Daiwa Capital Markets

Korea Automobiles and Components Sector

Electric vehicles and smart cars: reinventing the wheel

- Apple and Tesla's aggressive moves towards EVs and smart cars herald a new era and should give parts makers' shares a leg up
- We revise up our EV and smart-car forecasts on more stringent regulations, government support and falling component prices
- Mando and Hanon (both Buys [1]) are our top picks; we also like HMC (Buy [1]) on a 6-month view

Negative | Neutral | **Positive**

Positive
(unchanged)

Sung Yop Chung
(82) 2 787 9157
sychung@kr.daiwacm.com

Table of contents

EVs and smart cars: changing the landscape 7

Reality check: what are the obstacles? 13

Our forecasts for EVs and smart cars: what's new 18

Electric vehicles: strong drivers ahead 22

Smart cars: faster-than-expected growth should provide impetus..... 32

EVs and smart cars: auto and ICT parts makers to lead the pack 46

Valuations and recommendations 56

Appendix 69

Company Section

Mando Corp 73

Hanon Systems.....81

Hyundai Motor.....90

Hyundai Mobis 101

Kia Motors.....110

Hyundai Wia Corp 120

S&T Motiv.....125

Woory Industrial 127

Daiwa Capital Markets

Korea Automobiles and Components Sector

Electric vehicles and smart cars: reinventing the wheel

- Apple and Tesla's aggressive moves towards EVs and smart cars herald a new era and should give parts makers' shares a leg up
- We revise up our EV and smart-car forecasts on more stringent regulations, government support and falling component prices
- Mando and Hanon (both Buys [1]) are our top picks; we also like HMC (Buy [1]) on a 6-month view

Negative | Neutral | **Positive**

→ **Positive** (unchanged)

Sung Yop Chung
(82) 2 787 9157
sychung@kr.daiwacm.com

What's new: Tesla's unveiling of its first mass-market electric vehicle (EV), the Model 3, along with Apple's more aggressive stance on developing EVs with smart-car functions, are rapidly changing the car industry landscape. We are revising up our global EV shipment forecasts for 2016-30 and our market forecasts for smart cars for 2016-25. In turn, we now see a stronger earnings growth trajectory for auto parts makers over the next 3 years.

What's the impact: **Upward revisions to EV and smart-car market forecasts.** We now see stronger growth drivers for EVs globally, backed by: 1) a more stringent regulatory environment for fuel-economy and emission control standards, 2) a stronger shipment growth trajectory from China, and 3) a faster-than-expected decline in EV battery prices. As such, we are raising our EV demand forecast globally to 2,600,000 units by 2020 (2015-20E CAGR of 36.9%) from 750,000 units (CAGR of 28.3%).

For smart cars, we now expect the automotive electronics market to reach USD341.3bn by 2020 (2015-20E CAGR of 8.4%) from USD323.1bn (CAGR of 7.3%), on: 1) more stringent safety measures, 2) a faster rise in electronic content per vehicle for advanced driver assistance systems (ADAS), connectivity and infotainment, and 3) information and communication technology (ICT) players' focus on uncovering new growth angles.

We expect auto parts' makers to lead the pack and enjoy higher profitability vs. OEMs over the long term, through their competency in key components for EVs and smart cars as well as their system-supplying capabilities. While the end-customer (auto OEMs and ICT players) market is fragmented, there are only a few players globally with these capabilities. As such, auto parts makers have been recording higher operating profit than OEMs, and we expect this trend to continue over the next 3 years.

What we recommend: We look for Mando Corp (Mando) and Hanon Systems (Hanon) to lead the way in earnings visibility and expansion of trading multiples, on their strong competitive edge as system suppliers for thermal energy management and ADAS capabilities. We lift our 12-month DCF/PER-based TPs for Mando to KRW300,000 (from KRW260,000) and for Hanon to KRW15,000 (from KRW13,000). On a 6-month view, we also like HMC for its rising presence in SUVs, alongside favourable trends in developed-markets (DM) and emerging-market (EM) currencies. And we take another look at Woory Industrials (not rated) and S&T Motive (not rated), both small-cap suppliers of EV components.

How we differ: We are above the market on 2016-18E EPS for the sector, as we think it has yet to factor in Hanon and Mando's product-mix improvements.

Key stock calls

	New	Prev.
Mando Corp (204320 KS)		
Rating	**Buy**	Buy
Target	**300,000**	260,000
Upside	▲ **34.5%**	
Hanon Systems (018880 KS)		
Rating	**Buy**	Buy
Target	**15,000**	13,000
Upside	▲ **32.7%**	
Hyundai Motor (005380 KS)		
Rating	**Buy**	Buy
Target	**170,000**	170,000
Upside	▲ **21.4%**	

Source: Daiwa forecasts

Negative | Neutral | **Positive**

Positive
(unchanged)

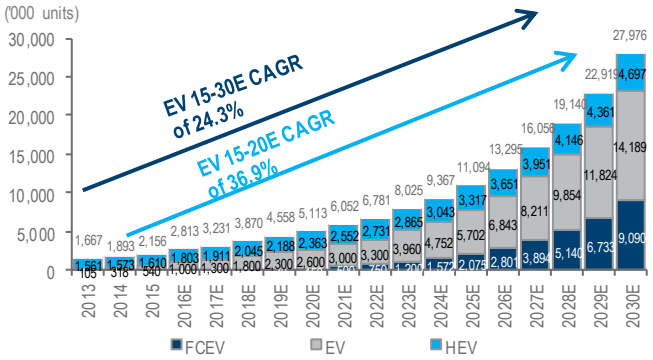
How do we justify our view?

Growth outlook	Valuation	Earnings revisions
✔ ✔ ✔ ✔ ✔	✔ ✔	✔ ✔ ✔

Growth outlook

We now expect faster growth in shipments of both EVs and the size of the smart-car (autonomous cars that contain features like infotainment, connectivity, and ADAS) market up to 2020. Our new forecasts call for EV demand to reach 2,600,000 units by 2020 (2015-20E CAGR of 36.9%), vs. 750,000 units (2015-2020E CAGR of 18.3%) previously. For smart cars, we now forecast the market size for automotive electronics to reach USD341.3bn by 2020 (2015-20E CAGR of 8.4%) from USD323.1bn (2015-20E CAGR of 7.3%). Apart from governments implementing more stringent measures for fuel economy, emissions control standards and safety, we expect the tug-of-war between auto OEMs and ICT players to provide more impetus for auto parts makers globally.

EV shipment outlook



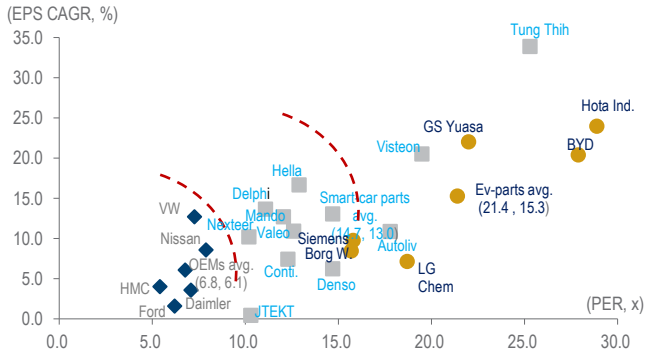
Source: Wards auto, PWC, Daiwa forecasts

Valuation

Since Apple's (AAPL, USD95.5, Buy [1]) more aggressive move towards EVs with smart-car features through its Project Titan, and Tesla's (TSLA, USD196.7, Not Rated) unveiling of its first mass-market EV, the Model 3, the share prices of EV and smart-car components names have staged a strong rebound. We expect their valuation premium to global OEMs to widen over 2016, as the Bloomberg consensus calls for an operating margin of 8.9% on average for 2016 (vs. 6.8% for the global OEMs).

We look for Hanon and Mando to trade on a par with global EV and smart-car component makers over the next 12 months, at average 2016E PERs of 21.4x and 14.7x, respectively, on several potential orders for thermal energy management and ADAS products on the horizon.

Global OEMs vs. EV and smart-car suppliers



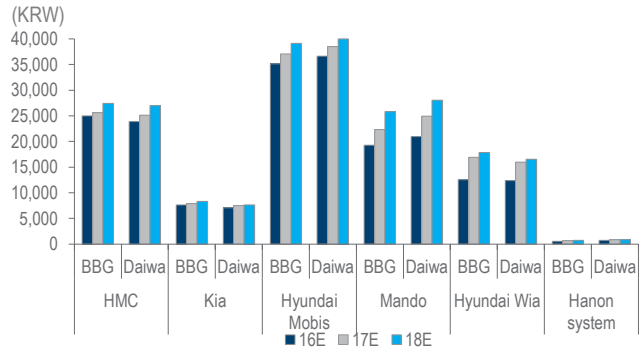
Source: Bloomberg, Daiwa

Earnings revisions

Our 2016-18E EPS for Hanon and Mando are higher than the Bloomberg-consensus figures, as we believe the street has yet to incorporate their product mix improvements over the past 2-3 years, whereby they now offer a greater proportion of high-margin thermal energy management systems (Hanon) and high-margin electronic products (Mando) and cost-cutting measures for both companies.

Our 2016-18E EPS for HMC are also higher, because we think the consensus has yet to factor in the company's better product mix from a rise in high-margin SUV shipments and currency tailwinds from both DM (USD, Euro and JPY) and EM currencies (Rouble and Real).

Korea automakers and components: earnings forecast revisions (Daiwa vs. Bloomberg)



Source: Bloomberg, Daiwa forecasts

Sector stocks: key indicators

Company Name	Stock code	Share Price	Rating New	Rating Prev.	Target price (local curr.) New	Target price (local curr.) Prev.	Target price (local curr.) % chg	EPS (local curr.) FY1 New	EPS (local curr.) FY1 Prev.	EPS (local curr.) FY1 % chg	EPS (local curr.) FY2 New	EPS (local curr.) FY2 Prev.	EPS (local curr.) FY2 % chg
Hanon Systems	018880 KS	11,300	Buy	Buy	15,000	13,000	15.4%	701	692	1.3%	825	805	2.4%
Hyundai Mobis	012330 KS	264,000	Outperform	Outperform	290,000	290,000	0.0%	36,617	36,928	(0.8%)	38,490	38,655	(0.4%)
Hyundai Motor	005380 KS	140,000	Buy	Buy	170,000	170,000	0.0%	23,859	23,859	0.0%	25,103	25,103	0.0%
Hyundai Wia Corp	011210 KS	92,500	Outperform	Buy	100,000	140,000	(28.6%)	12,375	15,495	(20.1%)	15,983	19,232	(16.9%)
Kia Motors	000270 KS	44,700	Outperform	Buy	51,000	58,000	(12.1%)	7,050	7,644	(7.8%)	7,489	8,169	(8.3%)
Mando Corp	204320 KS	223,000	Buy	Buy	300,000	260,000	15.4%	20,921	20,921	0.0%	24,938	24,938	0.0%

Korea Auto Sector: major assumptions

	2014	2015	2016E	2017E	2018E	2015	2016E	2017E	2018E
Revenue (KRWbn)							YoY (%)		
HMC	89,256	91,959	93,034	95,851	100,374	3.0	1.2	3.0	4.7
Kia	47,097	49,521	50,660	52,361	55,889	5.1	2.3	3.4	6.7
Hyundai Mobis	35,127	36,020	38,380	41,007	43,566	2.5	6.6	6.8	6.2
Hanon System	5,455	5,558	5,981	6,513	6,645	1.9	7.6	8.9	2.0
Mando	1,721	5,299	5,581	5,958	6,447	n.m	5.3	6.8	8.2
Hyundai Wia	7,596	7,884	7,908	9,249	9,506	3.8	0.3	17.0	2.8
Operating profit (KRWbn)							YoY (%)		
HMC	7,550	6,358	6,714	7,016	7,851	(15.8)	5.6	4.5	11.9
Kia	2,573	2,354	2,453	2,615	2,816	(8.5)	4.2	6.6	7.7
Hyundai Mobis	3,141	2,935	3,284	3,554	3,779	(6.6)	11.9	8.2	6.3
Hanon System	370	360	469	556	537	(2.7)	30.3	18.6	(3.4)
Mando	79	266	292	331	365	n.m	9.8	13.4	10.3
Hyundai Wia	526	501	442	542	581	(4.8)	(11.8)	22.6	7.2
Net profit(KRWbn)							YoY (%)		
HMC	7,155	6,058	6,811	7,696	7,801	(15.3)	12.4	13.0	1.4
Kia	2,994	2,631	2,858	3,036	3,100	(12.1)	8.6	6.2	2.1
Hyundai Mobis	3,508	3,097	3,564	3,747	3,893	(11.7)	15.1	5.1	3.9
Hanon System	275	231	374	440	449	(16.0)	61.9	17.6	2.0
Mando	48	126	196	234	263	n.m	55.6	19.4	12.4
Hyundai Wia	439	327	337	435	450	(25.5)	3.1	29.1	3.4
Op. profit margin (%)							YoY (pp)		
HMC	8.5	6.9	7.2	7.3	7.8	(1.5)	0.3	0.1	0.5
Kia	5.5	4.8	4.8	5.0	5.0	(0.7)	0.1	0.2	0.0
Hyundai Mobis	8.9	8.1	8.6	8.7	8.7	(0.8)	0.4	0.1	0.0
Hanon System	6.8	6.5	7.8	8.5	8.1	(0.3)	1.4	0.7	(0.5)
Mando	4.6	5.0	5.2	5.6	5.7	0.4	0.2	0.3	0.1
Hyundai Wia	6.9	6.4	5.6	5.9	6.1	(0.6)	(0.8)	0.3	0.3
Net profit margin (%)							YoY (pp)		
HMC	8.0	6.6	7.3	8.0	7.8	(1.4)	0.7	0.7	(0.3)
Kia	6.4	5.3	5.6	5.8	5.5	(1.0)	0.3	0.2	(0.3)
Hyundai Mobis	10.0	8.6	9.3	9.1	8.9	(1.4)	0.7	(0.1)	(0.2)
Hanon System	5.0	4.2	6.3	6.8	6.8	(0.9)	2.1	0.5	0.0
Mando	2.8	2.4	3.5	3.9	4.1	(0.4)	1.1	0.4	0.2
Hyundai Wia	5.8	4.1	4.3	4.7	4.7	(1.6)	0.1	0.4	0.0

