg
0425.HK	425 HK

Price at 9 Jun 2017 (HKD)	32.30
Price target - 12mth (HKD)	36.70
52-week range (HKD)	33.20 - 22.10
HANG SENG INDEX	26,063

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Gaining from higher value product mix; initiate with BUY

Aluminum parts for sustainable growth; ADAS camera for upside

Minth, one of the world's leading auto trim and body parts suppliers, has consistently seen robust new order intake and order backlog. We expect Minth to deliver a solid 19% EPS CAGR in FY17-19 based on strong growth of aluminum products, an improving product mix and a secure order backlog of RMB79bn. Looking ahead, we anticipate new business initiatives related to ADAS cameras and new energy vehicles given Minth's strong integration capabilities. We initiate coverage with a Buy and a target price of HKD36.7.

Solid track record in new order wins with successful product upgrade

Minth recorded steady growth in content per car and model coverage, with content surpassing RMB300 per car in FY16. Minth has consistently delivered robust new order intake and order backlog. New order awards were both above RMB4bn in FY15-16 and order backlog reached RMB79bn by the end of FY16. Management targets to record RMB20bn in annual revenue by FY20, which is supported by its new order momentum.

Aluminum products – the major growth drivers in revenue and margins

Aluminum parts have grown to be the major revenue driver and we forecast a 19% FY16-19E CAGR. This division contributed >20% of FY16 revenue and Minth targets a contribution of 25-30% which will improve profitability, given its higher gross margin of c.40% vs. blended margin of 35% in FY16. New business lines, include a Taiwanese acquisition and a JV with Fujitsu concentrating on automotive cameras, and investments in electric drive systems for NEV's and electric car production.

Initiating with a Buy rating; valuation and risks

We apply a target PE of 15x, supported by EPS growth of 19% to derive a valuation of HKD36.7. This is above the stock's historical multiple given both improving earnings mix and potential from diversification into new product areas. Risks: weaker-than-expected auto sales affecting demand for auto parts and unexpected increase in raw material prices.

Price/price relative

Performance (%)	1m	3m	12m
Absolute	6.6	24.2	42.3
HANG SENG INDEX	4.7	10.9	22.4

Source: Deutsche Bank

Forecasts And Ratios

Year End Dec 31	2015A	2016A	2017E	2018E	2019E
Sales (CNYm)	7,654.1	9,400.0	11,005.5	13,363.1	15,847.7
EBITDA (CNYm)	1,612.1	2,238.2	2,656.3	3,249.1	3,887.3
Reported NPAT (CNYm)	1,271.7	1,719.1	2,067.2	2,513.4	3,006.7
Reported EPS FD (CNY)	1.14	1.52	1.80	2.17	2.57
DB EPS FD (CNY)	1.14	1.52	1.80	2.17	2.57
DB EPS growth (%)	12.8	32.5	18.6	20.5	18.6
PER (x)	11.1	12.5	15.7	13.0	11.0
EV/EBITDA (x)	8.2	8.7	11.2	9.0	7.3
DPS (net) (CNY)	0.47	0.61	0.73	0.87	1.04
Yield (net) (%)	3.7	3.2	2.6	3.1	3.7

Source: Deutsche Bank estimates, company data

[1] DB EPS is fully diluted and excludes non-recurring items

[2] Multiples and yields calculations use average historical prices for past years and spot prices for current and future years, except P/B which uses the year end close

Model updated: 08 June 2017

Running the Numbers

Asia

Hong Kong

Auto/Motor Vehicle

Minth Group Limited

Reuters: 0425.HK Bloomberg: 425 HK

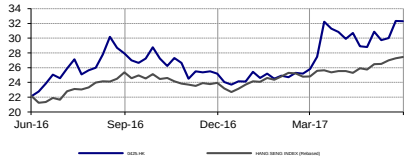
Buy

Price (9 Jun 17)	HK$ 32.30
Target price	HK$ 36.70
52-week Range	HK$ 22.10 – 33.20
Market Cap	HK$ 36,510m
	US$ 4,682m

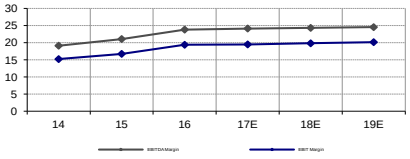
Company Profile

Minth principally engaged in auto parts businesses. The Company's main businesses include the design, manufacture and sales of auto trims, decorative parts, body structural parts and other related auto parts, such as roof racks, electric sliding door systems and electric door locks, among others. The Company mainly operates businesses in the People's Republic of China (PRC), Asia Pacific, North America and Europe.

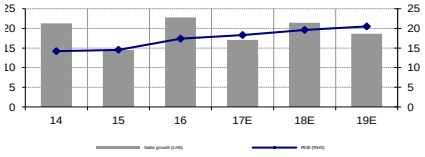
1yr Price Performance



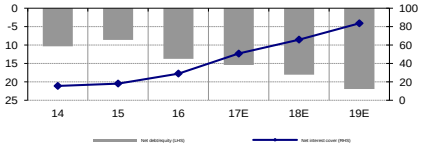
Margin Trends



Growth & Profitability



Solvency



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Fiscal year end 31-Dec	2014	2015	2016	2017E	2018E	2019E
Financial Summary						
DB EPS (CNY)	1.01	1.14	1.52	1.80	2.17	2.57
Reported EPS (CNY)	1.01	1.14	1.52	1.80	2.17	2.57
DPS (CNY)	0.41	0.47	0.61	0.73	0.87	1.04
BVPS (CNY)	7.55	8.30	9.38	10.50	11.88	13.50
Weighted average shares (m)	1,094	1,104	1,120	1,135	1,145	1,155
Average market cap (CNYm)	12,177	14,033	21,182	31,812	31,812	31,812
Enterprise value (CNYm)	11,162	13,162	19,557	29,814	29,218	28,266
Valuation Metrics						
P/E (DB) (x)	11.0	11.1	12.5	15.7	13.0	11.0
P/E (Reported) (x)	11.0	11.1	12.5	15.7	13.0	11.0
P/BV (x)	1.62	1.52	2.31	2.68	2.37	2.08
FCF Yield (%)	nm	nm	3.1	3.0	4.1	5.6
Dividend Yield (%)	3.7	3.7	3.2	2.6	3.1	3.7
EV/Sales (x)	1.67	1.72	2.08	2.71	2.19	1.78
EV/EBITDA (x)	8.7	8.2	8.7	11.2	9.0	7.3
EV/EBIT (x)	11.0	10.3	10.7	13.9	11.0	8.9
Income Statement (CNYm)						
Sales revenue	6,684	7,654	9,400	11,005	13,363	15,848
Gross profit	2,085	2,428	3,250	3,840	4,692	5,602
EBITDA	1,278	1,612	2,238	2,656	3,249	3,887
Depreciation	262	331	416	512	601	694
Amortisation	0	0	0	0	0	0
EBIT	1,016	1,281	1,822	2,145	2,648	3,193
Net interest income(expense)	-65	-70	-63	-42	-40	-38
Associates/affiliates	48	60	45	48	51	54
Exceptionals/extraordinaries	0	0	0	0	0	0
Other pre-tax income/(expense)	357	299	315	419	468	533
Profit before tax	1,356	1,569	2,119	2,569	3,126	3,741
Income tax expense	203	249	339	429	523	627
Minorities	35	48	60	73	89	107
Other post-tax income/(expense)	0	0	0	0	0	0
Net profit	1,118	1,272	1,719	2,067	2,513	3,007
DB adjustments (including dilution)	0	0	0	0	0	0
DB Net profit	1,118	1,272	1,719	2,067	2,513	3,007
Cash Flow (CNYm)						
Cash flow from operations	1,031	1,042	1,723	2,244	2,641	3,145
Net Capex	-1,203	-1,121	-1,060	-1,278	-1,322	-1,313
Free cash flow	-172	-79	663	966	1,320	1,832
Equity raised/(bought back)	0	0	0	0	0	0
Dividends paid	-423	-497	-541	-688	-827	-1,005
Net inc/(dec) in borrowings	319	-783	-558	-72	-69	-64
Other investing/financing cash flows	-249	532	609	129	151	185
Net cash flow	-525	-828	173	335	575	948
Change in working capital	*-217*	*-488*	*-462*	*-258*	*-387*	*-447*
Balance Sheet (CNYm)						
Cash and other liquid assets	3,594	2,767	2,940	3,275	3,850	4,798
Tangible fixed assets	3,449	4,175	4,957	5,688	6,372	6,953
Goodwill/intangible assets	88	86	126	129	132	136
Associates/investments	386	276	390	428	470	518
Other assets	5,334	5,852	6,639	7,348	8,228	9,100
Total assets	12,851	13,156	15,051	16,868	19,053	21,504
Interest bearing debt	2,708	1,958	1,446	1,374	1,305	1,241
Other liabilities	1,597	1,792	2,749	3,186	3,664	4,070
Total liabilities	4,306	3,750	4,195	4,560	4,968	5,311
Shareholders' equity	8,289	9,192	10,598	11,977	13,664	15,665
Minorities	257	214	258	331	421	528
Total shareholders' equity	8,545	9,406	10,856	12,309	14,085	16,193
Net debt	*-886*	*-809*	*-1,494*	*-1,901*	*-2,545*	*-3,557*
Key Company Metrics						
Sales growth (%)	21.3	14.5	22.8	17.1	21.4	18.6
DB EPS growth (%)	14.1	12.8	32.5	18.6	20.5	18.6
EBITDA Margin (%)	19.1	21.1	23.8	24.1	24.3	24.5
EBIT Margin (%)	15.2	16.7	19.4	19.5	19.8	20.1
Payout ratio (%)	40.2	40.8	39.6	39.8	39.8	39.8
ROE (%)	14.2	14.5	17.4	18.3	19.6	20.5
Capex/sales (%)	18.3	15.6	12.6	12.5	10.6	8.9
Capex/depreciation (x)	4.7	3.6	2.8	2.7	2.4	2.0
Net debt/equity (%)	-10.4	-8.6	-13.8	-15.4	-18.1	-22.0
Net interest cover (x)	15.6	18.2	29.0	50.7	65.9	83.6

Source: Company data, Deutsche Bank estimates

Investment thesis

Leading trim supplier with solid record in global expansion

Minth is one of the leading auto trim suppliers in the world. Trims, decorative and body structural parts, are the largest revenue contributors, accounting for 87% of revenue in FY16. With a successful product upgrade, Minth recorded steady growth in content per car and model coverage. Dollar content per car surpassed RMB300 in FY16.

The aluminum parts business has grown to be Minth's major revenue driver. We estimate it contributed over 20% to the total revenue in FY16. Moreover, management targets a long-term revenue mix of 25-30%. The rising proportion of aluminum products will benefit overall profitability as aluminum parts enjoy a higher gross margin of c.40% vs. Minth's blended margin of 34.6% in FY16.

In addition, we expect synergies from the recent acquisition and cooperation in ADAS camera, considering Minth's strong module integration capability, despite limited near-term revenue contribution. According to the company, it is currently going through a product certification process with potential customers.

We expect Minth to deliver 19.0% FY16-19E revenue CAGR and 20.5% earnings CAGR, driven mainly by robust growth in aluminum products. We expect gross margin to remain on a mild expanding trend to 34.9-35.3% in FY17-19E vs. 34.6% in FY16. As a result, we estimate a stable net profit margin of 18.8-19.0% in FY17-19.

Risks

Key downside risks include: 1) weaker-than-expected auto sales volume, affecting demand for auto components; 2) inability to acquire new customers; 3) any market share loss with existing clients; and 4) unexpected increase in raw material prices.

Clear product strategy; taking bigger share in trims

Key points

- With a successful product upgrade, Minth recorded steady growth in content per car and model coverage. Dollar content per car surpassed RMB300 in FY16.
- Minth aims to achieve RMB20bn in annual revenues by FY20. In our view, Minth's new order momentum could ensure it meets the target, with backlog reaching RMB79.3bn by the end of FY16.
- The aluminum parts business has grown to be Minth's major revenue drivers. We estimate it contributed over 20% to total revenue in FY16. Moreover, management targets a long-term revenue mix of 25-30%.
- The rising proportion of aluminum products should benefit overall profitability as aluminum parts enjoy a higher gross margin of c.40% vs. Minth's blended margin of 34.6% in FY16.
- We expect synergies from new business initiatives in ADAS camera and new energy vehicles given Minth's strong integration capabilities. However, we expect the near-term contribution to be limited.

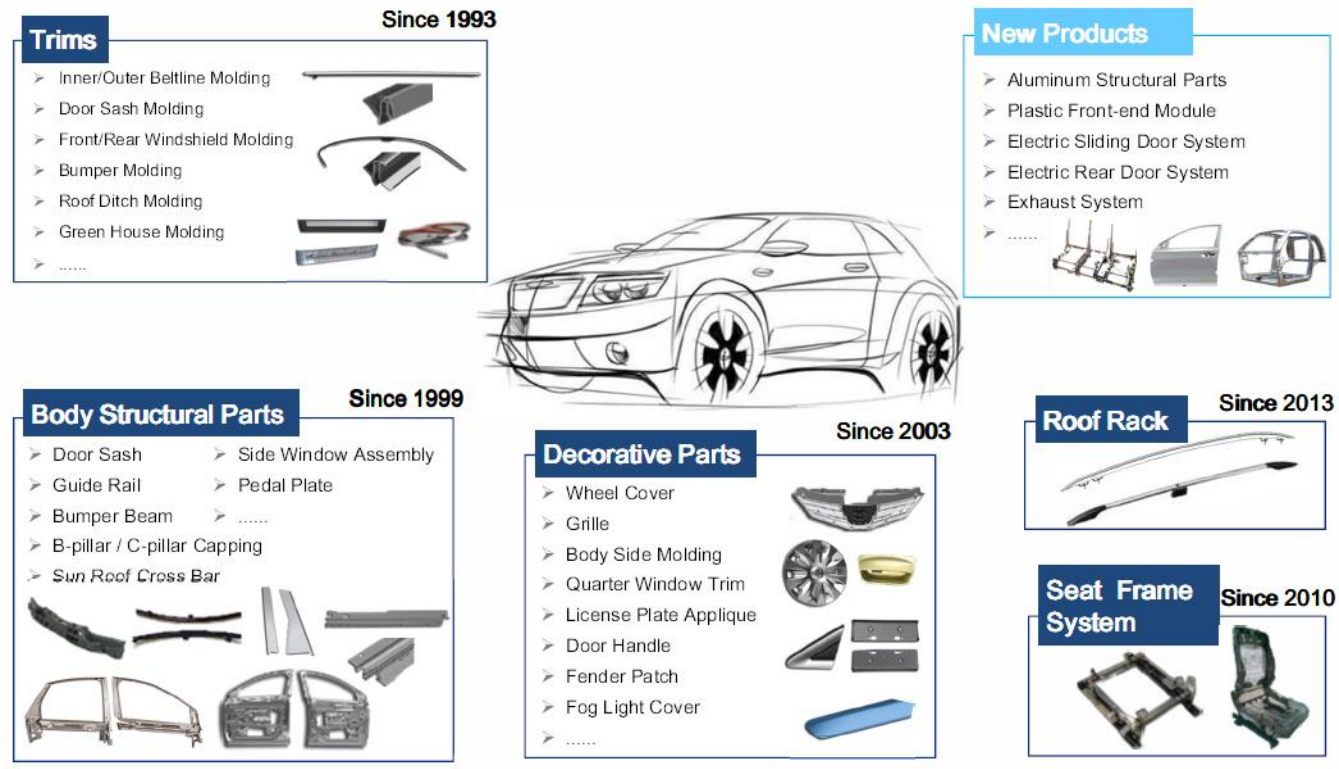
Solid track record in new order wins with global footprint

Minth successfully upgraded its product portfolio over the years. It started as a supplier for low-end small-ticket trim products in 1993 and body structure parts in 1999. In 2013, it launched roof rack products to capture the strong growth in China's SUV market.

The company has invested heavily for developing new products such as aluminum structural parts, plastic front-end modules, and electric sliding door systems.

Minth operates more than 30 production centers in China in close proximity to OEM customer locations. In order to cater to the overseas market (38% of FY16 revenue), the company utilizes two of its Chinese factories as well as its plants in the US, Thailand, Mexico and Germany. It also has sales offices and R&D centers in Japan and Germany.

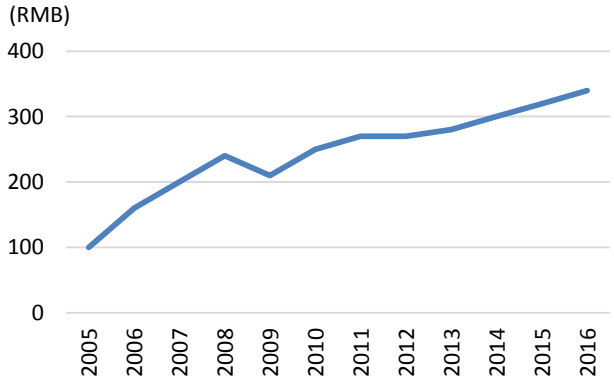
Figure 57: Minth Group – core business



Source: Company data

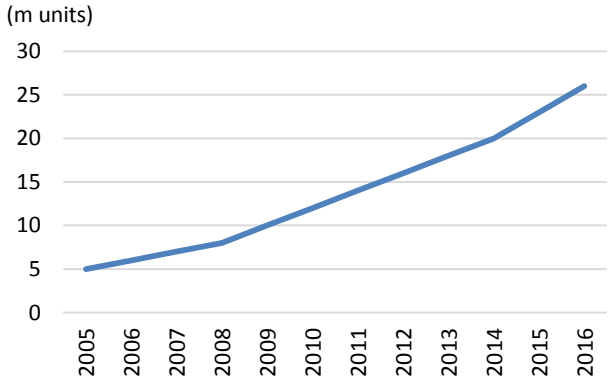
Through product innovation, Minth has seen a steady upward trend in content per car, model coverage and revenue. Its dollar content per car surpassed RMB300 in FY16 (Figure 58).

Figure 58: Minth's content per car reached RMB300



Source: Company data

Figure 59: Minth's model coverage



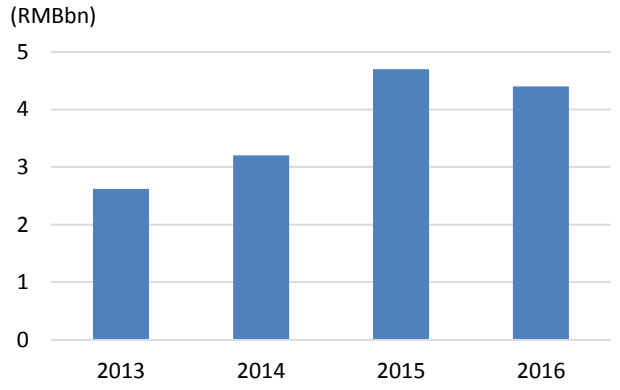
Source: Company data

Minth started with Japanese joint-venture brand OEM customers in China and gradually broke into European and US joint-venture entities. After successful cooperation with these foreign brands in China, Minth gained customer recognition and was increasingly included in foreign OEMs' global sourcing system as a supplier to their global vehicle platforms.

In view of strong growth from local brands, Minth started to supply local OEMs since FY16 as the company sees improvement in project returns given increase in local brands' new model success rate amid strong SUV demand. Some major local brand customers include Great Wall Motor (2333.HK, Hold, HKD8.59), Trumpchi from GAC (2238.HK, Buy, HKD13.82), Roewe from SAIC (600104.SS, Hold, RMB30.09), and Geely (0175.HK, Hold, HKD13.96).

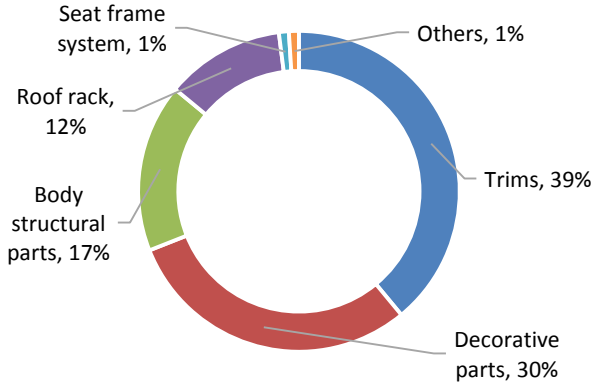
As a result, Minth was able to deliver robust new order intake and order backlog over the years. New order awards were both above RMB4bn in FY15-16 and order backlog reached RMB79.3bn by the end of FY16.

Figure 60: Minth's new order intake



Source: Company data

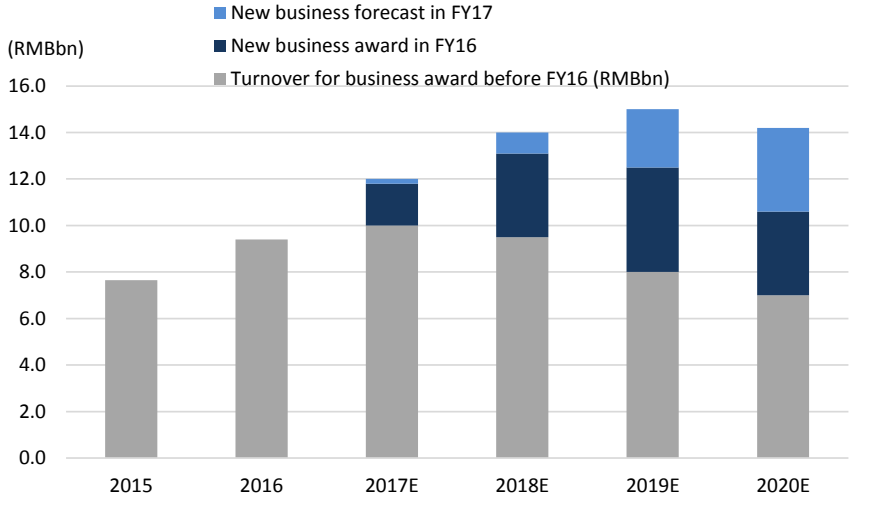
Figure 61: Minth's order backlog of RMB79bn as of FY16-end



Source: Company data

Minth aims to achieve RMB20bn in annual revenues by FY20. The company estimates that RMB4bn of new orders each year between FY16 and FY20 could make it possible.

Figure 62: High visibility in order book to achieve RMB20bn revenue target by FY20E



Source: Company data

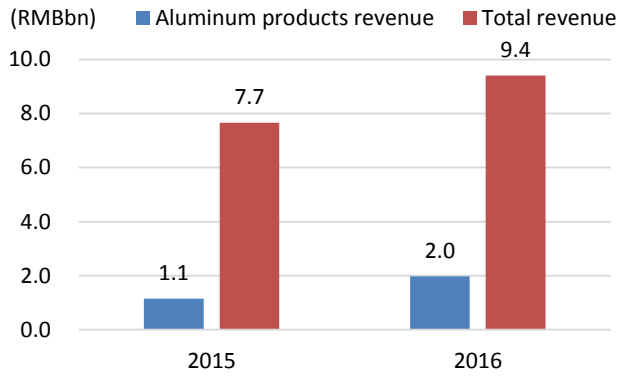
Aluminum products the major growth drivers

In light of the popularity of lightweight vehicle technology, Minth expanded into aluminum products and obtained new orders from major US and European OEMs, such as General Motors (GM.N, Hold, USD34.34). Since then, the company has received good recognition from its key customers for these products. According to Minth, aluminum parts contributed 29% of the total new order intake in FY13 and 36% in FY14.