Source: Companies, Daiwa forecasts

Korea Auto and Components sector: major assumption changes

	2016E			2017E			2018E		
	Previous	Revised	Diff (%)	Previous	Revised	Diff (%)	Previous	Revised	Diff (%)
Revenue (KRWbn)									
HMC	93,034	93,034	0.0	95,851	95,851	0.0	100,374	100,374	0.0
Kia	50,589	50,660	0.1	53,276	52,361	(1.7)	56,965	55,889	(1.9)
Hyundai Mobis	38,380	38,380	0.0	41,007	41,007	0.0	43,566	43,566	0.0
Hanon Systems	5,976	5,981	0.1	6,487	6,513	0.4	6,610	6,645	0.5
Mando	5,581	5,581	0.0	5,958	5,958	0.0	6,447	6,447	0.0
Hyundai Wia	8,189	7,908	(3.4)	9,554	9,249	(3.2)	10,035	9,506	(5.3)
Operating profit (KRWbn)									
HMC	6,714	6,714	0.0	7,016	7,016	0.0	7,851	7,851	0.0
Kia	2,597	2,453	(5.5)	2,788	2,615	(6.2)	3,114	2,816	(9.6)
Hyundai Mobis	3,284	3,284	0.0	3,554	3,554	0.0	3,779	3,779	0.0
Hanon Systems	465	469	0.9	542	556	2.6	510	537	5.3
Mando	292	292	0.0	331	331	0.0	365	365	0.0
Hyundai Wia	521	442	(15.2)	629	542	(13.8)	673	581	(13.7)
Net profit (KRWbn)									
HMC	7,114	7,114	0.0	7,258	7,258	0.0	7,801	7,801	0.0
Kia	3,098	2,858	(7.7)	3,312	3,036	(8.3)	3,451	3,100	(10.2)
Hyundai Mobis	3,564	3,564	0.0	3,747	3,747	0.0	3,893	3,893	0.0
Hanon Systems	369	374	1.4	430	440	2.3	436	449	3.0
Mando	196	196	0.0	234	234	0.0	263	263	0.0
Hyundai Wia	421	337	(20.0)	523	435	(16.8)	553	449	(18.8)

Source: Daiwa forecasts

Korea: potential EV and smart-car beneficiaries by industry

Company	BBG code	Share price (KRW)	Market cap (KRWbn)	2015 Revenue (KRWbn)	Automotive revenue (%)	2015 Op. profit (KRWbn)	FY15 Net profit (KRWbn)	2015 OPM (%)	2015 NPM (%)	2016E EPS (KRW)	2016E PER (x)	2016E PBR (x)	2016E ROE (%)	Product description
Automotive OEMs														
*HMC	005380 KS	140,000	26,804	91,959	100%	6,358	6,058	6.9	6.6	23,859	5.9	0.4	9.7	EV, infotainment
*Kia	000270 KS	44,700	15,749	49,521	100%	2,354	2,631	4.8	5.3	7,050	6.3	0.7	11.2	EV, infotainment
Auto-parts makers														
*Mobis	012330 KS	264,000	22,309	36,020	100%	2,935	3,564	8.1	9.9	36,617	7.2	0.9	13.0	EV parts and system
*Wia	011210 KS	92,500	2,184	7,884	100%	501	327	6.4	4.1	12,374	7.5	0.7	10.2	Powertrain and fuel-efficiency
*Mando Corp.	204320 KS	223,000	1,818	5,299	100%	266	126	5	2.4	20,921	10.7	1.2	13.3	ADAS, safety
*Hanon Systems	018880 KS	11,300	5,236	5,558	100%	360	346	6.5	6.2	701	16.1	3.0	19.5	thermal-energy management
ICT players														
*LG Electronics	066570 KS	54,900	9,033	56,509	4%	1192	120	2.1	0.2	686	11.3	0.8	6.9	Vehicle components business
*Samsung Elec.	005930 KS	1,445,000	250,733	200,653	n.a.	26413	18695	13.2	9.3	132,183	10.1	1.2	11.8	n/a
EV battery makers														
LG Chemical	051910 KS	255,500	16,999	20,207	n.a.	1,824	1,153	9	5.7	11,798	12.0	1.3	10.9	EV Battery
*Samsung SDI	006400 KS	108,000	7,530	7,569	n.a.	71	300	1	-1.5	-1,715	22.7	0.7	2.0	EV Battery
Small-cap autos														
Woory Industrial	215360 KS	33,400	295	314	100%	23	14	7.3	4.6	904	19.0	4.3	28.1	PCT and sensor for EV cars
S&T Motiv	064960 KS	69,100	1,007	1,211	70%	123	97	10.2	8	1,334	10.1	1.4	13.5	Electronics and powertrain

*Source: Bloomberg, *Daiwa forecasts for covered stocks, Share prices as of 22 June 2016*

Please also see:

Pan-Asia Autos **Smart cars: who has the headstart?** **26 June 2015**	**Korea Automobile and Components Sector:** **Green-car race shifts up a gear** **6 November 2015**
Sung Yop Chung (82) 2 787 9157 (sychung@kr.daiwacm.com) **Eiji Hakomori** (81) 3 5555-7072 (eiji.hakomori@daiwa.co.jp)	**Sung Yop Chung** (82) 2 787 9157 (sychung@kr.daiwacm.com)
	

EVs and smart cars: changing the landscape

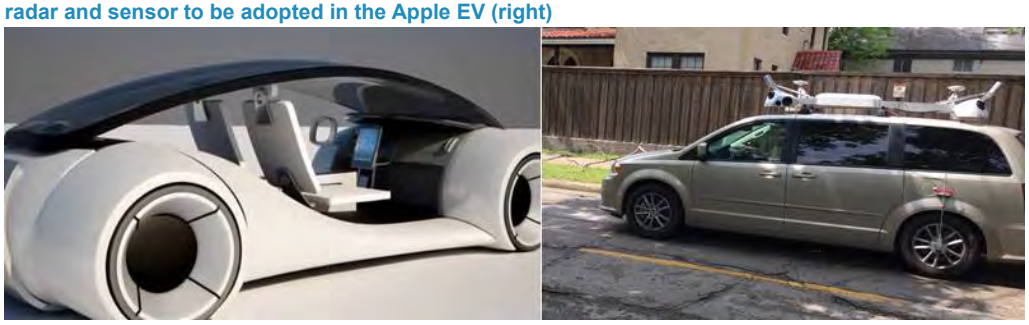
Apple: Titan could be its next earnings growth driver

What we have heard so far

Project Titan: could be Apple's next growth driver

Apple has not commented on talk in the market about its project "Titan", but it is widely believed that the company is working on building an electric smart car. According to the press, in recent months, Apple has been quietly purchasing and leasing a variety of buildings in Sunnyvale, California. Based on our market research, the company has secured an 800,000 sq ft space for a possible car factory, and over the past 12 months around 600 workers with experience in the autos industry have been hired (ie, from brands such as Ford, Tesla, VW and Bosch).

Apple: Titan project – concept EV with autonomous driving feature (left), and example of a car with radar and sensor to be adopted in the Apple EV (right)



Source: Apple, Daiwa, various media

Apple: history of its auto-related business and activities

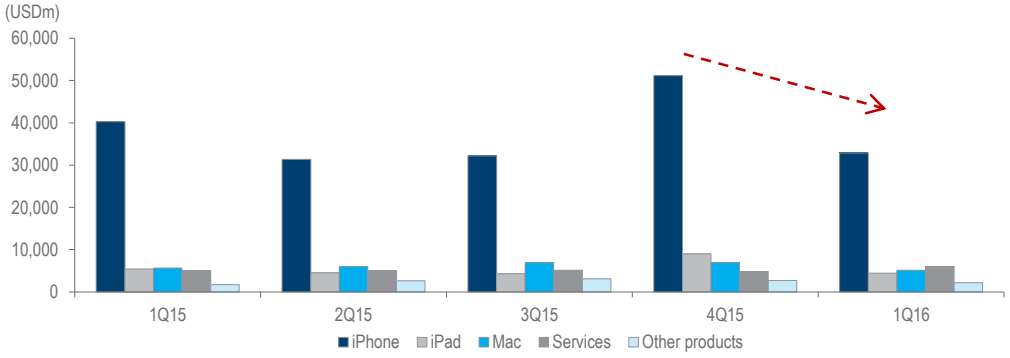
Year	Action	Result
2013	Supplier for JLR, BMW, etc	Developed HMI for JLR
1H14	Apple's chief of M&A holds meeting with Tesla's CEO	Did not amount to anything
2H14	Discusses on co-developing an EV with BMW leadership team	Use of i3 suggested, but no update since it was discussed
2015.02	Visits Daimler and Audi	Apple suggests co-development of EV, but BMW declines
2015.04	Daimler releases F015 in San Francisco for media preview	Possible reaction to Apple
2015.12	Announces R&D cost of USD10bn (up almost 3-fold from USD3bn in 2012)	Hired autos experts from Tesla and Samsung
2015.12	Apple buys car-related domain names	Apple.car, apple.cars, and apple.auto registered
2016.01	Meeting with California's Department of Motor Vehicles	Discussed state regulations on autonomuos-driving cars

Source: Wall Street Journal, German media (for Daimler, Audi and BMW news)

Apple has invested more R&D on its EV than on its existing products

Interestingly, Apple has spent more on the R&D for electric, autonomous vehicles in the past few years than it has on its existing products, such as the iPhone, iPad, and Apple Watch, according to Apple's annual report. Given the saturation of the smartphone market, it would seem that Apple is aggressively allocating more resources to build "smartphones on wheels". And we expect these products to rapidly emerge as the growth drivers for the global ICT companies in the next few years.

Apple: revenue and operating profit by product



Source: Company, Daiwa

Tesla beefing up its EV presence

Strong pre-orders of the Tesla Model 3 could set the standard

For the past few years, Tesla has only made expensive luxury EV luxury models. However, given the price tag of these models (the Model S sedan starts at USD70,000/car and the Model X (SUV) at USD80,000/vehicle), demand hasn't been high enough to lead to the mass-commercialisation of its EVs globally

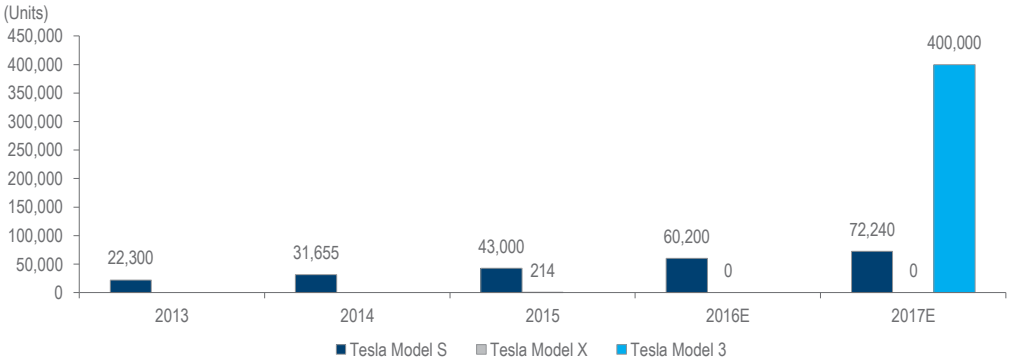
On the other hand, Tesla claims it already has 400,000 pre-orders for the Tesla 3s, probably because of the more affordable price of USD35,000/car. In short, we believe the higher-than-expected Tesla 3 pre-orders were triggered by: 1) the lower-than-expected price tag: currently, the manufacturer's suggested retail price (MSRP) for a Tesla 3 is USD33,560, but the transaction price could turn out to be much lower at USD27,500/car, taking into the account the USD7,500 tax credit offered in the US (tax credits differ depending on each country's green-car policy), and 2) an increase in the distance covered by a Tesla model to at least 200 miles on a single charge.

Tesla: specifications of each model (price, driving range, fuel economy, etc)

	Model S	Model X	Model 3
Range	240 miles	237 miles	215 miles
Top speed	140 mph	130 mph	
Charging time*	70 mins	79 mins	
Battery capacity (kWh)***	70	75	44
Price (USD)	70,000	80,000	35,000
Sales volume(units)**	100,000	208	400,000

Source: Company, Daiwa
*Note: 1) * based on a level 2 charger with 40 miles driven, 2)** Tesla 3 sales volume indicates the pre-order volume*

Tesla: EV demand breakdown by model



Source: Company, Daiwa
Note: Model 3 and Model X numbers include pre-orders

In a survey on Americans' driving habits by the Driving Zone in 2015, depending on the driving zone drivers are in, 93% of the time, Americans cover less than 100 miles a day, and 95% of all respondents who used their cars to drive to work commute less than 40 miles each way.

US: analysis of Americans' driving habits

	Average	Description
Trip length	40 miles	95% drive less than 100 miles per day
People in a car	1.8 people	Peaks at 2.2 people in the evening

Source: The Driving Zone, Daiwa

The Model 3 could help Tesla achieve its master plan of creating a mass market for EVs

At this pace, drivers would only need to plug in their Model 3 once or twice a week to keep them charged up. Tesla previously announced that it would start shipping the Model 3 to customers in late 2017, with production ramping up in 2018. We will keep an eye on the Model 3 pre-orders and whether this model is helping the company achieve its master plan, ie, creating a mass market for EVs.

The Model 3

Source: Company

Mitsubishi scandal: another sentiment boost for EVs

In addition to the VW scandal in September 2015, Mitsubishi's mileage-test data manipulation should provide another boost for EVs

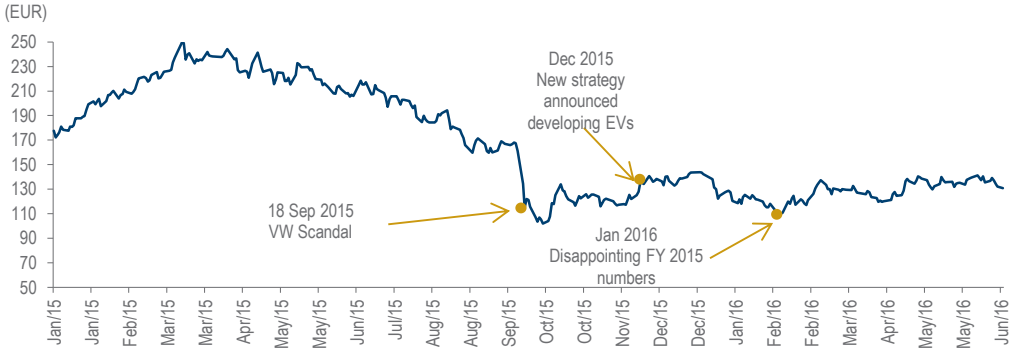
On 20 April 2016, Mitsubishi Motors (7211 JP, JPY542, Hold [3]) admitted that it had used deceptive measures to manipulate mileage-test data for its minicars sold in Japan, which had resulted 620,000 vehicles produced in the past 3 years being labelled as more fuel efficient than they actually were. The tests overstated the fuel efficiency by 5-10%. This action could result in the Japanese automaker having to pay back to the government tax rebates amounting to USD174m it had received for such minicars sold in Japan, of which 468,000 were supplied to Nissan Motors (Nissan) (7201JP, JPY1,007, Hold [3]).

Mitsubishi's shares fell by 15% on the day after the scandal (21 April 2016), the biggest share-price decline in more than a decade in Tokyo trading, leading to its market value declining by JPY721bn (USD6.6bn). The manipulation of mileage tests by Mitsubishi, as well as Volkswagen AG's admission in September 2015 that it had rigged the software for a number of its diesel models to meet US emissions standards could intensify scrutiny of the auto industry worldwide, in our view.

The Mitsubishi scandal prompted Nissan to purchase a 34% stake in Mitsubishi, as Japan's second-largest automaker came to the aid of its minicar partner (Mitsubishi and Nissan had already cooperated on development and manufacturing with a partnership back in 2011; with this cross-shareholding, Nissan would benefit from having a small-car segment and Mitsubishi would have the chance to re-gain its brand image with Nissan).

While the Mitsubishi scandal was different from the Volkswagen scandal, in that the former manipulated fuel-efficiency test data while the latter manipulated emissions standards, the market has become sensitive to such types of news flow. As such, we believe both scandals could provide further impetus for faster EV shipments growth globally.

Volkswagen scandal: share-price impact of emissions scandal



Source: Bloomberg, Daiwa

Mitsubishi: share-price impact of mileage scandal

Source: Bloomberg, Daiwa

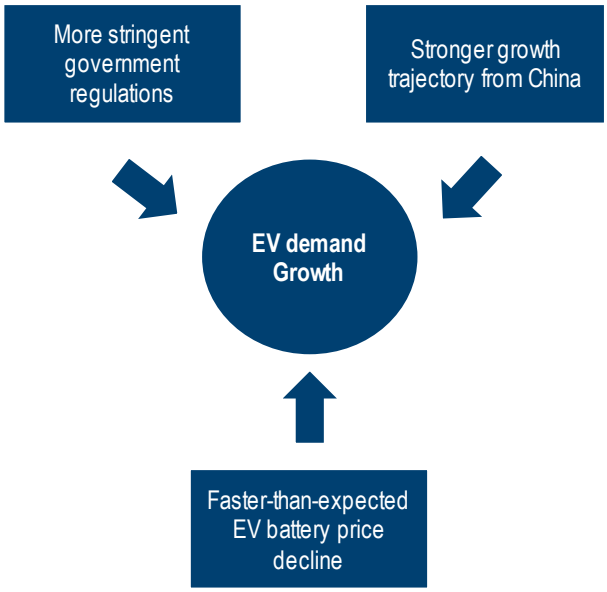
Apple's entry could be a boon for EVs and smart cars

Ingredients for stronger EV demand likely to become apparent throughout 2016-17

On 11 January 2016, Tesla's co-founder and CEO, Elon Musk, was quoted in the press as saying that it is an "open secret" that Apple is building EVs, highlighting that Apple had "hired people we have fired." However, he believes Apples moves would not be a threat to Tesla, but would rather expand the industry by way of ramping up the competition. Beyond Tesla and Apple, there is fierce competition within the global auto market and we believe this competition will expand the market size for EVs and smart cars.

We look for the following factors to lead to stronger EV demand over the long term: 1) more stringent government regulations, 2) a stronger EV growth trajectory from China, 3) a faster-than-expected decline in EV battery prices (see following graphic). Thus, we forecast EV demand to reach 2,600,000 units by 2020 (a 2015-20E CAGR of 36.9%), and 14,189,000 units by 2030 (a 2015-30E CAGR of 24.3%).

EV market: key demand growth drivers



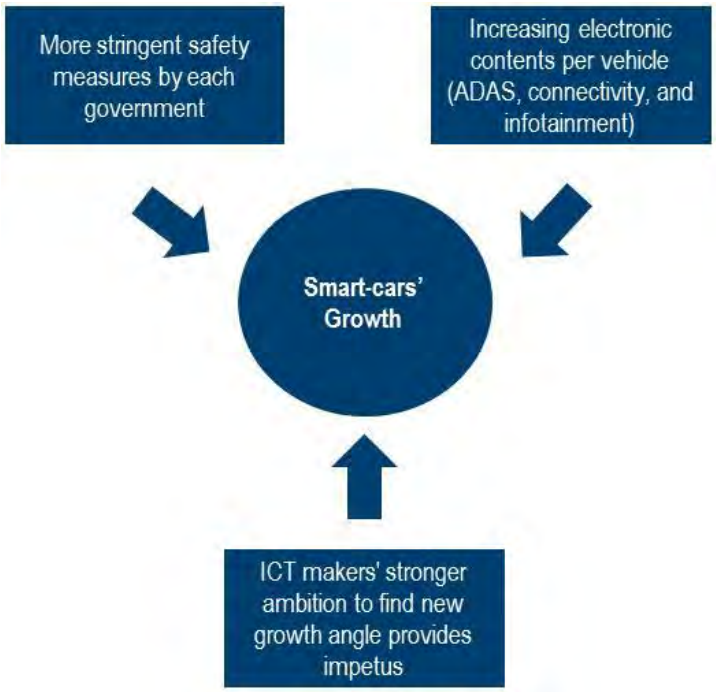
Source: Daiwa analysis

Auto parts' makers to lead the pack in terms of EVs/smart cars for their competitiveness in manufacturing key components

For smart cars, we now expect the market size for automotive electronics globally to reach USD341.3bn by 2020 (2015-20E CAGR of 8.4%) vs. our previous forecast of USD323.1bn (2015-20E CAGR of 7.3%). We expect this growth to be driven by: 1) more stringent government safety measures around the globe, 2) a faster rise in electronic-contents per vehicle for ADAS, connectivity and infotainment, and 3) ICT players' pursuit of new growth angles.

We look for auto parts makers to lead the pack and enjoy higher profitability vs. the OEMs over the long-term on their competency in manufacturing key components for EVs and smart cars as well as their system-supplying capabilities. While the end-customer (auto OEMs and ICT players) market is fragmented, there are only a few players globally with these capabilities. As such, auto parts makers have been recording higher profits and we expect this trend to continue over the next 3 years.

Smart cars: main growth drivers



Source: Daiwa analysis

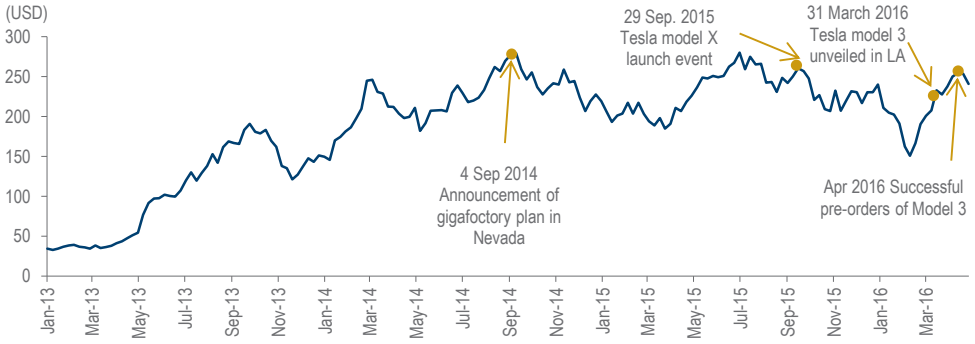
Leading to stronger share-price momentum for EV/smart-car players

Strong Model 3 pre-orders and Mitsubishi scandal: strong share-price performance for related companies

At an event in Los Angeles on 31 March 2016, where he debuted the Model 3, Tesla's Elon Musk said there had been a barrage of interest from potential buyers. Although deliveries are not due to start until the end of 2017, Musk targets sales of 500,000 units by 2020, a figure that would fulfil his ambition of creating the world's first mass-market EV.

With the company having secured 400,000 units of pre-orders YTD, we would not be surprised to see the backlog edge towards 500,000 as the vehicle enters production, which would likely boost vehicle electrification, connectivity and automation.

Impact on Tesla's share price of the unveiling of the Model 3



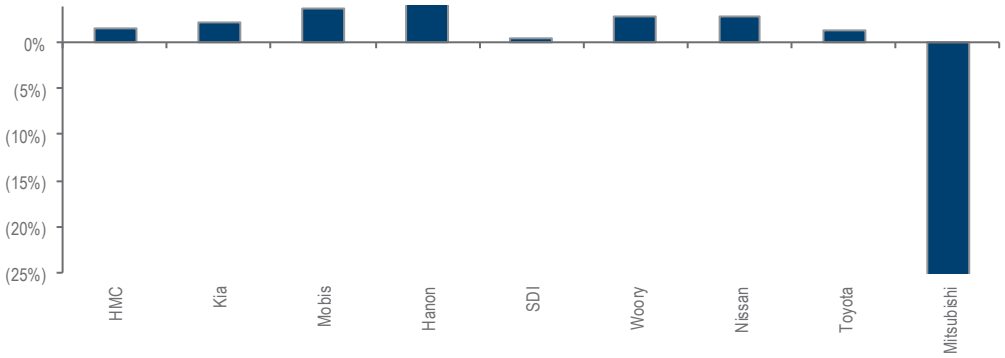
Source: Company

Moreover, we believe the Mitsubishi scandal presents an opportunity for other mass-market internal combustion engine (ICE) players, global automakers, OEMs and suppliers with a competitive advantage in EVs to gain market share in the next few months.

EV players have seen stronger share-price momentum after the Mitsubishi scandal

As illustrated in the chart below, ICE-based OEMs that compete with Mitsubishi in the emerging markets, such as HMC (005380 KS, KRW140,000, Buy [1]) and Kia (000270 KS, KRW44,700, Outperform [2]), as well as EV makers such as Nissan and Tesla, and EV component makers such as Woory Industrial (215360 KS, KRW33,400, not rated) (EV actuators) and Hyundai Mobis (012330 KS, KRW264,000, Buy [1]) (battery management systems), and Samsung SDI (006400 KS, KRW108,000, Outperform [2]) have all largely seen a pop in their share prices since the Mitsubishi scandal hit the headlines.

Mitsubishi: impact on peers' share prices since its fuel economy test scandal



Source: Bloomberg, Daiwa

Reality check: what are the obstacles?

Three main obstacles for EVs

1) Limited driving distance

Range and charging time: still behind the curve to compete with ICEs

In our view, one of the biggest obstacles stopping EVs from overcoming the market dominance of their gasoline peers is their 'range' and 'cost-competitiveness'. The driving distance on a single charge is clearly one of the key issues with EVs today, as they have a much shorter driving range than a typical gasoline car.

Price comparison of EVs

	Tesla model3	Nissan Leaf	BMW i3	Chevy Bolt	BYD E6	Kia Soul EV
Range (miles)	215	107	118	200	400	100
MSRP (USD)	35,000	29,010	37,000	37,500	46,500	24,530
Battery pack (kWh)	44/66	30	22/33	60	82	27
Sales volume	400,000	200,000	38,581	104,000		5,000

Source: Company, Media, Daiwa

Price comparison (gasoline, hybrid, and EV) in the US

(USD)	MSRP	Maintenance	Insurance	Fuel	Tax credit	5-year cost in total
Toyota Camry	20,796	2,859	5,738	7,000	0	37,024
Toyota Prius	22,959	3,174	5,875	4,000	0	36,639
Nissan Leaf	23,858	2,432	6,187	2,750	7,500	28,358

Source: US Department of Energy, Daiwa
Note: Fuel cost and incentives from US DoE, Fuel cost as of Aug 2015, average insurance rate applied to people who actually bought the model.