Aluminum parts, mainly aluminum trims and roof racks, have grown to become Minth's major revenue drivers. We estimate aluminum products contributed c.15% to Minth's total revenue in FY15 and over 20% in FY16. Management is expecting a long-term revenue contribution of 25-30% from aluminum products.

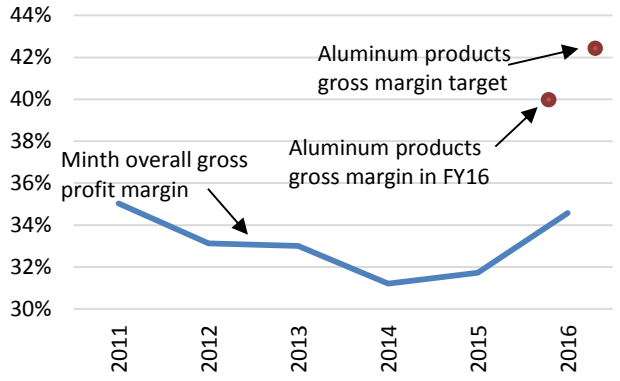
Order backlog for aluminum trims and roof rack remains healthy, accounting for c.20-25% of the total RMB79bn backlog as of end-FY16. We believe that the growth momentum for aluminum products could sustain until FY20, with new product initiatives such as aluminum door frame and other body structure parts.

Figure 63: Aluminum was 20%+ of FY16 revenue…



Source: Company data, Deutsche Bank estimates

Figure 64: …with better profitability



Source: Company data, Deutsche Bank estimates

The rising proportion of aluminum products in revenue should benefit Minth's overall profitability. We estimate aluminum products to have a higher gross margin of c.40% vs. Minth's blended margin of 34.6% in FY16 (Figure 64).

In addition, with the continuous improvement in the operational results in overseas factories, management foresees further room for an increase in aluminum margins to 42-43% in the mid-term.

Figure 65: Minth's global aluminum plants layout

Plant location	Major products	Comments
Huai'an	Aluminum parts	The largest aluminum plant in terms of revenue
Jiaxing	Aluminum parts; traditional trims and decorative parts	Second largest aluminum plant in terms of revenue
Mexico Plant 2	Aluminum parts	In operation in 2H16; utilization improved since then
Germany CST	Aluminum parts	From acquisition

Source: Company data, Deutsche Bank

New business initiatives take time to contribute profit

Leverage on camera modules to tap into ADAS and auto electronics market

We expect synergies from the recent acquisition and cooperation considering Minth's strong module integration capability. However, we expect near-term contribution to be limited. According to the company, it is currently going through a product certification process with potential customers.

SPTek acquisition

Minth acquired a 51% equity stake in Taiwanese automotive camera company SPTek Limited (中升兴业) in 2015, for a total consideration of c.RMB12.7m. It further increased the stake to 89.1% in 2016. The acquisition laid the foundation for Minth to enter the automotive camera field.

SPTek, founded in 2006, is headquartered in Taipei with two R&D centers in Taiwan, one manufacturing plant in Dongguan, Guangdong and one regional sales office in Tokyo. The company has established relationships with Japanese OEMs. Based on Minth's disclosure, we estimate that SPTek had RMB6.7m in revenues in FY16 and a net loss of RMB1.2m.

Figure 66: SPTek's global footprint

Source: Company data

Figure 67: SPTek's major products

Source: Company data

JV with Fujitsu Electronics

In addition to the SPTek acquisition, Minth formed a 60:40 joint venture (registered capital of RMB5.2m) with Fujitsu Electronics (Shanghai) Co. Ltd. in 2016 for the development and sales of automotive camera modules.

The cooperation with Fujitsu provides an opportunity to start supplying cameras and integrated trim modules to Japanese customers, such as Honda (7267.T, Hold, JPY3,098.0) and Toyota (7203.T, Buy, JPY5,902.0), in our view.

Production plant in Ningbo

Minth's Chunxiao camera plant in Ningbo commenced operations in July 2016, with an initial production capacity of 1m units of camera modules (max. 5m units). Management foresees significant growth potential in the auto camera business (global shipment of 100m units of cameras in FY20E) and aims to capture a 10% global market share by FY20.

Focus on supplying key components for new energy vehicles (NEVs)

In our view, although the near-term contribution from the NEV business remains muted, Minth's various investments in the NEV industry should provide it long-term growth.

Electric drive systems

Minth formed a 51:49 joint venture (Jiaxing Clean Wave E-Drive System) with Clean Wave in 2016 (USD29m registered capital) to produce advanced electric drive systems for NEVs. The JV plans to launch the first prototype of its K-series and G-series systems in 2018 (Figure 68). The company also holds a 13.2% stake in Clean Wave, a US-based firm engaged in the R&D and production of electric motors, power electronic controls for NEVs and hybrid vehicles.

New energy vehicles

Minth currently holds a 12.7% equity stake (plus a 12.3% call option) in Jiangsu Min'an Electric Cars with local government arm Huai'an Development holding a 50% stake. Jiangsu Min'an was established in 2013 and obtained NDRC's license for electric passenger vehicle manufacturing in late 2016. The company now has three concept car models in the pipeline. According to Min'an website, the construction of its car manufacturing plant will start this year.

Figure 68: Jiaxing Clean Wave E-Drive systems

Source: Company data

Figure 69: Jiangsu Min'an NEV model

Source: Company data

Rating
Buy

Asia
China

Automobiles & Components

Company
Tuopu

Reuters	Bloomberg
601689.SS	601689 CH

Price at 9 Jun 2017 (CNY)	31.30
Price target - 12mth (CNY)	35.40
52-week range (CNY)	34.54 - 25.99
Shanghai Composite	3,151

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China's first supplier of intelligent braking systems; Buy

Shock and noise absorber leader tapping ADAS through intelligent braking

Tuopu is a leader in China's Noise, Vibration and Harshness (NVH) market and a main supplier to Geely. New initiatives in ADAS/autonomous driving will start to feature from 2018, with Intelligent Braking System (IBS) products currently at the testing stage with JV OEMs. This diversification will be funded with RMB2.4bn from a private placement to build capacity and mass production will begin in late 2018. We estimate it should deliver a 24% FY16-19E net profit CAGR, driven by robust growth in NVH and IBS/Electric Vacuum Pump (EVP) projects in FY19E. We initiate with a Buy and target price of RMB35.4.

Market leader in vibration absorber and acoustic insulation, with robust outlook

Tuopu ranks No. 1 in rubber shock absorbers and No.6 in acoustic insulation products in terms of market share. Geely was its largest customer in FY16, contributing c.20% of revenue, followed by SAIC GM. We expect Tuopu to benefit from the rapid growth momentum at Geely, with its popular Boyue, GS and GL models. We expect NVH parts to remain Tuopu's major revenue contributor and forecast a 24% FY16-19E revenue CAGR with stable margins, on a robust outlook for NVH products.

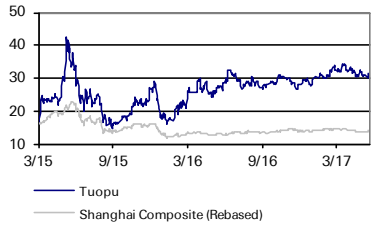
New initiatives in autonomous driving to support long-term growth

Active safety has been increasingly included in new car safety assessments, including C-NCAP, and automatic braking is an essential active safety feature. The investment in IBS, a market previously dominated by Bosch, opens the door for Tuopu to this and other ADAS functions. It is currently testing its IBS products with some JV OEMs and after completing an RMB2.4bn private placement in May to expand its production capacity, Tuopu will be the first domestic supplier to produce IBS, starting late 2018.

Initiating with Buy and target price set at 26x FY18E P/E; risks

Our TP of RMB35.4 is set at a target 26.0x FY18E P/E, at par with the historical average. We expect Tuopu to deliver a 24% FY16-19E profit CAGR, driven by robust growth in NVH products and a stable margin outlook. Key downside risks: failure to record new order awards for IBS/EVP products; weaker-than-expected auto sales and unexpected increases in raw material prices.

Price/price relative



Performance (%)	1m	3m	12m
Absolute	0.7	-2.7	12.8
Shanghai Composite	2.3	-2.0	7.7

Source: Deutsche Bank

Forecasts And Ratios

Year End Dec 31	2015A	2016A	2017E	2018E	2019E
Sales (CNYm)	3,007.2	3,937.7	5,041.1	6,230.9	7,462.3
EBITDA (CNYm)	582.3	852.1	1,042.3	1,335.3	1,612.1
Reported NPAT (CNYm)	408.5	615.7	747.8	989.4	1,185.2
DB EPS FD (CNY)	0.66	0.95	1.07	1.36	1.63
DB EPS growth (%)	-14.4	44.4	13.2	26.6	19.8
PER (x)	35.9	28.0	29.1	23.0	19.2
EV/EBITDA (x)	24.4	20.1	17.6	14.2	12.4
DPS (net) (CNY)	0.62	0.00	0.31	0.41	0.49
Yield (net) (%)	2.6	0.0	1.0	1.3	1.6

Source: Deutsche Bank estimates, company data

[1] DB EPS is fully diluted and excludes non-recurring items

[2] Multiples and yields calculations use average historical prices for past years and spot prices for current and future years, except P/B which uses the year end close

Model updated: 08 June 2017

Running the Numbers

Asia

China

Auto/Motor Vehicle

Tuopu

Reuters: 601689.SS Bloomberg: 601689 CH

Buy

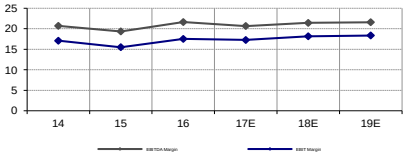
Price (9 Jun 17)	CNY 31.30
Target price	CNY 35.40
52-week Range	CNY 25.99 – 34.54
Market Cap	CNY 20,317m
	US$ 2,990m

Company Profile

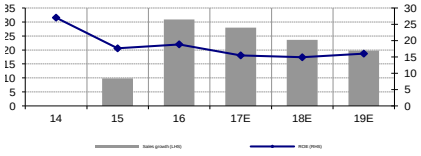
Ningbo Tuopu Group Co., Ltd. is a China-based company principally engaged in the research, development, manufacture and sale of automotive shock absorption products and other automotive components. The company's products include shock absorbers, suspension, interior functional parts, aluminium alloy control arms and intelligent braking systems. The company distributes its products in both domestic and overseas markets.