Range and charging time analysis

	level 2	Fast Chargers
Charging KW (in max)*	19.2	76.8
Charging miles per hour	70	240
For Tesla Model 3 (60KWh, 215-mile range)		
Time (hours) to fully charge a battery	3.13	0.78
For Nissan Leaf (30kWh, 107-mile range)		
Time (hours) to fully charge a battery	1.56	0.39

Source: Daiwa analysis
*Note: 1) *Level 2 charging KW differs by home charger or public charger (home charger capacity could go down to 7.6KW), 2) Level 2 chargers are called normal chargers and fast chargers indicate level 3 and level 4 chargers*

However, according to our analysis above, we now envisage EVs to be cost-competitive from an operating standpoint vs. HEVs. Although driving ranges and recharging time still remain hurdles for EVs, we believe the commercialisation of fast chargers (above) could provide more impetus for stronger EV demand in the coming years.

2) Lack of charging stations

To increase the use of all EVs, consumers need access to a wider range of charging stations. For most drivers, this starts with charging at home or at fleet-charging facilities. We believe charging stations at workplaces and public places would also bolster the market acceptance of EVs. Installation costs for charging stations at residential garages, apartments, and condominium complexes are determined primarily by each resident's requirements. Several factors that would weigh on a site's requirements include: 1) type of vehicle, 2) size of vehicle, 3) size of battery, and 4) the charging cost.

Setting up EV infrastructure should be prioritised

Moreover, electric utilities are under significant pressure to maintain a dependable, clean and low-cost electrical supply to their customer base. In order to achieve this, utility companies are evaluating and implementing "smart-grid" technologies that allow them to control various electrical loads on their systems. Other than developing affordable EVs, setting up infrastructure for charging points should be the priority of EV manufacturers and government agencies, in our view.

Cost for residential EV supply equipment (EVSE) level 2 installation in the US

Description	Quantity	Cost (estimated in USD)	Total (USD)
Labor (hrs)			
Initial site visit	2	75	150
Permit application	2	75	150
Installation	8	75	650
Approval	2	75	150
Labor sub total			**1,050**
Materials			
ESVE (40Amp)	1	780	780
40 Amp Breaker	1	35	35
Conduit (0.75 EMT)	35	3.3	147
40 Amp fused disconnect	1	115	115
Miscellaneous	1	60	60
Material sub total			**1,137**
Permit	1	85	85
In Total			**2,272**

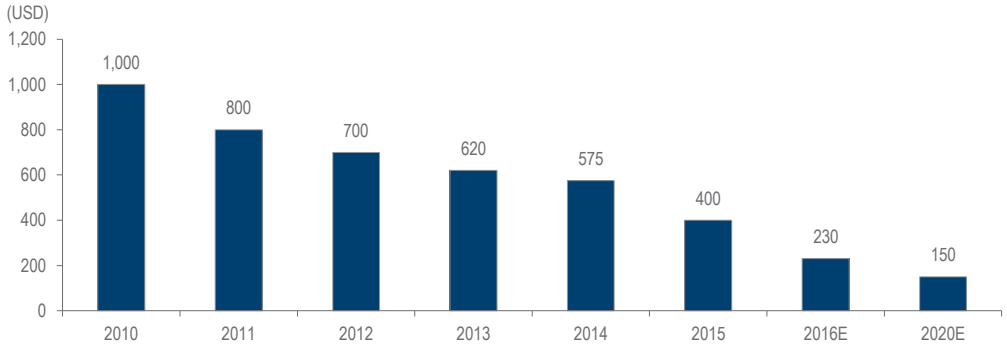
Source: Electric transportation engineering corp., Daiwa

3) High battery prices

Despite consumers' concerns about high battery prices leading to high EV prices (40% of an EV price consists of its battery), according to a recent United nations-backed report ('Global trends in renewable energy investment 2016', released on 24 March 2016), EV batteries have dramatically dropped in price over the past 5 years.

However, in order for an EV engine to be on a par pricewise with an ICE, researchers estimate that the cost of an EV battery would need to be at least USD150/kWh (currently USD230/kWh). During the Model 3 unveiling in March 2016, Tesla's vice-president of Investor Relations, Mr. Evanson, stated that Tesla's battery cost is already below USD190/kWh, and that the base Model 3 will be offered with a battery pack option that is lower than USD60/kWh. Also, at General Motors' (GM) (GM US, USD29.3, Outperform [2]) annual business conference in Michigan in October 2015, GM announced that it expects to source EV battery cells from LG Chem at USD145-150/kWh by 2017. We expect the declining EV battery prices to reach a cost-effective price level of USD150/kWh by 2020.

Average EV battery costs (USD/kWh) trends and forecasts



Source: Bloomberg new energy finance, Daiwa forecasts

Three main obstacles for smart cars

1) Lack of legal and infrastructure framework

The lack of a legal infrastructure and framework has been a sticking point

With smart cars generally considered to be a significant part of the future of the automotive industry, we believe it will be crucial for state and municipal governments to consider the pros and cons of having these vehicles on the road. While most industry players have already developed and tested many of the technological building blocks, tough and tricky legal challenges remain, including new laws on accidental liability, where self-driving cars may operate, and who should have a licence.

Also, new traffic guidelines will have to be developed for the autopilot mode and for fully autonomous driving. Since even fully autonomous cars will depend on road and lane markings as well as the global positioning systems loaded with pre-mapped roads, they will

require a sufficient field of vision and connectivity for vehicle to vehicle (V2V) and vehicle to infrastructure (V2X) communication. The incentive to establish the right legal framework is high. We believe California will be the pioneer, given it is a leading state for EVs and smart cars and has state-leading corporate subsidies and supportive legislation.

Market's pull-factors on smart cars

Time frame	Market's pull factors
Today	Safety is important buying criteria but limited willingness to pay
From 2016	Continuously high importance of safety as purchase criteria Insurance companies to offer lower premiums
From 2025	In addition to safety, increase comfort gain will likely drive the market for assisted and automated functions

Source: ETSC, Daiwa

However, that does not mean that the US federal government will not have a role in drafting rules for autonomous vehicles. In particular, just as the federal government has established "minimum safety performance requirements for motor vehicles" in the context of non-autonomous vehicles, the federal government has a clear role in setting safety standards for the autonomous vehicles as well.

In its May 2015 "Preliminary Statement of Policy Concerning Automated Vehicles," the US National Highway Traffic Safety Administration (NHTSA) stated that it "is conducting research on self-driving vehicles so that the agency has the tools to establish standards for these vehicles, should the vehicles become commercially available."

However, as the autonomous vehicle industry matures in the coming years, it will be important for the US to establish a nationally consistent set of safety regulations. These standards, once they are established, would indirectly affect liability. The process of setting standards would provide a set of metrics that state courts would likely choose to adopt in liability cases, in our view.

2) Relatively high price for auto components

Smart cars are generally understood to be autonomous and semi-autonomous transport vehicles, but they can also include routine enhancements that make the vehicles safer and more connected with each other.

We believe cars will begin incorporating more high-tech solutions in the near future, ensuring safety and entertainment of drivers and passengers. Such adoption could be triggered by: 1) Internet connectivity (smart-phone and internet connection within a vehicle), 2) autonomous driving, 3) assisted driving (driver assistance system), and 4) infotainment systems (eg, Android auto and apple's car play).

Technological advancements have seen the cost of a smart car increase

However, the most significant features for a smart car are its cost and liability. Today's smart cars are typically more expensive than other older models in the marketplace given their enhanced features. They use radar and cameras to assist the drivers by providing real-time information about the surroundings. These systems help drivers to avoid collisions and accidents. OEMs are focusing on adopting advanced safety features such as ADAS due to growing government regulations focused on ensuring the safety of passengers and drivers.

Further, we believe the high cost of ADAS due to the implementation of expensive technologies and systems such as cameras, sensors and radar and the high maintenance cost associated with the proper functioning of these systems will hinder the sales of smart cars. However, we believe, with more smart cars on the roads and related technological advancements, the cost of a smart-car should decline in the near future.

Smart-car components comparison

			
	24Ghz Radar	**77Ghz Radar**	**Lidar**
Functionality	High short-range resolution Limited long-range capabilities	Medium long-range capabilities Wide DAS support Innovation: vertical scanning	Ability to provide 360 view Functionality issues (under fog) Prism only to be introduced in autonomous driving
Regulatory framework	Restricted use of 21.65 -36.65 band in EU Expected to be phased out from 2018	76-79 GHz band regulated for intelligent transport in EU, Japan and NA	No regulatory hurdles
Cost	Lower cost compared to 77 GHz radar sensors	Currently high cost but cost reduction expected	Complex lidar systems with high functionality (e.g., Google car) expensive
Overall	Limited future automotive application in DAS	Dominant tech for a range of applications	Highest potential to be adopted if cost reduction
Price	USD40-60	USD400	USD6,000-20,000
Main player	Hella, Valeo	Continental, Delphi, Bosch	Continental, Velodyne

Source: Roland Berger, Daiwa

3) Security issues

Given their increased connectivity, smart cars are exposed to hacking

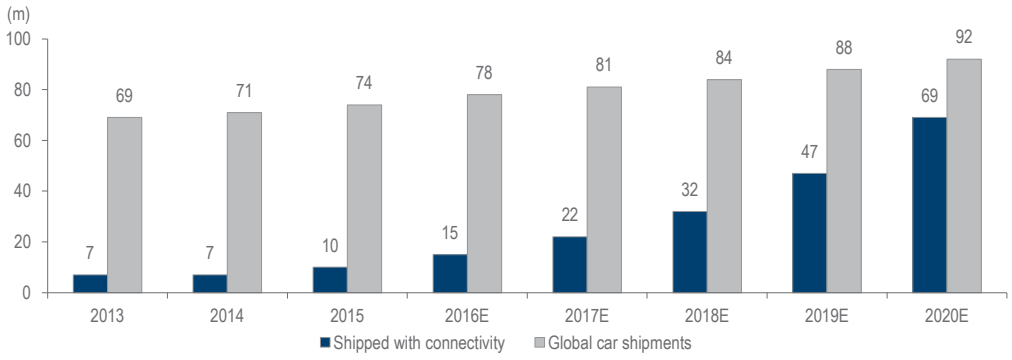
Vehicle security is an important aspect of the new car technology that we believe will need to be addressed before moving into the smart-car generation in the future. For example, GM introduced a door handle that pops out when the driver is nearby without using the key. Biometrics is likely to be an important aspect of car security, basically meaning that things like fingerprints, eye-scans, heart beats and so on will unlock cars and even be the key that starts the car, ensuring that no one else can use your car if you do not want them to. Also, with infotainment and Internet connectivity, users will be able to connect their personal and private information to vehicle's devices.

However, as cars become increasingly connected to the internet, security researchers are discovering a significant number of security holes in the technology that powers smart cars. The number of cars connected to the Internet is growing at a fast rate

More cars with connectivity will likely be on the road by 2020

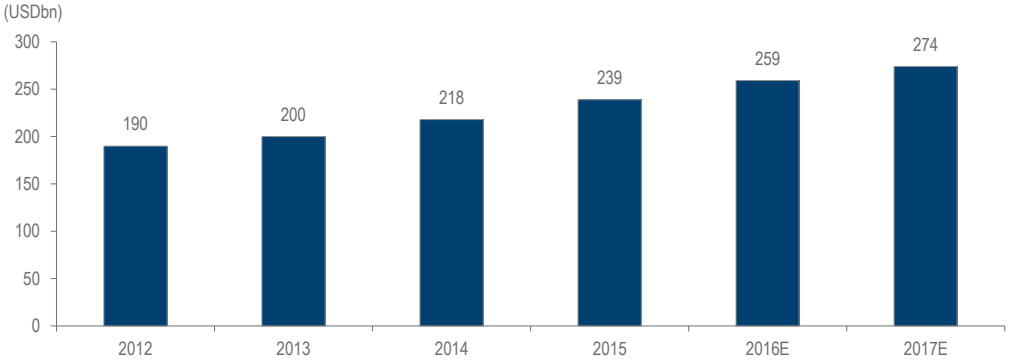
On 22 December 2015, wired report researchers discovered vulnerability in Chrysler's Fiat that allows for some vehicles to be controlled remotely over the Internet from thousands of miles away. When it comes to autonomous driving, this would be a critical obstacle (which may even lead to death) for smart cars, in our view.

Connected-car shipment forecasts



Source: Bloomberg Intelligence, Daiwa

Connected-car market forecasts



Source: KAMA, Daiwa

Our forecasts for EVs and smart cars: what's new

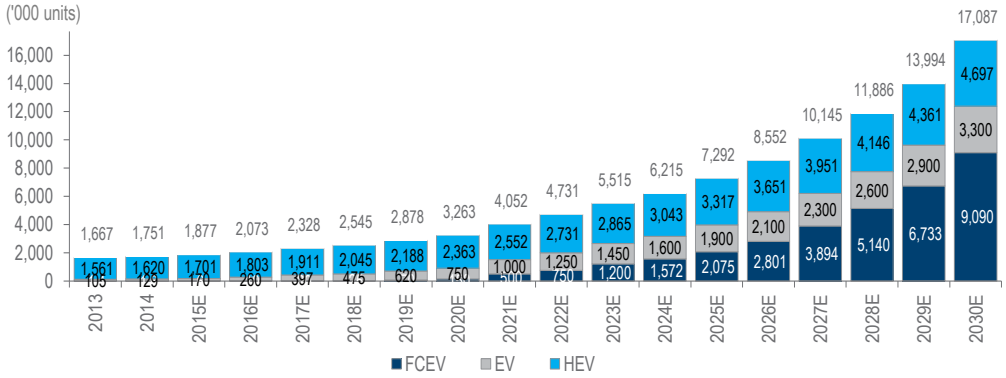
Previous shipment forecasts for EVs

EVs and smart cars driving the next wave of auto-industry growth

In our previous report (*Green cars shift up a gear*, published on 6 November 2015), we estimated that the total number of green cars would reach 7.3m units by 2025 (including 3.3m HEVs, 1.9m EVs, and 2.1m FCEVs). Despite our assumption of stronger demand growth for both EVs and FCEVs on stricter fuel efficiency and emissions control measures up to 2020, we estimate the total demand for EVs and FCEVs will remain smaller than that for HEVs, possibly constrained by higher prices and limited product offerings as compared with HEVs.

We are revising up our shipment forecasts

Daiwa previous green car shipment forecasts



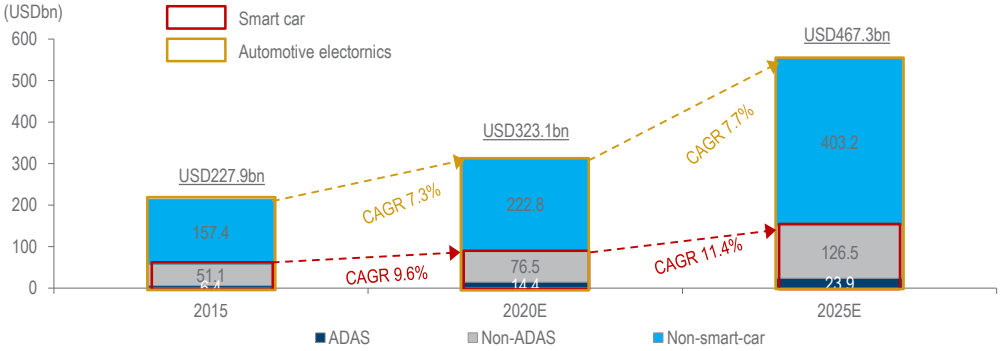
Source: Daiwa forecastsNote:

Previous shipment forecasts for smart cars

In our previous report on smart cars (*Smart cars: who has the head start?*, published on 26 June 2015) we argued that the auto players were well placed to retain their market-leading positions and keep the ICT platform and software companies at bay. Our confidence in the auto players rested on our view that key component manufacturing (including ADAS) would remain in the hands of the auto OEMs and auto-parts makers.

However, we concluded that if we extended our time horizon beyond a decade, the auto OEMs would have the potential to integrate all of the relevant platforms into the production chains by 2030. Also, we estimated the automotive electronics products' market size to be USD467bn by 2025.

Market size for automotive electronics products

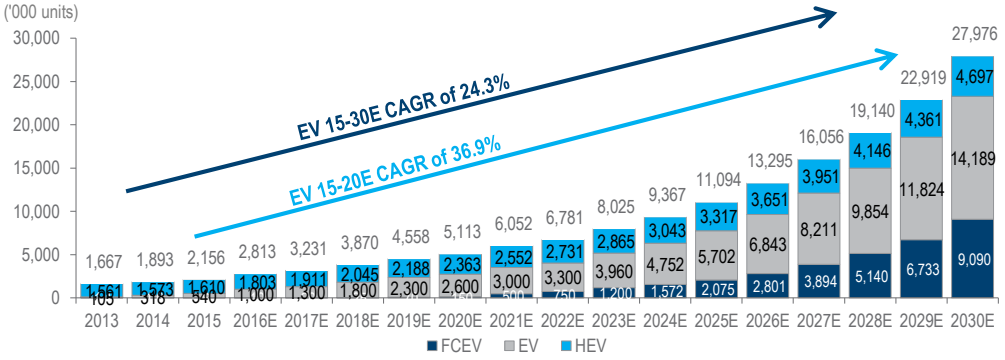


Source: Daiwa forecasts

Raising our EV forecasts

As discussed in the following sections of this report, we now believe EV shipments globally are likely to get another boost from 2016, triggered by: 1) the ever more-stringent regulatory environment for both fuel-economy and emission control standards, 2) stronger growth trajectory in China, and 3) faster-than-expected declines in EV battery prices. As such, within this report we are revising up our global EV shipment forecast to 2,600,000 units by 2020 (2015-20E CAGR of 36.9%) vs. our previous forecast of 750,000 units by 2020 (2015-20E CAGR of 18.3%).

Daiwa's revised green-car shipment forecasts

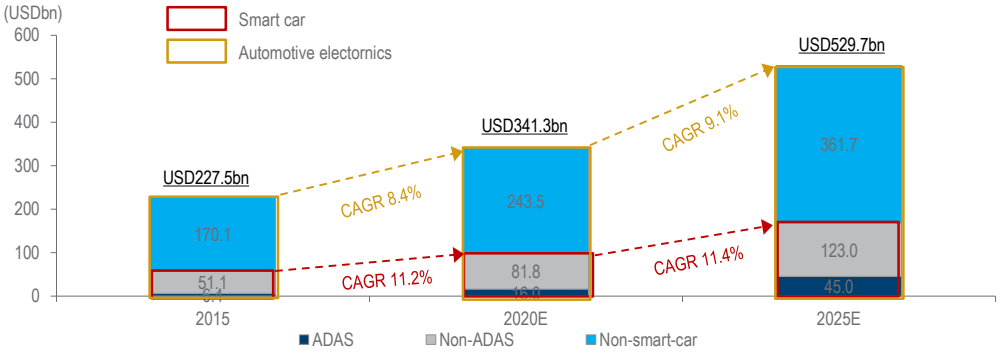


Source: Daiwa forecasts
Note: EVs include BEVs and PHEVs and 35-40% of total EVs are PHEVs

Revising up our smart-car shipment forecasts too

As more smart-car-related technologies are being developed and refined for the automotive industry, we now expect the market size for automotive electronics to reach USD341.3bn by 2020 (2015-20E CAGR of 8.4%), from our previous forecast of USD323.1bn (2015-20E CAGR of 7.3%). We expect this to be driven by: 1) more stringent safety measures by governments around the world, 2) a faster than-previously-expected rise in ADAS, connectivity and infotainment electronic-content per vehicle, and 3) the ICT players' ambitions to gain exposure to the growing EV/smart-car segments. Our confidence in the auto-parts makers' earnings visibility rests on our belief that the manufacturing of key components (including ADAS) will remain in the hands of the auto-parts makers.

Daiwa's revised market size forecasts for automotive electronics products



Source: PWC, Daiwa forecasts

Auto/ICT-parts makers to lead the pack

Early days for EVs/smart cars: window of opportunity for everyone

During the early phase of EV and smart-car development (2015-20), we expect to see a number of auto makers follow through on their announced concept-car-style innovations. This should be a time of opportunity for many players, as the changing nature of driving creates rich new digital and eco-friendly revenue streams. This shift would disrupt traditional automotive value chains, creating entry points for new rivals.

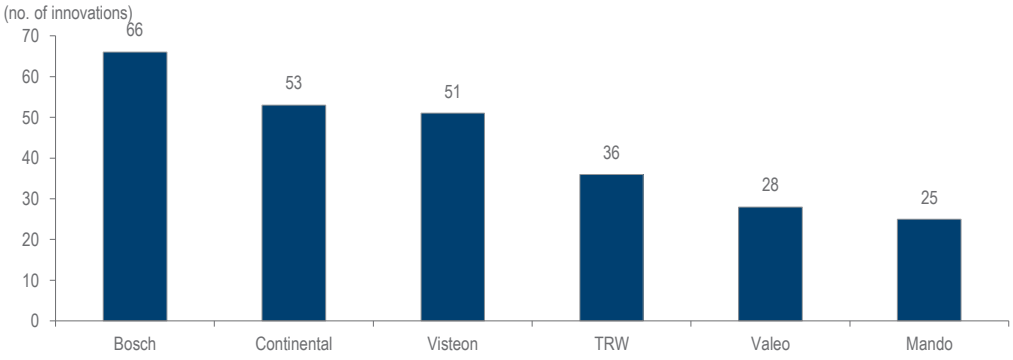
More competition from ICT players

Competition will likely come from newcomers like tech giants Apple and Google, and from the tier-1 automotive suppliers that have a stronger competitive advantage in EV and smart-car development.

To become successful in these segments, both the auto makers and suppliers must learn to compete with new players, including the technology companies. Apple and Google are already chasing automotive revenue, not only from infotainment, but also in the autonomous-driving technology, on their strong capability in “Big data” and “ICT technologies”.

Google is racing ahead with a technology that could become a standard operating system for self-driving cars, similar to its Android system for mobile communications.

ADAS: cumulative car innovation activity globally by the tier-1 suppliers as of 2015



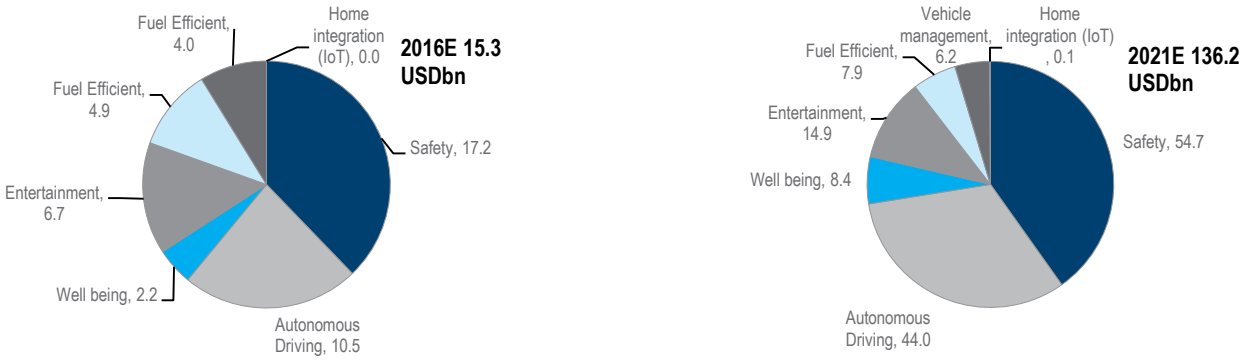
Source: PWC, Daiwa

Size of the autonomous-driving components market to increase the most within smart car-related technologies

Among the auto OEMs and parts makers, we expect the parts makers to benefit from the expansion of the smart-car and EV industry over the next decade, as they should gain bargaining power in step with the growing adoption of ADAS and EV parts.

According to PWC, the size of the autonomous-driving market, looks likely to grow the most out of the key components segments used in EV/smart technologies. PWC expects the market size of autonomous-driving components to increase the most, to 44.0% in 2021 from 10.5% in 2016, followed by entertainment, with the proportion rising to 14.9% in 2021 from 6.7% in 2016.

Market forecasts for smart-car-related technologies 2016-21



Source: PWC forecasts, complied by Daiwa

Auto/ICT components makers/players have higher earnings visibility than the OEMs

From the ICT players' point of view, given the increasing importance of connectivity and the EV battery price, we expect the ICT players to benefit from the expansion of the smart-car and EV industry. According to KPMG's annual survey for 2016, it sees the ICT sector gaining a foothold in the auto industry areas, for which it will produce key components.

As we expect demand for EV and smart-car components and applications to increase faster than initially expected within the auto industry, we look for the auto-parts makers to lead the pack and enjoy higher profitability vs. the OEMs over the long term. Given the auto-parts makers competency in key components for EVs and smart cars, as well as their ability to supply whole systems, we expect the auto parts makers to continue recording higher profits for the next 3 years.

As shown in the following table, the importance of auto parts, from sensors/cameras and LiDARs to actuators becomes more pivotal at each stage of automation.

Core systems for fully automated vehicles

Level of automation	Assistance (Lv. 1)	Semi-automated (Lv. 2)	Highly Automated (Lv. 3)	Fully Automated (Lv. 4)
Adaptive headlamp control	Optional	Optional	Imperative	Optional
Radar	Imperative	Imperative	Imperative	Imperative
Ultrasonic sensors	Optional	Imperative	Imperative	Imperative
Forward-looking camera	Imperative	Imperative	Imperative	Imperative
Rear-vision camera	Optional	Imperative	Imperative	Imperative
Surround view camera	Optional	Imperative	Imperative	Imperative
Night vision	Optional	Optional	Imperative	Imperative
LiDARs	Optional	Optional	Imperative	Imperative
Map-supported ADAS	Optional	Optional	Imperative	Imperative
Steering & braking automation	Optional	Imperative	Imperative	Imperative
	Optional	Optional	Optional	Imperative
	Optional	Optional	Optional	Imperative
	Optional	Optional	Optional	Imperative

Source: KATECH, Daiwa

NHTSA/SAE defined autonomous driving stages

NHTSA level	SAE level	Name	Description	Who carries out the steering/acceleration/ deceleration functions?	Who monitors the driving environment	Who/what is responsible for driving	Autonomous-driving system in a vehicle
The driver monitors the driving environment							
0	0	No automation	The driver is responsible for all aspects of driving the car	Driver	Driver	Driver	n.a.
1	1	Driver assistant	The driver is helped by a driver-assistance system for either the steering or acceleration/deceleration using information about the driving environment. The driver is expected to perform all the other driving-related tasks	The driver and system	Driver	Driver	Some car models
2	2	Partial automation	The driver is helped by one or more driver-assistance systems for the both the steering and acceleration/deceleration functions using information about the driving environment. The driver is expected to perform all the other riving-related tasks	**Automated-driving system (System) -**	Driver	Driver	Some car models
The system monitors the driving environment							
3	3	Conditional automation	The driving function is performed completely by an automated-driving system, although the driver is expected to respond appropriately when necessary	**System**	**System**	Driver	Some car models
4	4	High automation	The driving function is performed completely by an automated-driving system, even if the driver does not respond appropriately when necessary	**System**	**System**	**System**	Some car models
	5	Full automation	The driving function is performed completely by an automated-driving system in all road and environmental conditions	**System**	**System**	**System**	**All cars**

Source: SAE, Daiwa
Note: system refers to the system used for autonomous driving (including ADAS, sensors, radars, camera modules).