Price Performance

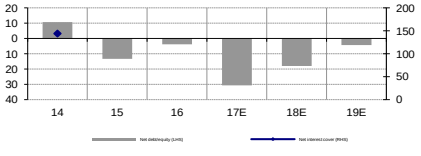
Margin Trends



Growth & Profitability



Solvency



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Fiscal year end 31-Dec	2014	2015	2016	2017E	2018E	2019E
Financial Summary						
DB EPS (CNY)	0.77	0.66	0.95	1.07	1.36	1.63
Reported EPS (CNY)	0.77	0.66	0.95	1.07	1.36	1.63
DPS (CNY)	0.23	0.62	0.00	0.31	0.41	0.49
BVPS (CNY)	2.84	4.86	5.19	8.65	9.60	10.74
Weighted average shares (m)	520	622	649	696	728	728
Average market cap (CNYm)	na	14,672	17,268	20,317	20,317	20,317
Enterprise value (CNYm)	na	14,217	17,091	18,338	19,009	19,935
Valuation Metrics						
P/E (DB) (x)	na	35.9	28.0	29.1	23.0	19.2
P/E (Reported) (x)	na	35.9	28.0	29.1	23.0	19.2
P/BV (x)	na	5.61	5.66	3.62	3.26	2.92
FCF Yield (%)	na	nm	nm	nm	nm	nm
Dividend Yield (%)	na	2.6	0.0	1.0	1.3	1.6
EV/Sales (x)	na	4.73	4.34	3.64	3.05	2.67
EV/EBITDA (x)	na	24.4	20.1	17.6	14.2	12.4
EV/EBIT (x)	na	30.5	24.8	21.1	16.8	14.5
Income Statement (CNYm)						
Sales revenue	2,737	3,007	3,938	5,041	6,231	7,462
Gross profit	893	966	1,361	1,717	2,118	2,539
EBITDA	567	582	852	1,042	1,335	1,612
Depreciation	97	112	154	164	193	227
Amortisation	3	4	8	8	11	14
EBIT	468	467	690	870	1,132	1,371
Net interest income(expense)	-3	9	25	9	32	23
Associates/affiliates	0	0	0	0	0	0
Exceptionals/extraordinaries	0	0	0	0	0	0
Other pre-tax income/(expense)	0	0	0	0	0	0
Profit before tax	464	476	715	880	1,164	1,394
Income tax expense	65	66	99	132	175	209
Minorities	1	1	0	0	0	0
Other post-tax income/(expense)	0	0	0	0	0	0
Net profit	399	409	616	748	989	1,185
DB adjustments (including dilution)	0	0	0	0	0	0
DB Net profit	399	409	616	748	989	1,185
Cash Flow (CNYm)						
Cash flow from operations	459	238	276	480	765	966
Net Capex	-381	-429	-742	-850	-1,139	-1,536
Free cash flow	78	-191	-465	-369	-374	-570
Equity raised/(bought back)	0	1,392	0	2,395	0	0
Dividends paid	-378	-125	-403	-224	-297	-356
Net inc/(dec) in borrowings	255	90	200	200	200	200
Other investing/financing cash flows	-7	-854	585	-100	-100	-100
Net cash flow	-52	313	-83	1,902	-571	-826
Change in working capital	*-33*	*-265*	*-484*	*-387*	*-428*	*-461*
Balance Sheet (CNYm)						
Cash and other liquid assets	95	422	330	2,231	1,660	834
Tangible fixed assets	972	1,240	1,549	2,030	2,671	3,521
Goodwill/intangible assets	129	180	388	583	879	1,324
Associates/investments	60	59	72	72	72	72
Other assets	1,282	2,229	2,608	3,400	4,235	5,138
Total assets	2,537	4,130	4,946	8,318	9,517	10,890
Interest bearing debt	255	0	200	300	400	500
Other liabilities	782	949	1,350	1,703	2,110	2,553
Total liabilities	1,037	949	1,550	2,003	2,510	3,053
Shareholders' equity	1,475	3,156	3,372	6,290	6,983	7,812
Minorities	25	25	25	25	25	25
Total shareholders' equity	1,500	3,181	3,396	6,315	7,007	7,837
Net debt	*160*	*-422*	*-130*	*-1,931*	*-1,260*	*-334*
Key Company Metrics						
Sales growth (%)	na	9.9	30.9	28.0	23.6	19.8
DB EPS growth (%)	na	-14.4	44.4	13.2	26.6	19.8
EBITDA Margin (%)	20.7	19.4	21.6	20.7	21.4	21.6
EBIT Margin (%)	17.1	15.5	17.5	17.3	18.2	18.4
Payout ratio (%)	30.1	93.8	0.0	28.7	30.0	30.0
ROE (%)	27.0	17.6	18.9	15.5	14.9	16.0
Capex/sales (%)	13.9	14.3	18.8	16.9	18.3	20.6
Capex/depreciation (x)	3.8	3.7	4.6	4.9	5.6	6.4
Net debt/equity (%)	10.7	-13.3	-3.8	-30.6	-18.0	-4.3
Net interest cover (x)	144.0	nm	nm	nm	nm	nm

Source: Company data, Deutsche Bank estimates

Investment thesis

NVH parts leader with new initiatives in ADAS

Tuopu is a leader in China's noise, vibration and harshness (NVH) market. It ranks No.1 in rubber shock absorber and No.6 in acoustic insulation products in terms of market share. Geely was Tuopu's largest customer by revenue contribution in FY16 (c.20%), followed by SAIC GM. We expect Tuopu to benefit from Geely's rapid growth via popular new models such as Boyue, Emgrand GS and Emgrand GL.

By investing in Intelligent Braking System (IBS), we believe the company is taking its first steps into the ADAS market in China, opening up significant long-term growth opportunities. Active safety is being increasingly included in new car safety assessments, including C-NCAP, and automatic braking is an essential active safety feature. Tuopu has been testing its IBS products with some JV OEMs. In May 2017, Tuopu completed its RMB2.4bn private placement to expand production capacity for IBS.

We expect Tuopu to deliver a 24% revenue and earnings CAGR over the next three years, mainly driven by robust growth momentum in traditional NVH products and by its IBS/EVP projects, which are due to start mass production in late FY18. We estimate a stable net profit margin of 14.8-15.9% in FY17-19E, driven by higher earnings contribution from IBS/EVP, partially offset by a mild decline in the gross profit margin of NVH.

Risks

Key downside risks include (1) weaker-than-expected auto sales volumes, affecting demand for auto components; (2) failure to record new order awards for IBS/EVP products; (3) any market share loss for Tuopu's key customers; and (4) an unexpected increase in raw material prices.

NVH giant tapping ADAS through intelligent braking

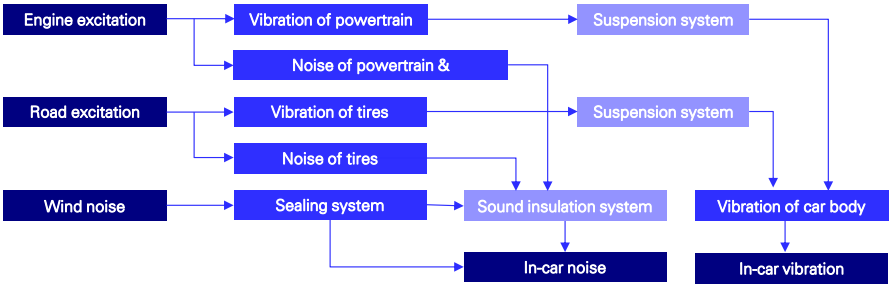
Key points

- Tuopu is a leader in China's Noise, Vibration and Harshness (NVH) market. It ranks No.1 in rubber shock absorbers and No.6 in acoustic insulation products in terms of market share.
- Geely was Tuopu's largest customer by revenue contribution in FY16. We expect Tuopu to benefit from Geely's rapid growth via popular new models such as Boyue, Emgrand GS and Emgrand GL.
- Tuopu is investing in Intelligent Braking System (IBS), a key component of advanced emergency braking (AEB), in order to capture growth in the ADAS/autonomous driving space in the long run.
- In May 2017, Tuopu completed its RMB2.4bn private placement to expand its production capacity for IBS and Electric Vacuum Pump (EVP). Both projects are scheduled to start mass production in late 2018.

A leader in NVH products

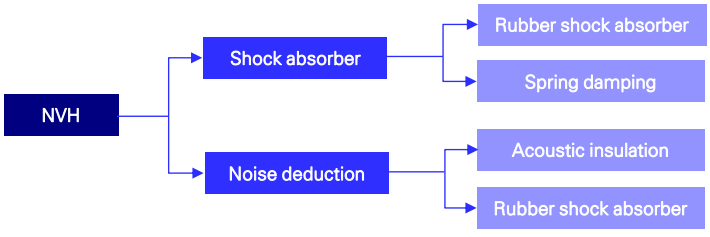
NVH is the noise, vibration and harshness that a driver feels when driving a vehicle, and is an important measurement of car quality. It is usually difficult to eliminate noise and vibration, so NVH parts focus on controlling the transmission path to achieve overall NVH targets.

Figure 70: Transmission path of NVH in a vehicle



Source: Company data

Figure 71: Classification of NVH products



Source: Company data

Tuopu is a leader in NVH products in China. To elaborate, in China, in terms of sales revenue, Tuopu's rubber shock absorber products ranked No.1 in China from 2011 to 2016, while sales revenue of acoustic insulation products ranked No.6 in China.

Figure 72: Tuopu's shock absorber products

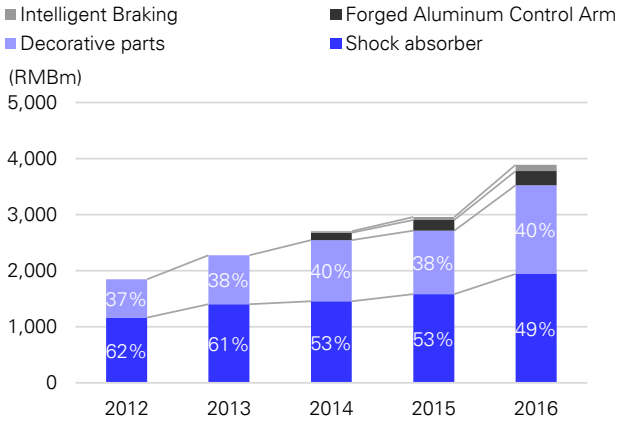
Source: Company data

Figure 73: Tuopu's noise reduction products

Source: Company data

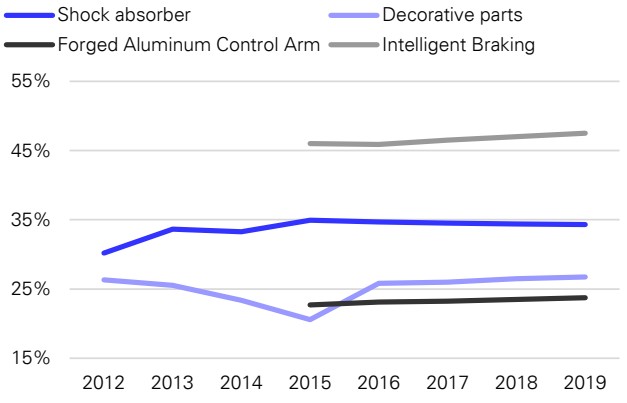
Tuopu's major revenue contributors are shock absorber products and decorative parts (mainly acoustic insulation products). The gross profit margins of these two have been stable in the past few years. We expect Tuopu's shock absorbing and noise insulation products to remain as the major revenue contributors in the next three years due to the long construction period of IBS/EVP projects and the currently low adoption rate of new products.

Figure 74: Revenue by segment



Source: Company data

Figure 75: GPM of major products



Source: Company data

Solid global customer base; benefiting from Geely's rapid growth

Tuopu's major customers are spread all over the world, as exhibited in Figure 76 and Figure 77. SAIC General Motor (SGM) was Tuopu's largest client in 2015, but was surpassed by Geely in 2016 due to the popularity of Geely's new models such as Boyue SUV, Emgrand GS and Emgrand GL. For overseas expansion, Tuopu signed an eight-year new order contract worth RMB1bn with GM in FY15 and a six-year new order contract worth RMB1.7bn with GM in FY16.

Figure 76: Tuopu – major customers in China

Source: Company data

Figure 77: Tuopu – major customers globally

Source: Company data

We expect Tuopu to continue to benefit from Geely's rapid growth as we believe Geely is on track to beat its FY17 sales target. We believe those orders will support Tuopu, with stable revenue growth and gross margin in the near future.

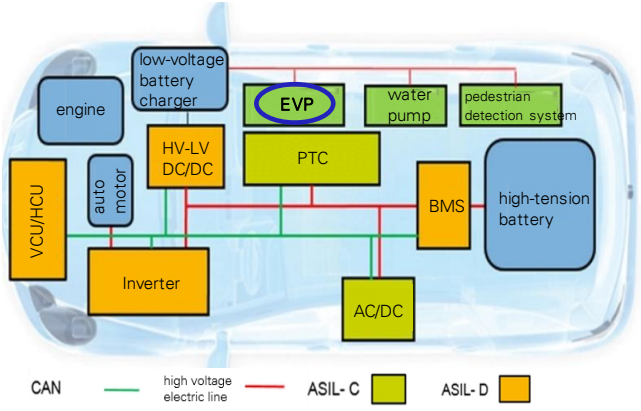
Solid track record in Electronic Vacuum Pump (EVP)

EVP is an important component of an automotive auxiliary braking system. By providing a vacuum for brake cylinders, EVP decreases drivers' braking and manipulating loads. Meanwhile, EVP improves the safety of automobiles.

Hella (HLE.DE, Buy, EUR45.72) is a major global player; Tuopu is among the few domestic brands with strong R&D capabilities. Tuopu started EVP project R&D in FY08 and began mass production in FY13. The company currently has a capacity of c.300k units for traditional EVP, which is mainly installed in turbo boost, together with vacuum booster.

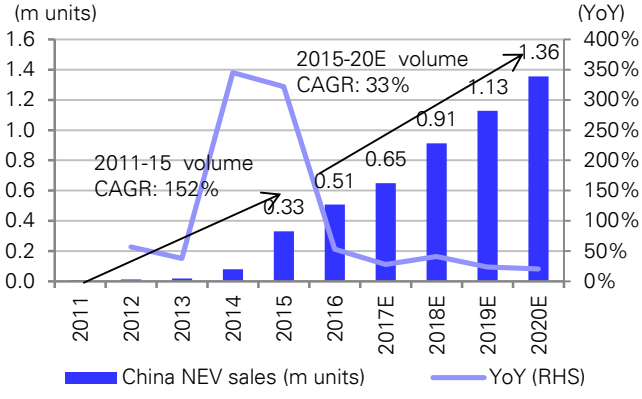
In addition to conventional gasoline vehicles, the new-generation EVP is widely installed in new energy vehicles (NEVs). We believe Tuopu will benefit from the NEV growth in China.

Figure 78: EVP application in NEV



Source: NXP

Figure 79: China NEV sales forecast



Source: Deutsche Bank estimates

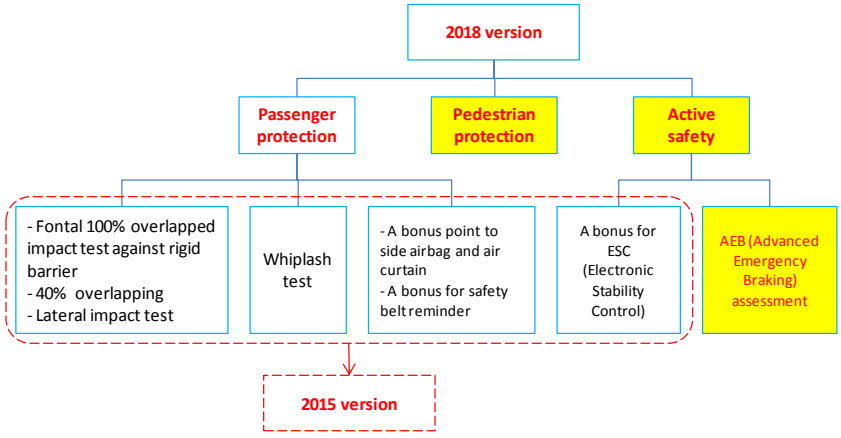
ADAS and autonomous driving through IBS

New C-NCAP standard supports the demand for IBS

Recently, ADAS related to active safety functionality has been increasingly included in new car safety scores, such as C-NCAP. This incentivizes OEMs to adopt more ADAS functionalities when launching new car models, as sophisticated drivers refer to C-NCAP scores as an authoritative car review.

In the new 2018 version of the C-NCAP assessment standard, the bonus score for Electronic Stability Control (ESC) will be classified in the active safety section, along with the newly added Advanced Emergency Braking (AEB) assessment (Figure 80). ESC systems help vehicles maintain good driving stability. AEB systems apply automatic braking when a vehicle is in an emergency situation to avoid or alleviate collision injuries.

Figure 80: 2018 vs. 2015 versions of C-NCAP standard content



Source: Cheyun.com, C-NCAP, Deutsche Bank

We believe AEB will become a standard component in new cars, thus boosting the demand for its core Intelligent Braking System (IBS) component. According to the US National Highway Traffic Safety Administration (NHTSA) and the Insurance Institute for Highway Safety in March 2016, 20 automakers in the US had agreed to install automatic emergency braking systems as a standard feature on all new cars by 2022.

Bosch is the only mass producer of IBS globally. Due to the high unit cost of IBS (RMB4,000-4,500), it is only installed in a small number of luxury car models. According to our channel checks, TRW, Continental and Hitachi also plan to enter the IBS market and start mass production in 2017.

Tuopu will be the first domestic company to start mass production, in late 2018. The company is currently testing its IBS products with some JV brands in China. Aiming to bring the cost per vehicle down to c.RMB2,000, according to management, we believe Tuopu's IBS products will be competitive compared with the foreign brands. Meanwhile, the close relationship with local OEMs in China should enable Tuopu to cross-sell IBS.

Private placement to build capacity for IBS and EVP

In May 2017, Tuopu completed its RMB2.4bn private placement. To elaborate, Tuopu will invest RMB2.2bn in IBS, with a designed capacity of 1.5m units, and RMB649m in second-generation EVPs, with a designed capacity of 2m units. Both projects are expected to enter mass production in 2018.

Figure 81: Details of Tuopu's RMB2.4bn private placement in November 2016

Project	Total investment	Investment from private placement	Designed capacity	Construction period	Involved Entity
IBS	RMB2,211m	RMB1,962m	1.5m units per year	2 years	Ningbo Tuopu Group
EVP	RMB649m	RMB433m	2m units per year	2 years	Ningbo Tuopu Chassis Technology

Source: Company data

Rating
Sell

Asia
China

Automobiles & Components

Company
NavInfo Co., Ltd.

Reuters	Bloomberg
002405.SZ	002405 CH

Price at 9 Jun 2017 (CNY)	17.90
Price target - 12mth (CNY)	14.90
52-week range (CNY)	26.46 - 16.55
Shenzhen Index	1,938

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Price/price relative

Performance (%)	1m	3m	12m
Absolute	-2.0	-9.5	-24.4
Shenzhen Index	0.3	-7.8	-3.4

Source: Deutsche Bank

Premium valuation outweighs technology potential; SELL

High-level autonomous driving adoption a long way to go

NavInfo's appeal lies in three key areas. First, its 40% share in pre-installed navigation system, a high margin but maturing business, along with its ongoing investment in HD mapping. Second, is the recent RMB3.9bn acquisition of Jiefa which supplies SoC solutions for infotainment systems. Third, is its position as an investment within Tencent group. While we see consistent growth of 7% for the former operation and the major contribution that Jiefa already generated, the RMB18bn market cap and 2018 PER of over 50x is above our expectations for developments in the ADAS field on a 2-3 year time horizon, and we initiate coverage with a Sell and RMB14.9 target price.

Leader in pre-installed auto navigation maps and Internet of Vehicles (IoVs)

Navigation maps contributed 48-54% of NavInfo's revenues in FY12-16 and 49-64% of its gross profit. Given increasing pre-installation penetration and pricing competition, we expect muted growth in in-dash car navigation system sales. Moreover, we expect the revenue contribution from IoVs to fall from 33% in FY16 to 28% in FY19 and the gross profit contribution from 22% to 20% during the period, after the inclusion of the Jiefa acquisition.

Jiefa consolidation to drive growth; HD maps and ADAS investments still early

The major revenue contributor in FY17-19E will be the consolidation of Jiefa, which NavInfo acquired for RMB3.9bn. We expect the revenue contribution to grow from nil in FY16 to 33% in FY19. However, it is difficult for Jiefa to penetrate into ADAS SoC solutions, as its chips are used mainly in after-market navigation and infotainment. Investments in HD maps and ADAS solutions are still at an early stage and will take time to yield meaningful contributions.

Initiating with a Sell on a fair valuation and TP at 45x FY18E P/E; risks

Our TP is set at 45x FY18E P/E. We expect NavInfo to deliver 39% FY16-19E EPS CAGR, driven by consolidation of Jiefa & growth in the connected car business, but offset partly by heavy investment in ADAS projects. Upside risks: stronger-than-expected China auto sales; faster-than-expected growth at Jiefa.

Forecasts And Ratios

Year End Dec 31	2015A	2016A	2017E	2018E	2019E
Sales (CNYm)	1,492.7	1,571.6	2,163.0	2,535.3	2,866.6
EBITDA (CNYm)	324.2	317.9	345.7	484.1	593.7
Reported NPAT (CNYm)	130.2	156.6	316.4	428.8	516.2
Reported EPS FD (CNY)	0.12	0.15	0.25	0.33	0.40
DB EPS FD (CNY)	0.10	0.14	0.25	0.33	0.40
DB EPS growth (%)	30.6	40.9	85.0	29.7	20.4
PER (x)	255.5	153.0	70.3	54.2	45.0
EV/EBITDA (x)	75.5	64.4	48.9	34.4	27.4
DPS (net) (CNY)	0.04	0.04	0.07	0.10	0.12
Yield (net) (%)	0.1	0.2	0.4	0.6	0.7

Source: Deutsche Bank estimates, company data

[1] DB EPS is fully diluted and excludes non-recurring items

[2] Multiples and yields calculations use average historical prices for past years and spot prices for current and future years, except P/B which uses the year end close

Model updated: 08 June 2017

Running the Numbers

Asia

China

Auto/Motor Vehicle

NavInfo Co., Ltd.

Reuters: 002405.SZ Bloomberg: 002405 CH

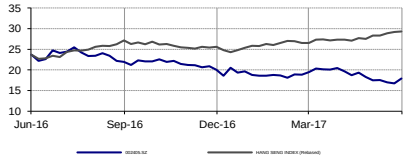
Sell

Price (9 Jun 17)	CNY 17.90
Target price	CNY 14.90
52-week Range	CNY 16.55 – 26.46
Market Cap	CNY 19,091m US$ 2,810m

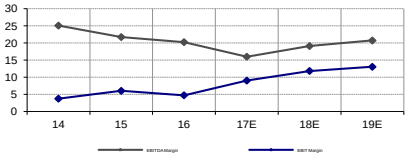
Company Profile

NavInfo Co., Ltd. is a China-based company engaged principally in the manufacture and distribution of navigation electronic maps. The company operates its business through navigation electronic maps, including automobile navigation fields, consumer electronics fields and others, as well as integrated geographical information services, and it provides dynamic traffic information services, car networking and map compilation services, online services and industry applications.