Electric vehicles: strong drivers ahead

More stringent government regulations: fuel-economy and emissions control standards

The end of diesel-powered cars?

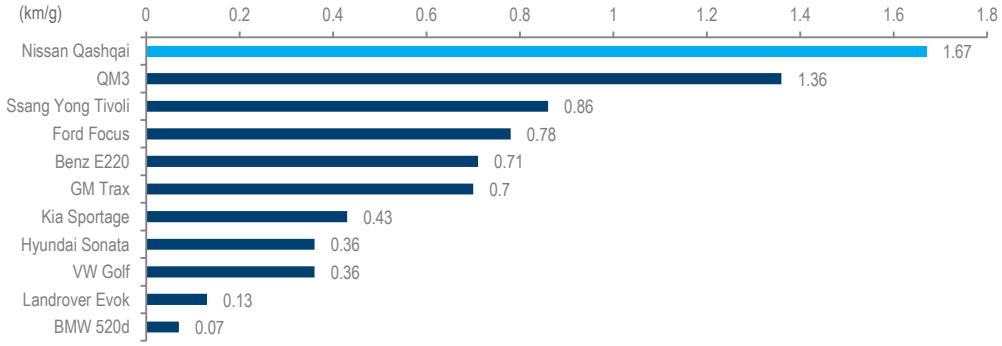
Air pollution, such as micro dust, yellow dust, etc., has long been known for its adverse effects on people's health, and leads to the deaths of more than 3m people worldwide every year. In large cities, emissions from vehicles represent a major contribution to air pollution.

Due to severe air pollution, more stringent regulatory standards have been set by governments

New technologies have been developed by the car industry to reduce nitrogen oxide and comply with stricter environmental regulations. The Volkswagen emissions scandal in September 2015 underscored the downside of using diesel fuel in cars. While the Volkswagen scandal alone could lead to governments restricting the sale of diesel cars, changing the habits (to buy EVs rather than diesel cars) of the large population in Europe will probably require government efforts to promote EVs, and changes in rules that discourage the use of diesel.

On 17 May 2016, Korea's Ministry of Environment (MoE) announced stricter emissions standards for diesel-powered vehicles from 2017 (likely from September 2017) and at the same time revealed that Nissan Qashqai had been manipulating its Euro6 emission standards. We believe the recent scandal from both Mitsubishi and Suzuki using improper fuel economy tests will provide another leg up for EVs.

Korea's Ministry of Environment: nitrogen oxide emissions while driving



Source: Korea Ministry of Environment, Daiwa
Note: Nitrogen oxide causes air pollution and forms smog and acid rain

The US

The NHTSA Corporate Average Fuel Economy (CAFÉ) programme requires manufacturers of passenger cars and light trucks, produced for sale in the US, to meet CAFE standards, expressed in miles per gallon (mpg). The purpose of the CAFE programme is to reduce the nation's energy consumption by increasing the fuel economy of cars and light trucks. Fuel economy standards improve the nation's energy security, address climate change and save consumers money at the pump. The NHTSA has established separate passenger car (including domestic and import passenger cars) and light truck fleet standards at "the maximum feasible average fuel economy level that it decides the manufacturers can achieve in each model year."

Manufacturers' compliance with the obligations are based on the vehicles that are produced for sale in the US in a model year within each of the following 3 fleets: domestic passenger cars (DP), imported passenger cars (IP) and light trucks (LT).

US: Corporate Average Fuel Economy (CAFÉ) regulations

CAFÉ	Description
Programed by	NHTSA
Description	To meet fuel-efficiency standard 54.5mile per gallon (23km per litre) before registration for sale
Action	To meet 35.5MPG (mile per gallon) / 54.5 MPG by 2016 and 2020, respectively
Fine	0.1MPG * USD 5.5 * vehicle sold amount

Source: NHTSA, Daiwa

Recently, the US Environmental Protection Agency (EPA) and the NHTSA jointly proposed standards for medium- and heavy-duty vehicles that would improve fuel efficiency and cut carbon pollution to reduce the impact of climate change, while bolstering energy security and spurring manufacturing innovation.

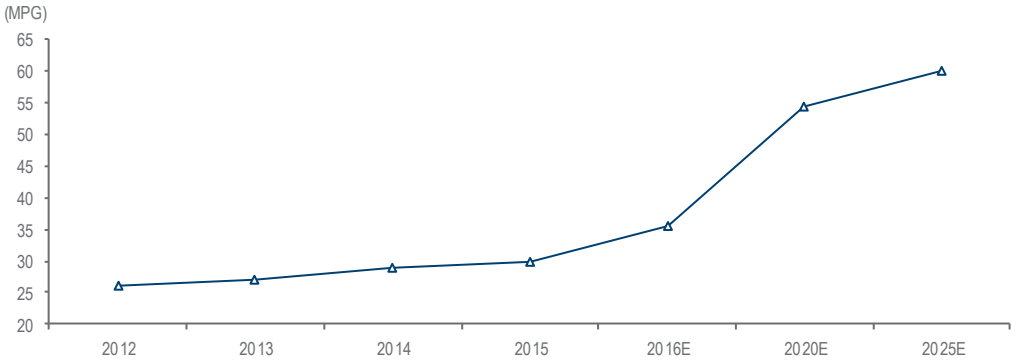
Global efforts to propose to set single standards for CO2 emissions

The proposed standards are expected to lower carbon dioxide (CO_2) emissions by around 1bn tonnes, cut fuel costs by about USD170bn, and reduce oil consumption by up to 1.8bn barrels over the lifetime of the vehicles sold under the programme. These reductions are nearly equal to the greenhouse gas (GHG) emissions associated with energy use by all US residences in 1 year.

The total oil savings under the programme would be greater than a year's worth of US imports from OPEC each year. The proposed standards are fully harmonised between NHTSA and EPA. The agencies have worked closely with the State of California's Air Resources Board (CARB) in developing the proposed standards. All 3 agencies are committed to the goal of setting a single set of national standards. Throughout every stage of development, the agencies' fuel efficiency programme has benefited from close partnership with industry, labour and environmental leaders.

With this proposal, a high level of engagement with government agencies will continue to be critical, as feedback will be instrumental to the agencies' work to finalize the standards by the end of 2016.

US: CAFE regulatory framework for small passenger vehicle



Source: NHTSA, Daiwa

The EU

For the US, it focuses more on fuel efficiency based on the government's target to decrease the country's energy imports (to raise the energy self-sufficiency rate). However, the EU places more emphasis on its CO_2 reduction programme to meet the Kyoto Protocol emission standards and improve fuel efficiency, with the aim of killing 2 birds with 1 stone (as it were). EU legislation has mandatory emission reduction targets for new cars. Such legislation is the cornerstone of the EU's strategy to improve the fuel economy of cars sold on the European market.

EU: CO_2 regulatory guidance

EU regulatory	Description
Fuel efficiency	New fuel-efficiency target of 26.5km/litre from 2020
	To reach 95g/km by 2020, 68~78g/km by 2025
CO_2	To fine 95 Euro per every additional CO_2 (gram) emitted
	Supercredits to be applied

Source: EEA, Daiwa

Tougher measures on CO_2 emissions should serve as a powerful impetus for EVs

By 2021 (having been phased in from the beginning of 2020), the EU targets all new cars to emit just 95g of CO_2/km, equal to fuel consumption of around 4.1litre/100km of petrol and 3.6l/km for diesel cars. The 2015 and 2021 targets represent reductions of 18% and 40%, respectively, compared with the 2007 fleet average of 158.7g/km.

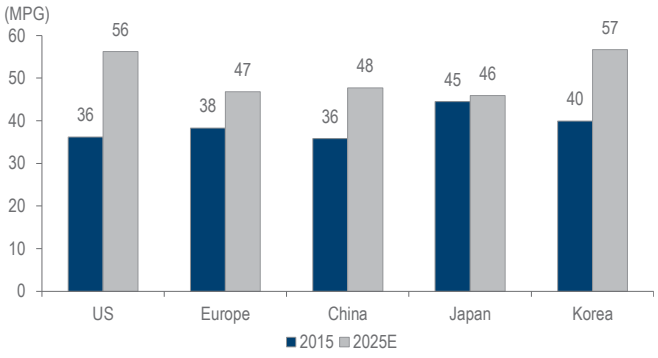
According to the European Environment Agency (EEA), all new cars sold in the EU in 2015 emitted on average 3% less CO_2 than those sold in 2014, and 10 grams of CO_2/km below the 2015 target. The average emissions level of a new car sold in 2015 was 119.6 grams of CO_2 per kilometre, significantly below the 2015 target of 130g. Since monitoring started under current legislation in 2010, emissions have decreased by 20g CO_2/km (15%). Manufacturers will nevertheless have to reduce emissions to meet the target of 95g CO_2/km by 2021.

EU: CO_2 fine guidance

Additional CO_2	Fine
Below 1g	5 Euro
1g-2g	15 Euro
2g-3g	25 Euro
Over 3g	95 Euro

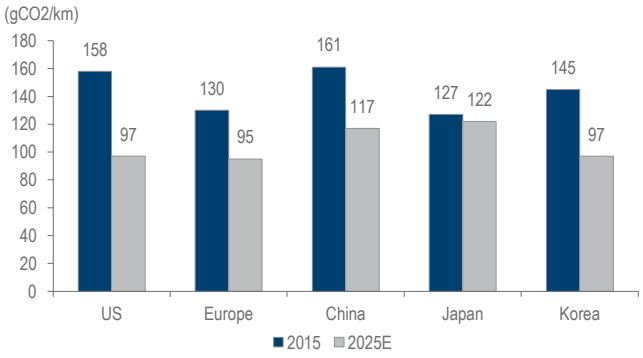
Source: EEA, Daiwa

Global fuel-efficiency target by country/region



Source: ACEA, Daiwa

Global CO_2 reduction target by country/region



Source: ACEA, Daiwa

Stronger growth trajectory from China

More accommodative measures from the central government

On 25 April 2016, the Beijing Auto Show show-cased number of new NEV models. Our China auto analyst, Mr. Kelvin Lau, is upbeat on the outlook for China's NEV industry, particularly with the government backing the development of NEV technology.

Supportive policy stance on New Energy Vehicles (NEVs) by Chinese government

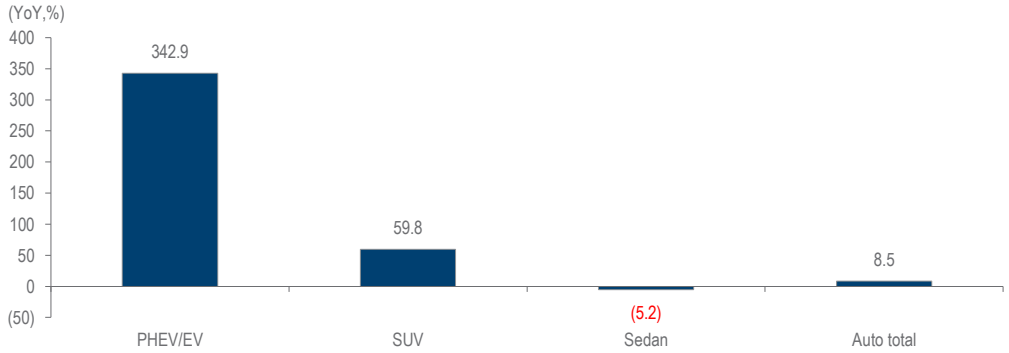
Kelvin highlights that the central government has a supportive policy stance towards NEVs, including: 1) providing substantial subsidies to end-buyers, 2) boosting government purchases of such vehicles, 3) allowing no NEV licence restrictions in any cities, 4) building more charging stations, and 5) supporting the development of battery technology. The government estimates that by end-2020, Chinese drivers will own 5m NEVs, and is focusing on encouraging a strong pipeline of new NEV models.

Recently, the China Government unveiled an ambitious road map for expanding the country's EV industry. Premier Li Keqiang vowed on 24 February 2016 to "step up support" for the EV industry at a meeting of the State Council by shifting funds from supporting EV

production to rewarding companies that produce new technologies and hit sales targets, according to the government website.

China is now ready to transform itself into a major EV industry globally surpassing the US as the world's largest market. In 2015, China sold 247,000 EVs, nearly 550% more than the year before and 17 times more than in 2013. In the same year, China became the world's biggest car market and also the biggest market for EVs.

China: auto demand by segment in 2015



Source: CAPA, Daiwa

It appears that the government's authorities believe that a stronger move to EVs (vs. ICEs) could deliver a number of major advantages for China.

China's concerted efforts towards EVs

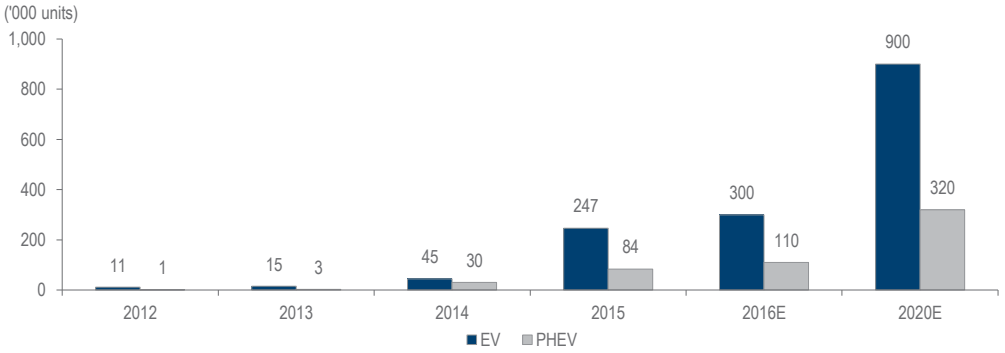
First, EVs would reduce consumption of oil-based fuels and boost China's energy independence: the cars would power up with electricity generated primarily from domestic coal. China otherwise faces the prospect of its oil consumption surging by 70% before 2020, given current expectations for the per capita growth of vehicle ownership. The country would then find itself increasingly vulnerable to global supply fluctuations.