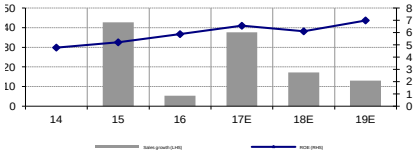
1yr Price Performance



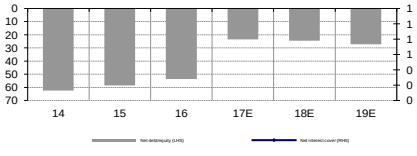
Margin Trends



Growth & Profitability



Solvency



Vincent Ha, CFA
+852 2203 6247 vincent.ha@db.com

Fiscal year end 31-Dec	2014	2015	2016	2017E	2018E	2019E
Financial Summary						
DB EPS (CNY)	0.07	0.10	0.14	0.25	0.33	0.40
Reported EPS (CNY)	0.11	0.12	0.15	0.25	0.33	0.40
DPS (CNY)	0.03	0.04	0.04	0.07	0.10	0.12
BVPS (CNY)	2.31	2.38	2.62	5.32	5.58	5.88
Weighted average shares (m)	1,037	1,040	1,042	1,234	1,290	1,290
Average market cap (CNYm)	12,705	25,959	21,966	19,091	19,091	19,091
Enterprise value (CNYm)	11,202	24,477	20,459	16,901	16,656	16,245
Valuation Metrics						
P/E (DB) (x)	163.7	255.5	153.0	70.3	54.2	45.0
P/E (Reported) (x)	108.1	200.1	141.3	70.3	54.2	45.0
P/BV (x)	5.63	10.84	7.39	3.36	3.21	3.05
FCF Yield (%)	nm	nm	nm	0.6	1.0	1.8
Dividend Yield (%)	0.3	0.1	0.2	0.4	0.6	0.7
EV/Sales (x)	10.71	16.40	13.02	7.81	6.57	5.67
EV/EBITDA (x)	42.7	75.5	64.4	48.9	34.4	27.4
EV/EBIT (x)	286.7	272.7	275.3	86.7	55.6	43.5
Income Statement (CNYm)						
Sales revenue	1,046	1,493	1,572	2,163	2,535	2,867
Gross profit	849	1,137	1,205	1,560	1,789	1,993
EBITDA	262	324	318	346	484	594
Depreciation	44	48	41	39	41	45
Amortisation	179	186	203	112	143	176
EBIT	39	90	74	195	300	373
Net interest income(expense)	36	19	27	18	15	16
Associates/affiliates	5	6	15	0	0	0
Exceptionals/extraordinaries	0	0	0	0	0	0
Other pre-tax income/(expense)	93	83	48	97	106	116
Profit before tax	173	199	164	310	420	506
Income tax expense	44	53	47	77	105	126
Minorities	12	16	-40	-84	-114	-137
Other post-tax income/(expense)	0	0	0	0	0	0
Net profit	118	130	157	316	429	516
DB adjustments (including dilution)	-40	-28	-12	0	0	0
DB Net profit	78	102	145	316	429	516
Cash Flow (CNYm)						
Cash flow from operations	325	296	399	322	443	619
Net Capex	-399	-303	-458	-196	-211	-213
Free cash flow	-74	-6	-59	126	232	407
Equity raised/(bought back)	14	277	1	3,800	0	0
Dividends paid	-42	-39	-44	-48	-96	-130
Net inc/(dec) in borrowings	59	-71	-26	-1	-1	-1
Other investing/financing cash flows	317	-91	211	-3,890	-12	-10
Net cash flow	274	70	83	-13	123	266
Change in working capital	*-22*	*-72*	*31*	*-38*	*-28*	*54*
Balance Sheet (CNYm)						
Cash and other liquid assets	1,732	1,779	1,724	1,711	1,834	2,099
Tangible fixed assets	206	317	766	807	850	897
Goodwill/intangible assets	520	694	758	4,065	4,081	4,061
Associates/investments	34	172	183	794	801	809
Other assets	620	766	691	893	1,031	1,046
Total assets	3,111	3,728	4,122	8,270	8,597	8,913
Interest bearing debt	92	46	22	21	20	19
Other liabilities	389	718	929	1,092	1,201	1,269
Total liabilities	481	764	951	1,113	1,221	1,288
Shareholders' equity	2,461	2,542	2,793	6,862	7,195	7,581
Minorities	169	422	378	294	181	44
Total shareholders' equity	2,630	2,964	3,172	7,157	7,376	7,625
Net debt	*-1,639*	*-1,733*	*-1,702*	*-1,690*	*-1,814*	*-2,081*
Key Company Metrics						
Sales growth (%)	na	42.7	5.3	37.6	17.2	13.1
DB EPS growth (%)	na	30.6	40.9	85.0	29.7	20.4
EBITDA Margin (%)	25.1	21.7	20.2	16.0	19.1	20.7
EBIT Margin (%)	3.7	6.0	4.7	9.0	11.8	13.0
Payout ratio (%)	29.2	29.3	29.6	29.0	30.3	30.3
ROE (%)	4.8	5.2	5.9	6.6	6.1	7.0
Capex/sales (%)	38.2	20.6	29.2	10.0	9.1	8.1
Capex/depreciation (x)	1.8	1.3	1.9	1.4	1.3	1.1
Net debt/equity (%)	-62.3	-58.5	-53.7	-23.6	-24.6	-27.3
Net interest cover (x)	nm	nm	nm	nm	nm	nm

Source: Company data, Deutsche Bank estimates

Investment thesis

Leading digital map provider, ADAS a long way to ripe

NavInfo is a licensed surveyor specialising in the digital navigation map business. Tencent (0700.HK, Buy, HKD272.8), through its investment fund, holds 11% equity stake in the company. It is the leader in China's in-dash navigation systems and had a 40% share in China's pre-installation navigation market in 4Q16. Navigation contributed 48-54% of its revenues in FY12-16 and 49-64% of its gross profit.

NavInfo's Internet of Vehicles (IoVs) business mainly includes dynamic traffic information and services (WeLink). The revenue contribution from IoVs has grown from 24% in FY12 to 33% in FY16. Meanwhile, the gross profit contribution has also risen, from 19% in FY12 to 22% in FY16.

NavInfo has been investing in high-definition (HD) maps and ADAS solutions since 2015. However, we believe investment in ADAS and IoVs is still at an early stage and will take time to yield meaningful contributions.

The company acquired Jiefa Technology (杰发科技) in 2016. While we believe SoC (system on chip) solutions are crucial for autonomous driving, Jiefa's chip know-how is only about after-market navigation and infotainment, and we believe it will be difficult for Jiefa to penetrate into the ADAS SoC solutions market, which is still dominated by global leading suppliers.

We expect NavInfo to deliver a 22.2% FY16-19 gross revenue and a 38.7% EPS CAGR, driven mainly by the consolidation of Jiefa Tech and growth in the connected car business. We expect the gross profit margin to remain on a mild declining trend, to reach 69.5-72.1% in FY17-19, from 76.6% in FY16. However, we estimate an expanding net profit margin of 14.6-18.0% in FY17-19, due to the inclusion of Jiefa.

Risks

Key upside risks include 1) less-than-expected competition in the auto in-dash navigation market; 2) stronger-than-expected auto sales volume, affecting demand for in-dash navigation systems; 3) any market share gain at NavInfo's clients; 4) faster-than-expected development in the IoVs and ADAS businesses; and 5) a more efficient consolidation of Jiefa Tech.

Investing in ADAS mapping taking time to bear fruit

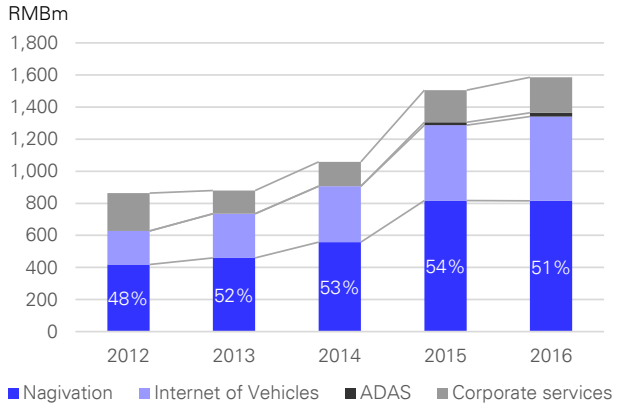
Key points:

- NavInfo is one of the nine licensed surveyors in China specialising in the digital navigation map business.
- It is the leader in China's in-dash navigation systems, and had a 40% share in China's pre-installation navigation market in 4Q16.
- NavInfo has been focusing on HD maps and ADAS solutions since 2015. We believe investments in ADAS and IoVs are still at an early stage and will take time to yield meaningful contributions.
- While we believe SoC (system on chip) solutions are crucial for autonomous driving, Jiefa's chip know-how is only about after-market navigation and infotainment, and we believe it will be difficult for Jiefa to penetrate into the ADAS SoC solutions market.

Dominance in in-dash navigation systems

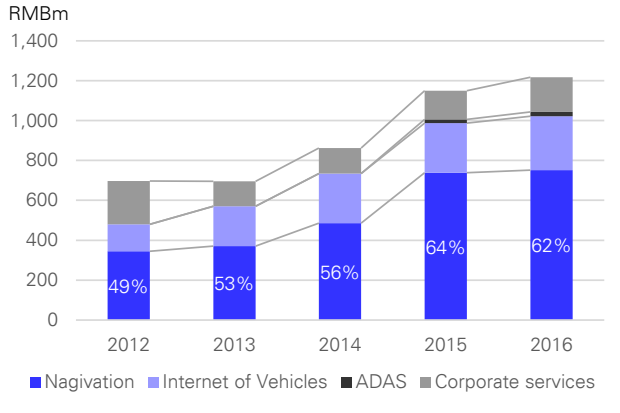
The navigation business has been NavInfo's traditional strength and earnings pillar in the past few years. Map surveying is a restricted business in China, and NavInfo is one of the nine licensed surveyors of the National Administration of Surveying, Mapping and Geoinformation (国家测绘地理信息局) specialising in the digital navigation map business.

Figure 82: Navigation contributes 48-54% of revenue



Source: Company data, Deutsche Bank

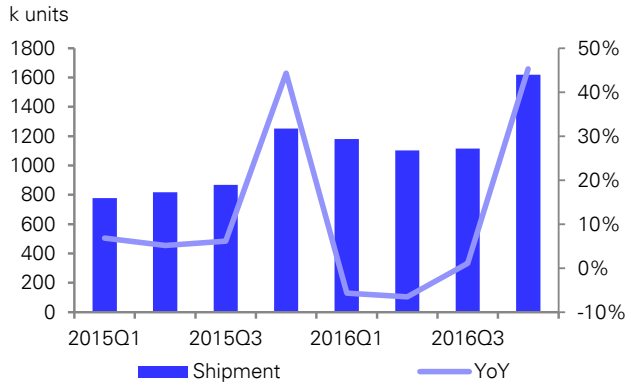
Figure 83: Navigation contributes 49-64% of gross profit



Source: Company data, Deutsche Bank

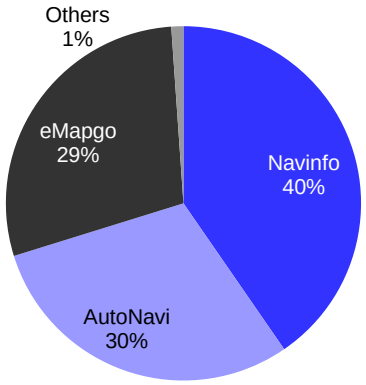
NavInfo is a market leader in in-dash navigation systems and had a 40% share in China's pre-installation navigation market in 4Q16. The company has established good relationships with auto manufacturers over the years. This has also enabled the company to easily penetrate other product categories, such as ADAS and IoVs.

Figure 84: Shipment of in-dash navigation in China



Source: Analysys

Figure 85: NavInfo market share in 4Q16



Source: Analysys

Figure 86: Major OEM customers for in-vehicle navigation services

Luxury brand	
Mass market brand	
Local brand	

Source: Company data

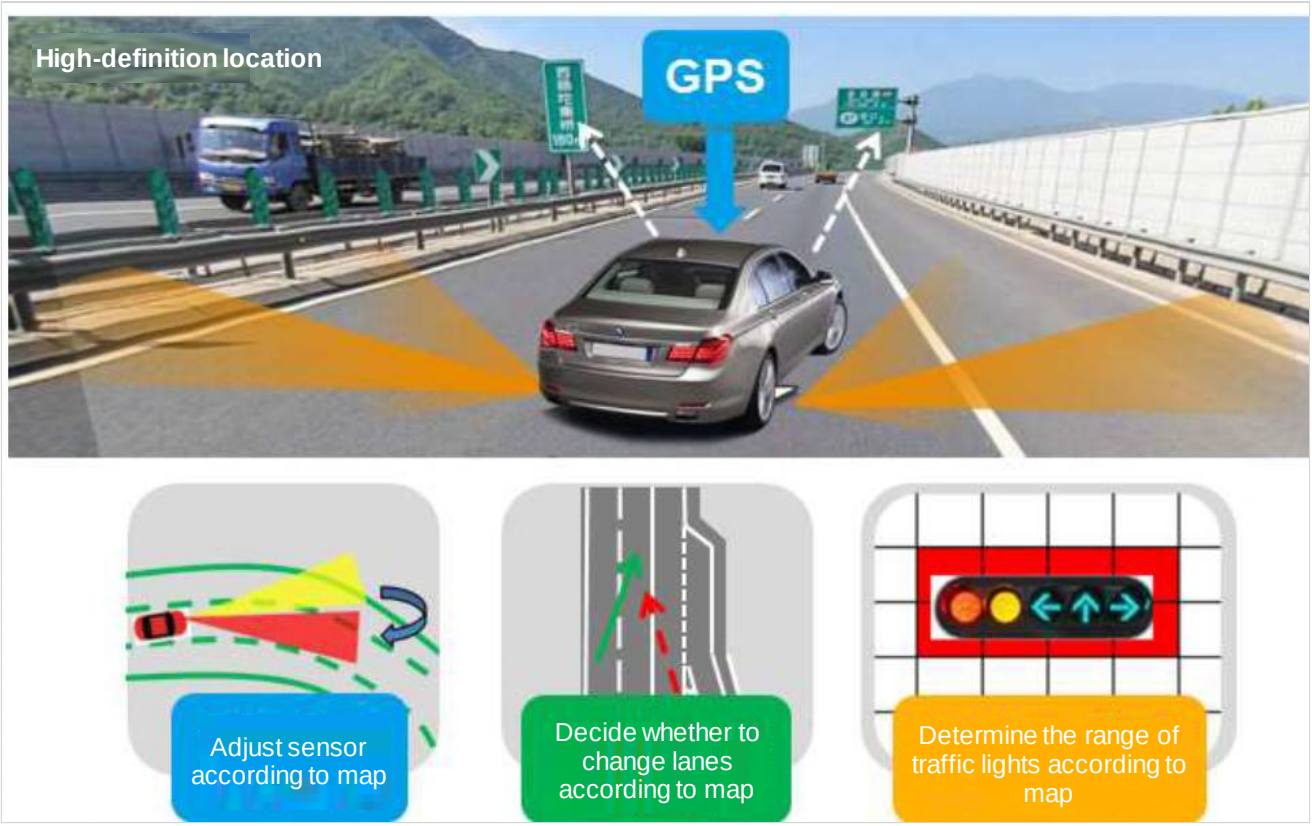
HD maps and WeLink in early-stage investment

High-definition (HD) maps

High-definition (HD) maps are the building blocks for ADAS/autonomous cars (Level 4-5 automation). Compared with ordinary navigation maps, HD maps provide more precise coordinated positions. To elaborate, the coordinated precision of ordinary navigation maps is c.10m, while that of HD maps is less than 1m. In addition, HD maps provide precise data of road shapes, including the slopes, curvatures and directions that are crucial for recognising the surrounding environment, and making decisions on sensor adjustments, lane changing and route planning, etc., during autonomous driving (AD).

NavInfo has been focusing on the research and development of HD maps, ADAS solutions and AD solutions, which involves data processing, chips and algorithms, since 2015. Indeed, its HD map data product has been jointly certified by many mainstream OEMs and research institutions. Moreover, in December 2016, NavInfo signed a cooperation agreement for an AD project with Great Wall Motors (GWM, 2333.HK, Hold, HKD8.59) for collaboration on vehicle auto controls, intelligent auto driving algorithms and many other AD technology fields.

Figure 87: HD map for ADAS



Source: Company data

International collaboration

In December 2016, NavInfo, through SIWAY Coöperatief U.A., invested jointly with Tencent (700.HK, Buy, HKD272.8) and GIC, to acquire a 10% equity share in HERE. HERE is a European mapping company established by German's big-three OEMs, Daimler (DAIGn.DE, Buy, EUR65.17), BMW (BMWG.DE, Buy, EUR84.6) and Volkswagen (VOWG_p.DE, Hold, EUR133.2).

NavInfo has completed the establishment of a 50-50 JV in China with HERE to collaborate further on AD, HD maps, location service platforms, big data and analysis, as well as new market expansion. Meanwhile, the collaboration with HERE also enables NavInfo to establish strategic alliances with the German big-three OEMs to provide global map data and location service solutions.

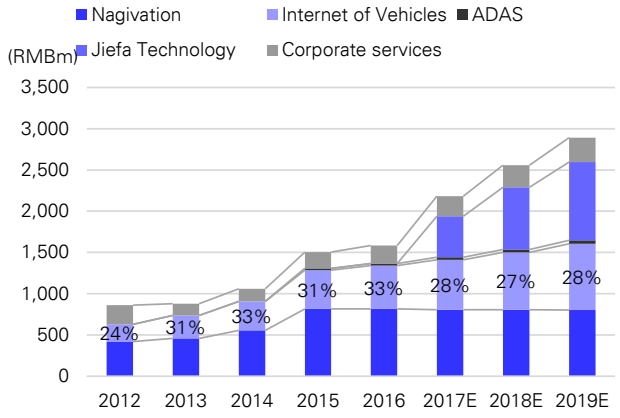
Internet of Vehicles (IoVs)

Besides HD maps, NavInfo also focuses on the research and development of IoVs. Its IoVs business mainly includes dynamic traffic information products and services for both passenger vehicles (PVs) and commercial vehicles (CVs). The revenue contribution from IoVs has grown from 24% in FY12 to 33% in FY16. Meanwhile, the gross profit contribution from IoVs has also risen, from 19% in FY12 to 22% in FY16.

NavInfo has launched a mobile and vehicle interconnection solution, namely WeLink for the PV IoVs. WeLink not only has the full version of navigation data, but also includes real-time traffic data, ADAS HD data and professional navigation software. WeLink supports Wi-Fi, Bluetooth and the USB three connection method, and it has strong compatibility, given its adoptions on

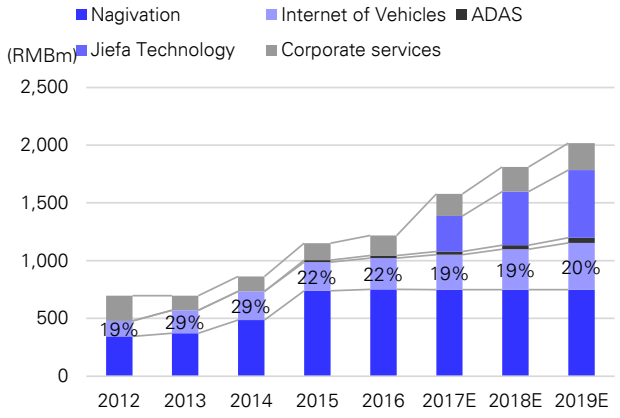
both mobile and vehicle devices. Indeed, the GWM Haval H1 is already equipped with the WeLink product. Moreover, NavInfo and Jiefa Technology (to be discussed later) have co-developed a clip-level optimised WeLink solution that would shorten the end-product launch time and improve the user experience with a faster response time.

Figure 88: IoVs has contributed 24-33% revenue over FY12-16



Source: Company data, Deutsche Bank

Figure 89: IoVs has contributed 19-29% gross profit over FY12-16



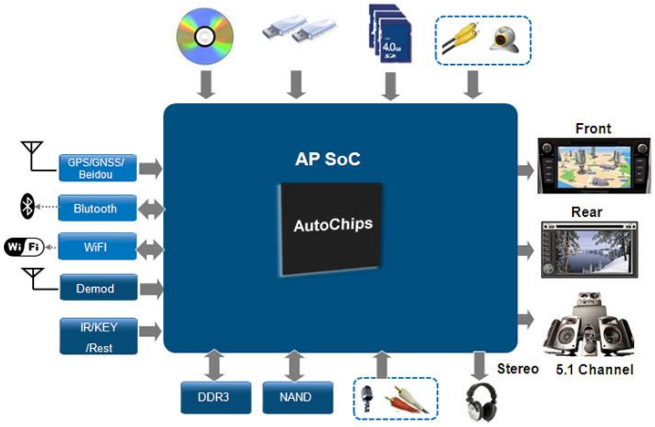
Source: Company data, Deutsche Bank

Auto chip business difficult to penetrate ADAS SoC

NavInfo acquired Jiefa Technology (杰发科技) in 2016 for a total consideration of RMB3,875m (at 17x implied FY17E P/E). Jiefa Tech, headquartered in Hefei, was previously the auto electronics subsidiary of MediaTek (2454.TW, Hold, TWD252.0), and is involved mainly in All Programmable System on Chips (AP SoC) and connectivity solutions for car infotainment systems.

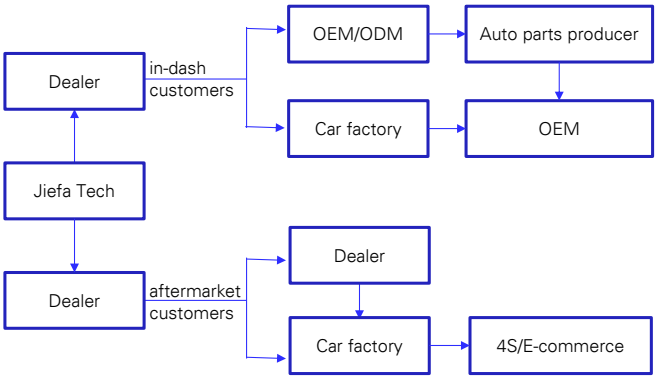
Jiefa has focused on after-market installations and also established relationships with global Tier-1 suppliers, including Alpine, Delphi, Clarion, Visteon and Pioneer. Its products have been installed by mass-market OEMs in China, such as Honda, Ford, Suzuki, Nissan and Peugeot.

Figure 90: Jiefa's total solution (AP SoC+ Connectivity)



Source: Company data, Deutsche Bank

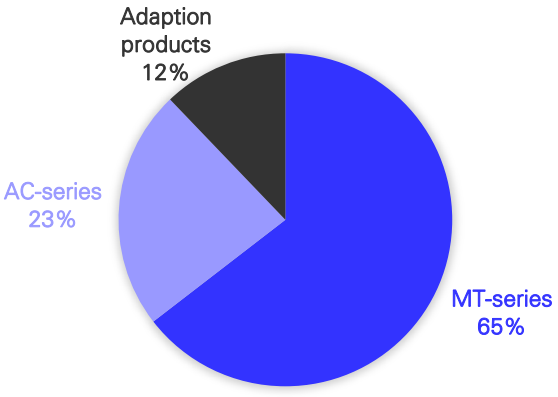
Figure 91: Jiefa Tech's customer structure



Source: Company data, Deutsche Bank

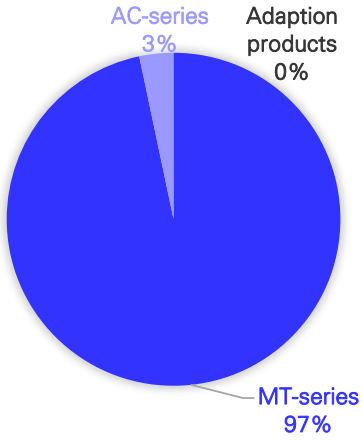
Its major products are MT-series chips, AC-series chips and adaption products. According to NavInfo, 65% of Jiefa's revenue was from MT-series, 23% from AC-series and 12% from adaption products in 7M16.