Second, EVs could help reduce CO_2 emissions and air pollution, a significant problem in China, already the world's largest emitter. On a well-to-wheels basis, battery-powered EVs could cut CO_2 emissions by 40% compared with vehicles powered by internal-combustion engines. Local mobile emissions of both CO_2 and Nox could fall by roughly 99% and 50%, respectively.

Third, a large China market for EVs would give Chinese automakers an excellent launching pad from which to reach the world stage. Back in 2009, the government recognised that domestic automakers probably couldn't catch up with their global rivals' internal-combustion-engine technology anytime soon; as such, the government changed its strategy to take a leading position in the fledgling EV segment. This approach has the potential to succeed, in our view, given Chinese companies are rapidly bringing battery-EVs to mass production, and given the consolidated technological advances in batteries, traction motors, and power electronics.

Under this scenario, in order to comply with stricter China Government regulations, global OEMs may need to transfer increasing amounts of EV-specific intellectual property to their Chinese partners. Chinese suppliers would focus on building massive numbers of lithium-ion batteries and other EV components to support the industry.

China: NEV demand forecasts



Source: CAPA, Daiwa forecasts

China Government to adapt California-style EV mandate to improve the country's technology and gain competitiveness vs. peers

For EV standards, detailed regulations that specify how a car must operate and what equipment the car should have differ depending on each government worldwide. Different countries and regions often have long-established standards that directly conflict with each other. This means that automakers must design 2 versions of a car's interior, 1 for each market, to accommodate the differently shaped and sized safety equipment. For example, not all EVs are created equal, and not all EV on-board chargers are created equal.

It's worth noting that several years ago, China instituted its own unique charging hardware and protocols for EVs sold in the country. That standard has been slow to gain adoption, meaning that EV charging infrastructure across China is presently a hodgepodge of different connectors and protocols. Automakers say that they view the Chinese action as a delaying tactic against global makers, requiring them to re-engineer their plug-in cars' charging systems and helping domestic makers catch up. However, this has not helped any of the Chinese domestic players improve their technology, but rather they have lost competitiveness against global peers.

Thus, the China Automotive Technology Research Center (CATRC), which helps craft policy and standards for the national industry, invited California's regulators to Tianjin to explain their success. It also sent experts to the West Coast to learn more. Later in 2015, policymakers adopted a California-style EV mandate. The Beijing state government announced that by end-2016, 30% of municipal vehicles must use batteries or fuel cells. Financial subsidies for NEVs were reduced (the city of Shenzhen's cumulative subsidy, for example, was about USD14,000, compared with USD18,500 before), but the mandate and other incentives more than offset this reduction. Many cities also now offer reduced parking fees, access to bus and HOV lanes and exemptions from stringent commuter restrictions.

In at least one sense, the Chinese have gone even further than California in encouraging EV use. To combat multi-day traffic jams and suffocating smog, major cities have greatly reduced the number of licence plates (auto registrations) allowed.

In 2015 the average cost of a license plate in Shanghai was more than USD18,000, and in Beijing there were nearly 200 applications for each registration granted. But cities including Beijing, Shanghai and Shenzhen have created special carve-outs for EVs. For example, Beijing allotted 30,000 free licence plates for EVs in 2015.

Different charging location by vehicle

Source: Company, Daiwa

With the China Government's alliance and cooperation programmes providing an upward leg for EV makers, the US-China Standards and Conformance Cooperation Program (SCCP) held a workshop in early June 2015 to agree upon a supportive policy on EVs and included efforts to harmonise present and future regulations on vehicle and battery safety, safety and interoperability of charging infrastructure, wireless charging, and emergency response and fire protection.

In sum, we believe it will not only be smart policies and regulations that will be critical in supporting the transformative sectors of the 21st century, but governments' alliances and cooperation will provide an extra boost for the EV market.

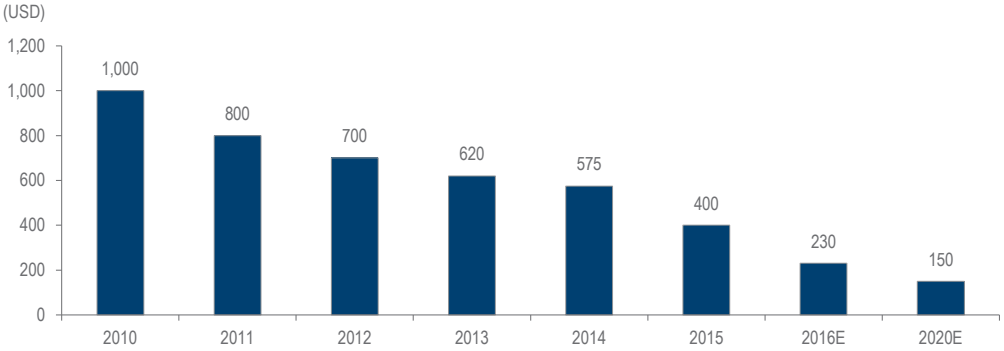
Faster-than-expected EV battery price decline

2017 could mark an inflection point for EVs: similar pricing with ICEs

According to a recent analysis of the EV market by Bloomberg New Energy Finance (BNEF), EVs could become as affordable as their gasoline counterparts by 2021. As shown in the following chart, we forecast EV battery prices to decline to USD150/Kwh by 2020, from USD400/Kwh in 2015.

Carmakers plan to start producing EVs that can run for 300km for USD30,000 by 2017 on the back of a faster-than-expected EV battery price decline

EV average battery costs (USD/kWh) trend and forecasts



Source: Daiwa forecasts

BNEF also expects EV battery prices to fall to USD150/kwh by 2020, which would improve EV battery power demand to nearly 700gwh by 2030, on BNF estimates.

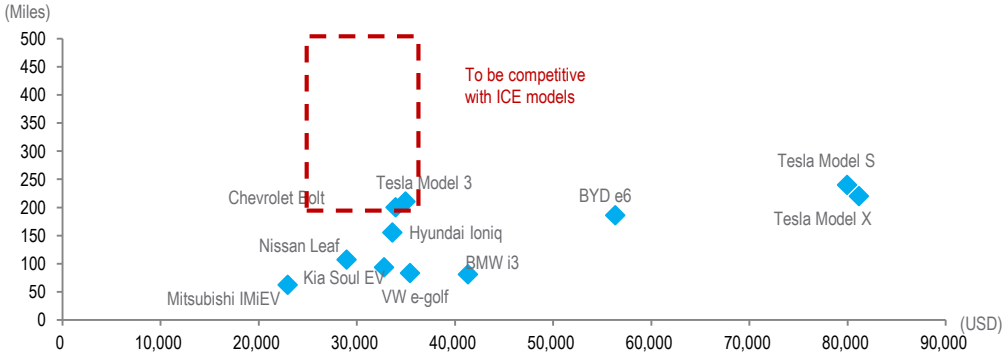
As such, BNEF expects long-range EVs to cost less than USD22,000/car and 35% of passenger vehicles to comprise EVs by 2040. Already, Tesla, GM and Nissan plan to start producing long-range (300km) EVs for USD 30,000/car by 2017. According to a recent survey in the US, customers would start buying more EVs should the pricing point for an EV fall below the average transaction price of USD30,000/car.

EV products in the pipeline (2016-19E)

Country	Brand	Schedule	Description
US	Tesla	2015	SUV Electric Vehicle: Model X
		2017	Model 3
	GM	2016	The new Bolt
	Apple	2019*	EV with autonomous driving
Germany	BMW	2016	PHEV 3-series
		2018	i5
	Audi	2018	SUV Electric Vehicle
	Benz	2016	PHEV C & S class
		2018	Electric vehicle - large sedan
Korea	HMC	2016	Ioniq EV, Ioniq PHEV
	Kia	2016	K5 PHEV, Niro PHEV
Japan	Nissan	2017	New Leaf, Mid-size and SUV Electric Vehicle

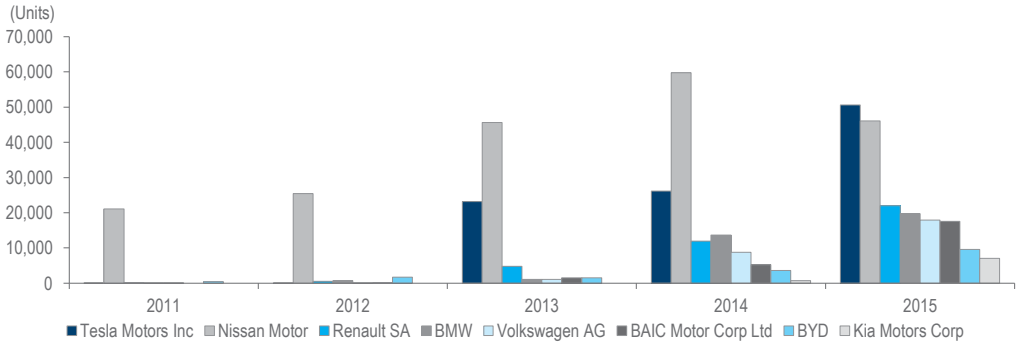
Source: Companies, compiled by Daiwa
*Note: *Based on unconfirmed reports*

EVs vs. ICE price/range comparison



Source: EV obsession, Daiwa

EV global shipments (2011-15)



Source: Bloomberg, Daiwa

Thus, we could see a rise in EV shipments globally from 2017 onwards. Furthermore, global EV shipments are tracking much stronger than our forecasts. In 2015, global EV sales rose by 60% YoY, equating to Tesla's CAGR target by 2020.

The state of play: Electric Vehicles

1. Nissan

The Renault-Nissan Alliance, the world's leader in zero-emissions mobility, sold its 250,000th EV in June 2015, a white Renault ZOE sold to a French engineer. The Nissan LEAF remains the best-selling EV of all time, with more than 200,000 units sold. With 6 models on the road, the Renault-Nissan Alliance is the only global car group to only focus on EVs (no other models in the model range). In addition to the LEAF, Nissan sells the e-NV200 van, which has been on sale in Europe and Japan since last year. In addition to the ZOE, Renault sells the Renault Kangoo Z.E van, the SM3 Z.E. sedan and the Twizy, a 2-seater urban commuter vehicle.

Also, Nissan and BMW are joining forces to offer public fast charging at 120 locations across 19 US states in an effort to support Nissan LEAF and BMW i3 customers and to promote increased adoption of EVs in the US. With this partnership between 2 of the top EV manufacturers, Nissan and BMW are seeking to address the growing demand for additional public fast-charging options in cities spanning the US, giving drivers the ability to easily extend the length of their travel via an electric vehicle.

Nissan launching a 2016 version of its best-selling EV, the LEAF

Nissan also recently introduced the new 2016 LEAF, which has an available best-in-class range of 107 miles, making it the first affordable EV to get more than 100 miles on a single charge.

Nissan: the-best-selling EV globally

Source: EV obsession

2. Hyundai Motor Company

HMC: preparing a 200-mile EV by 2020

Hyundai Motor (005380 KS, KRW140,000, Buy [1]) plans to start selling its first battery-powered EV at the end of 2016, as South Korea's champion of fuel-cell cars hedges its bets in next-generation green technology. The new Ioniq comes as a plug-in hybrid, a regular hybrid, and an all-electric version. Hyundai claims the Ioniq is the first eco-focused car to have 3 electric drivetrains on 1 platform.

Also, Hyundai is preparing 200-mile and 250-mile EVs for 2018 and 2020, respectively. This is above and beyond the Ioniq EV which is due to be launched in the US later this year with a 110-miles range. Hyundai has already revealed its plan to offer 26 new green models by 2020, including plug-ins, hybrids, and hydrogen fuel cell vehicles,

Hyundai: the new Ioniq

Source: Autoblog

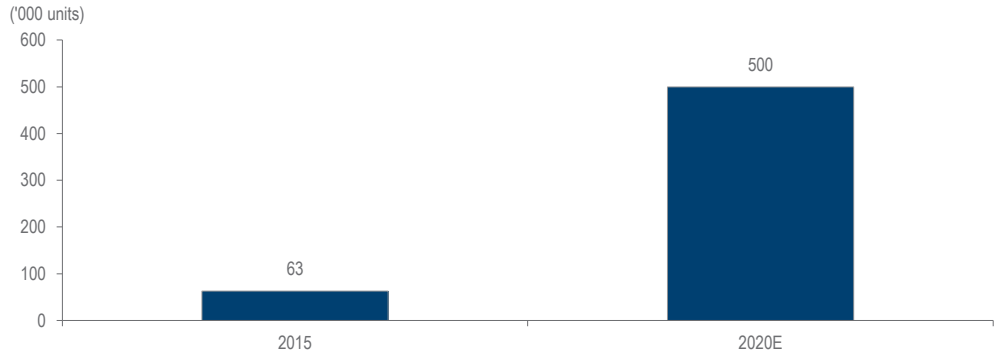
3. BYD

BYD was the first Chinese car maker to deliver a truly zero-emissions ecosystem to the world in 2011 (as the only EV manufacturer globally to also build low-cost solar panels and environmentally friendly energy storage to power fuel-efficient NEVs). However, BYD is now the world's No. 1 battery-EV manufacturer by sales volume. BYD climbed from the 7th position in late 2014 to the 1st position in 2015 as the result of a carefully executed strategy and products in the China market.