Figure 92: Jiefa Tech – revenue breakdown in 7M16



Source: Company data, Deutsche Bank

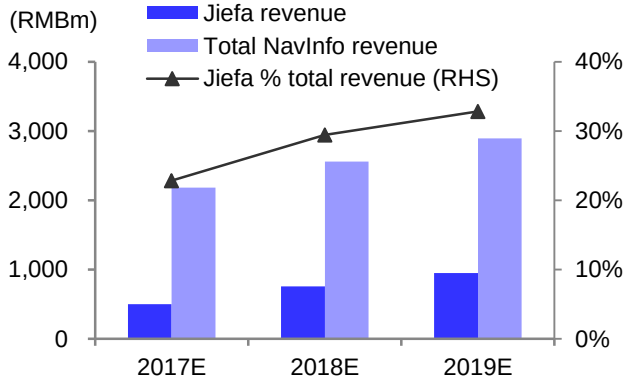
Figure 93: Jiefa Tech – gross profit breakdown in 7M16



Source: Company data, Deutsche Bank

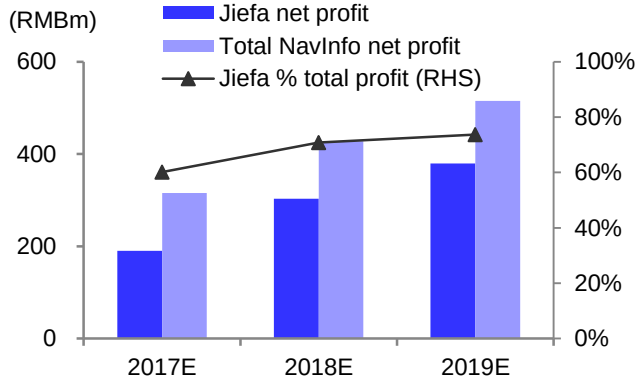
While we believe SoC solutions are crucial for autonomous driving, as sensor fusion and related information analysis requires a large amount of computing capability, Jiefa's chip know-how is only about after-market navigation and infotainment. Jiefa can leverage on NavInfo to penetrate the OEM pre-installation market, but we believe it will be difficult for Jiefa to penetrate the ADAS SoC solutions market, which is still dominated by global leading suppliers.

Figure 94: Jiefa Tech – revenue contribution to NavInfo



**Note: Jiefa Tech in consolidated in NavInfo financial statements since March 2017.*
Source: Company data, Deutsche Bank estimates

Figure 95: Jiefa Tech – net profit contribution to NavInfo



**Note: Jiefa Tech in consolidated in NavInfo financial statements since March 2017.*
Source: Company data, Deutsche Bank estimates

Model updated:08 June 2017

Running the numbers

Asia

China

Automobiles & Components

Huayu Automotive

Reuters: 600741.SS Bloomberg: 600741 CH

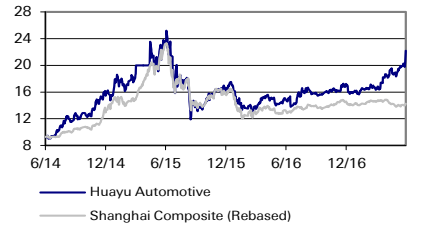
Buy

Price (9 Jun 17)	CNY 22.95
Target Price	CNY 24.30
52 Week range	CNY 13.80 - 22.95
Market Cap (m)	CNYm 72,355
	USDm 10,650

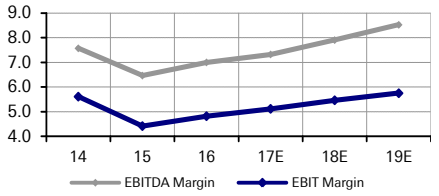
Company Profile

Huayu Automotive Systems Company Limited (HASCO) manufactures and sells auto parts, with six core business divisions such as metal forming & dies, interior & exterior trimming, electric and electronics parts, function parts, hot-worked parts and new energy parts. Huayu's parent and controlling shareholder is Shanghai Automotive Industry Corporation (Group).

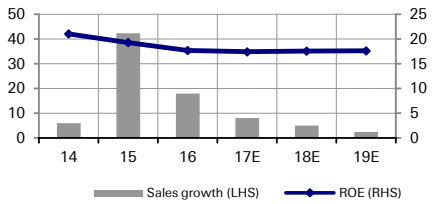
Price Performance



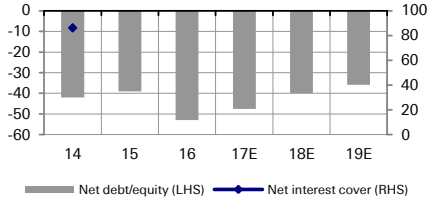
Margin Trends



Growth & Profitability



Solvency



Fei Sun, CFA
+852 2203 6130 fei.sun@db.com

Fiscal year end 31-Dec	2014	2015	2016	2017E	2018E	2019E
Financial Summary						
DB EPS (CNY)	1.57	1.67	1.82	2.08	2.31	2.56
Reported EPS (CNY)	1.72	2.03	1.93	2.21	2.45	2.70
DPS (CNY)	0.52	0.99	1.00	1.10	1.23	1.35
BVPS (CNY)	9.1	11.9	12.1	13.3	14.6	16.1
Weighted average shares (m)	2,583	2,583	3,153	3,153	3,153	3,153
Average market cap (CNYm)	28,359	46,358	48,024	72,355	72,355	72,355
Enterprise value (CNYm)	7,758	24,383	16,368	40,929	42,951	43,427
Valuation Metrics						
P/E (DB) (x)	7.0	10.7	8.4	11.0	9.9	9.0
P/E (Reported) (x)	6.4	8.9	7.9	10.4	9.4	8.5
P/BV (x)	1.69	1.42	1.32	1.73	1.57	1.42
FCF Yield (%)	10.4	6.6	15.1	2.8	0.7	2.9
Dividend Yield (%)	4.7	5.5	6.6	4.8	5.3	5.9
EV/Sales (x)	0.1	0.2	0.1	0.3	0.3	0.3
EV/EBITDA (x)	1.4	3.6	1.9	4.2	3.9	3.5
EV/EBIT (x)	1.9	5.3	2.7	6.0	5.6	5.2
Income Statement (CNYm)						
Sales revenue	73,756	104,975	123,747	133,817	140,577	144,146
Gross profit	11,199	13,983	17,672	19,098	20,304	20,980
EBITDA	5,587	6,791	8,667	9,805	11,119	12,294
Depreciation	1,077	1,835	2,335	2,709	3,167	3,711
Amortisation	368	315	364	242	264	288
EBIT	4,142	4,641	5,968	6,853	7,688	8,295
Net interest income(expense)	-48	64	120	103	55	65
Associates/affiliates	2,455	2,800	3,349	3,788	4,212	4,872
Exceptionals/extraordinaries	0	0	0	0	0	0
Other pre-tax income/(expense)	433	831	424	495	515	536
Profit before tax	6,982	8,336	9,861	11,239	12,470	13,767
Income tax expense	786	950	1,278	1,405	1,559	1,721
Minorities	1,740	2,153	2,507	2,872	3,187	3,518
Other post-tax income/(expense)	0	0	0	0	0	0
Net profit	4,456	5,233	6,076	6,962	7,724	8,528
DB adjustments (including dilution)	-394	-907	-337	-411	-431	-453
DB Net profit	4,061	4,325	5,739	6,552	7,293	8,075
Cash Flow (CNYm)						
Cash flow from operations	6,094	6,631	11,375	7,479	6,811	9,482
Net Capex	-3,155	-3,584	-4,125	-5,439	-6,336	-7,398
Free cash flow	2,939	3,047	7,250	2,039	475	2,084
Equity raised/(bought back)	0	0	0	0	0	0
Dividends paid	-1,343	-2,554	-3,153	-3,481	-3,862	-4,264
Net inc/(dec) in borrowings	-729	-719	884	-280	-252	-227
Other investing/financing cash flows	1,214	428	5,465	2,089	2,345	2,686
Net cash flow	2,081	203	10,446	368	-1,294	280
Change in working capital	*859*	*-83*	*3,315*	*-1,743*	*-3,508*	*-1,863*
Balance Sheet (CNYm)						
Cash and other liquid assets	15,659	19,395	29,895	30,262	28,969	29,248
Tangible fixed assets	9,449	15,884	18,250	20,817	23,790	27,246
Goodwill/intangible assets	1,751	2,557	2,675	2,816	2,976	3,156
Associates/investments	13,524	13,923	15,110	17,104	19,310	21,846
Other assets	22,857	39,223	41,681	45,458	46,156	49,136
Total assets	63,242	90,983	107,612	116,457	121,202	130,633
Interest bearing debt	3,684	4,894	5,602	5,322	5,069	4,843
Other liabilities	31,040	48,983	56,166	58,610	56,177	57,651
Total liabilities	34,724	53,877	61,768	63,932	61,246	62,494
Shareholders' equity	23,619	30,656	38,097	41,906	46,149	50,815
Minorities	4,899	6,450	7,747	10,619	13,806	17,324
Total shareholders' equity	28,517	37,106	45,844	52,525	59,955	68,139
Net debt	*-11,975*	*-14,501*	*-24,293*	*-24,941*	*-23,899*	*-24,406*
Key Company Metrics						
Sales growth (%)	6.0	42.3	17.9	8.1	5.1	2.5
DB EPS growth (%)	25.0	6.5	8.7	14.2	11.3	10.7
EBITDA Margin (%)	7.6	6.5	7.0	7.3	7.9	8.5
EBIT Margin (%)	5.6	4.4	4.8	5.1	5.5	5.8
Payout ratio (%)	30.1	48.8	51.9	50.0	50.0	50.0
ROE (%)	21.0	19.3	17.7	17.4	17.5	17.6
Capex/sales (%)	4.6	3.6	3.6	4.1	4.5	5.2
Capex/depreciation (x)	2.4	1.8	1.7	1.9	1.9	1.9
Net debt/equity (%)	-42.0	-39.1	-53.0	-47.5	-39.9	-35.8
Net interest cover (x)	86.3	nm	nm	nm	nm	nm

Source: Company data, Deutsche Bank estimates

The authors of this report wish to acknowledge the contribution made by *Lu Xu*, **an employee of CRISIL Global Research & Analytics, a division of CRISIL Limited, a third-party provider of offshore research support services to Deutsche Bank**.

Appendix 1

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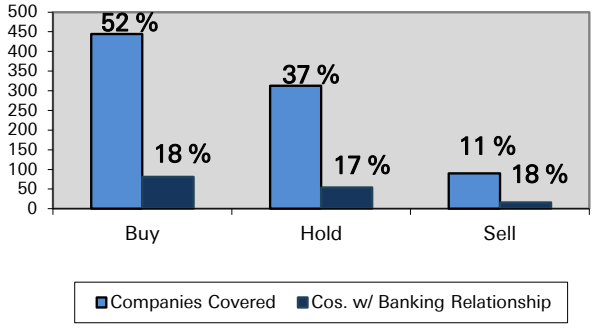
Buy: Based on a current 12- month view of total share-holder return (TSR = percentage change in share price from current price to projected target price plus pro-jected dividend yield) , we recommend that investors buy the stock.

Sell: Based on a current 12-month view of total share-holder return, we recommend that investors sell the stock

Hold: We take a neutral view on the stock 12-months out and, based on this time horizon, do not recommend either a Buy or Sell.

Newly issued research recommendations and target prices supersede previously published research.

Equity rating dispersion and banking relationships



Asia-Pacific Universe

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