BYD: ranked No.1 as battery-EV manufacturer by sales volume

BYD also dominates the electric bus market where there is no close competition. Globally, it will deliver nearly 6,000 electric buses in 2016, with about 300 zero-emission electric buses scheduled to be built in 2016 at its North American factory, the Bus & Coach Factory in Lancaster, California. These numbers alone (6,000 in 1 year) make BYD the largest manufacturer of electric buses worldwide, and surpassed the entire US bus market volume in 2015. However, BYD only has a strong comparative advantage in PHEVs, and as such, needs to build up its competitiveness in the battery EV market.

BYD: NEV (EV and PHEV) sales target by 2020



Source: EV obsession, Daiwa

4. Tesla

Tesla Model 3 has the potential for mass production

As we mentioned above, strong pre-orders of 400,000 units suggest Tesla's Model 3 is likely to become the best-selling EV in the world. By comparison, the previous annual bestseller – the luxury Tesla Model S – sold just 50,000 units in 2015.

On the technology side, Musk has been determined to use more advanced and more expensive lithium ion batteries, targeting to bring down the cost of the company's EVs through mass production made possible by increased demand.

Tesla has differentiated itself by setting up its own fast-charging stations

Tesla has also taken an alternative approach by developing the infrastructure to support its cars. Conventional carmakers (ie, GM saying it would not fund fast-charging sites for the Chevrolet Bolt EV) have been relying on the public sector in one form or another to make public charging points available and build up the market. Tesla, however, has built its own network of rapid charging stations so its customers feel confident that they will be able to charge their cars on long trips.

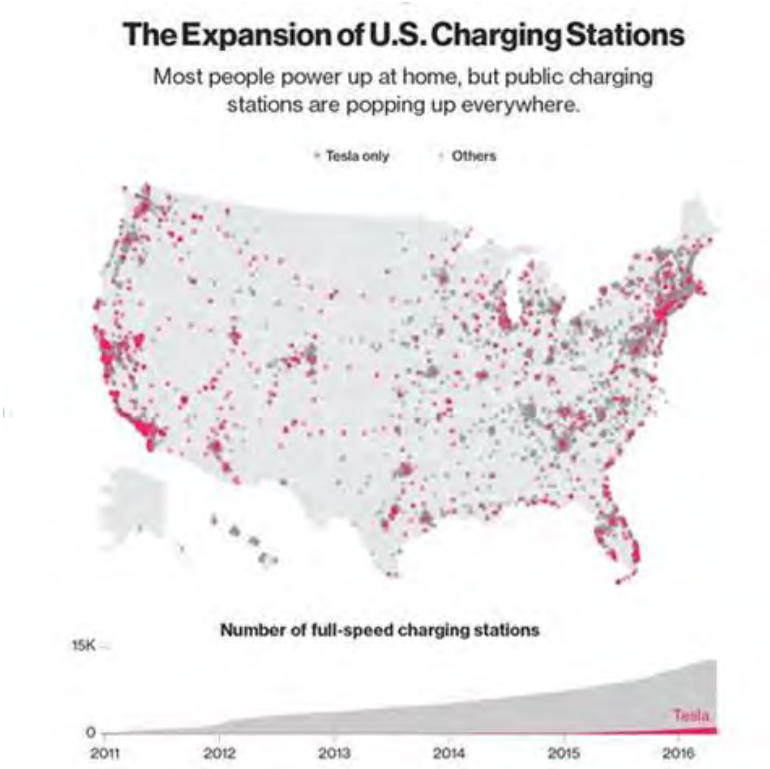
It will be important to watch whether Tesla will be able to meet its production schedule given that Model 3's pre-orders are almost 4x the total number of cars Tesla has produced over the past 8 years.

Tesla vs. BYD: model comparison

	Model S	Model X	Model 3	E6
Brand	Tesla	Tesla	Tesla	BYD
Launch	Jun-12	Sep-15	end-17	2011
Range (km)	377-473	381-414	346	400
Battery pack (kWh)	70/90	75/90	44/66	82
Price (KRW)	70,000	80,000	35,000	46,500

Source: EV obsession, Daiwa

US charging stations



Source: US Department of Energy (DoE)

Smart cars: faster-than-expected growth should provide impetus

More stringent safety measures by each government

The US

Regulators are well-positioned to speed up the rate of ADAS and safety adoption. The NHTSA, the leading US vehicle regulator, plays a crucial role in the market by developing and enforcing federal motor vehicle safety standards (FMVSS), which mandate the design, performance, and durability requirements for all new vehicles sold in the US market. It is because of FMVSS that all new cars on the market must include, for example, 3-point safety belts and airbags.

Government agencies are promoting the use of safety features in vehicles

Furthermore, the NHTSA manages the US New Car Assessment Program (NCAP), which sets specifications and performance standards for crashworthiness features that go beyond FMVSS requirements. In addition, the US NCAP includes recommended advanced technology features for crash avoidance systems. Used by consumers to compare vehicles and displayed on new vehicle window stickers, the NCAP presents a 5-star rating system where 1 star is the lowest rating and 5 stars is the highest.

The NHTSA continues to strengthen and promote safety features. For example, electronic stability control systems are now required for all new light vehicles; and by model year 2018, all light vehicles will be required to install a rear view camera system. The NHTSA is in the process of updating the NCAP to include autonomous emergency braking (AEB) systems featuring 2 system types – crash-imminent braking and dynamic brake support. The agency is studying other ADAS features, such as lane-keeping assist, but has not yet mandated these technologies.

To accelerate adoption of ADAS features

Ease of implementation

Level of influence	Educate / Advertise	Regulate / include in Rating	Incentivize	Mandate
Legislators	✓	✓	✓	✓
Regulators	✓	✓	✓	✓
Ratings Agencies	✓	✓	✓	–
Insurance Companies	✓	✓	✓	–
Consumer Agencies	✓	✓	–	–
OEMs	✓	–	✓	–
Tier 1 Suppliers	✓	–	–	–

Source: BCG, NHTSA

The EU

In September 2015, European Commission and Parliament officials announced that they were moving towards regulating connected cars. Major car companies have been running tests on autonomous or driverless cars over the past couple of years and some have had hiccups along the way. Google reported several crashes involving its autonomous cars in the US in this year alone.

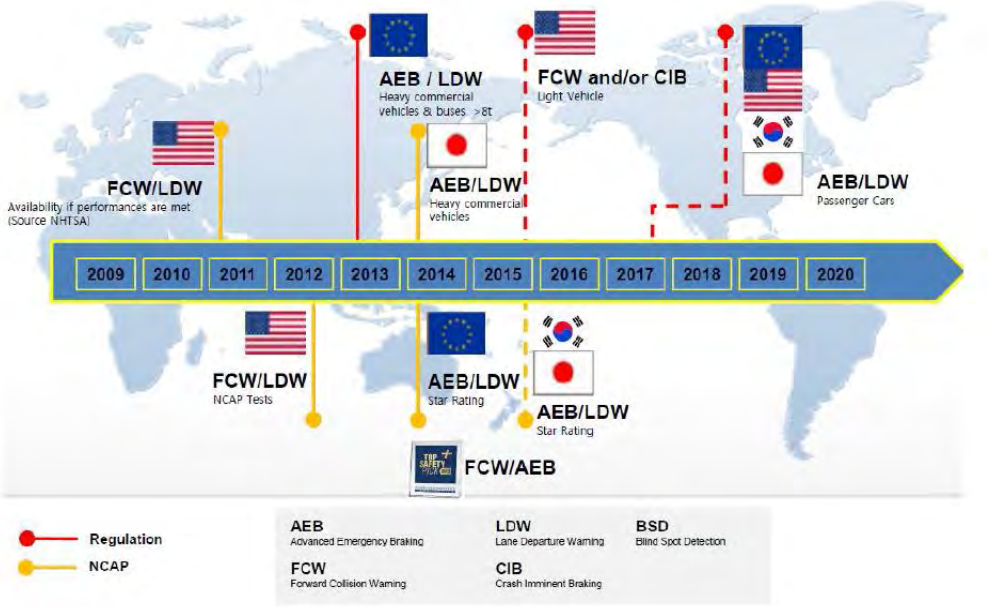
Despite accidents, some European companies have launched test drives with autonomous cars on public streets. Germany's Daimler got the go-ahead in March 2016 from the state authorities to drive its autonomous cars in Baden-Württemberg provided there is a driver in the car. The British Government published guidelines for driverless cars in August 2015 that similarly require a person to be able to take control of the car even when it's driving autonomously.

EU legislators are planning to rule out stringent safety measures since autonomous driving and smart cars are more than just technology. European Parliament Vice President Adina

Valean mentioned at a Brussels panel discussion on autonomous driving in September 2015 that the “complexity of smart cars is so huge, it is related to security, insurance, and safety issues to consider as a whole”.

Since as early as 2010, the EU has been leading initiatives to promote road safety and traffic management by pooling information provided by cars that are hooked up to the digital network infrastructure. In particular, Ms Valean wanted the industry to concentrate its efforts on “global market success” via enhanced co-operation and standardisation of ICT-aided cars. Car manufacturers have also invested heavily in these ICT-aided cars.

Global ADAS regulations



Source: Mando, Daiwa

Increasing electronic content per vehicle: infotainment, ADAS, connectivity

Faster-than-expected growth of new components

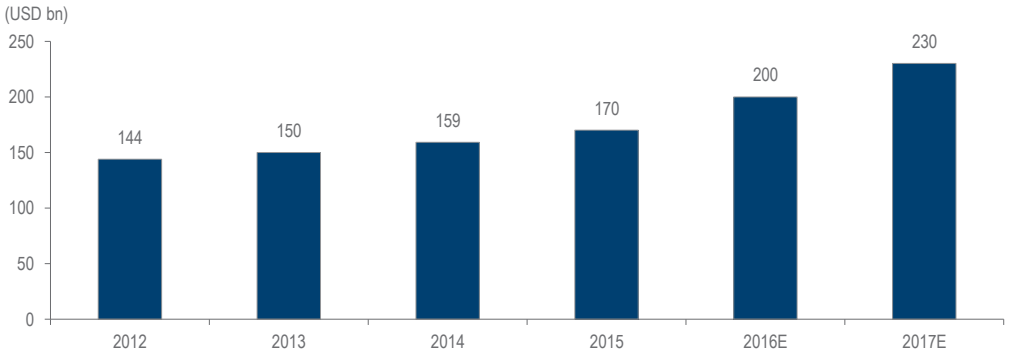
Expansion of automotive electronic content per vehicle should drive up smart-car market revenue

From self-parking cars to anticipatory braking, the semiconductor and electronic content per vehicle has become increasingly important to automotive innovations over the past decade. Also, revenue from electronic content has increased faster over the past 10 years than that generated by both the automotive and semi-conductor industry combined.

According to Market-Eye, electronics now represents 25-30% of a car’s production costs. However, electronic systems now contribute 90% of car innovations and new features, from emissions levels to safety systems (both active and passive) and entertainment/ connectivity features.

There is not one new development in the automotive industry that does not rely on electronic systems and technologies.

Production of electronic equipment dedicated to automotive globally



Source: DECISION, Daiwa

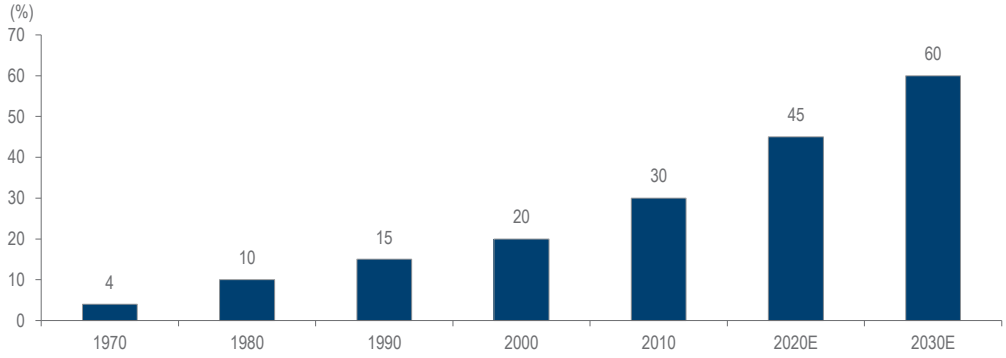
Automotive electronics content could rise to 50% by 2025

According to TU Munich, a German thinktank, electronics and software currently comprise 35% of a car's cost, and electronics systems comprise more than 90% of the innovations and new features of cars, such as semi-autonomous driving features like automatic parking, lane-keeping assistance or sensor-based reporting.

Moreover, ICT becomes pivotal for more efficient automation and operational excellence inside the manufacturing plants. With a potentially faster-than-expected rise in ICT for car production over 2016-20, we now look for automotive electronic content to rise to 45% of the manufacturing cost for cars by 2020, vs. our previous assumption of 35%.

Automotive electronic content to rise to 50% by 2025 vs. our previous assumption of 35%

Automotive electronics: % of car costs

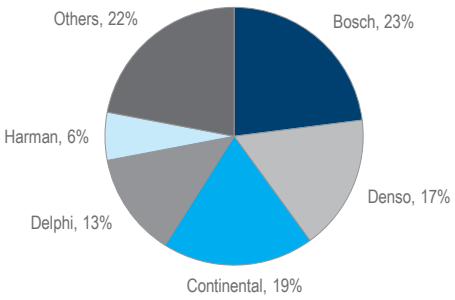


Source: Statista, Daiwa forecasts

Infotainment: another driver of faster adoption of electronic content

The car dashboard is becoming a versatile computing platform comparable with a mobile PC. Integrated infotainment systems that combine the vehicle's navigation, telematics, communication, and audio functions are now part of the mainstream vehicle design. Smartphone integration technology represents the current backbone of infotainment systems. Auto parts are focusing on the power of technology and connectivity already offered by a smartphone by developing suitable integration platforms. Given ICT players' strength in smartphone technology, these companies are also focusing on developing smartphone-centric infotainment solution systems.

Global automotive infotainment market

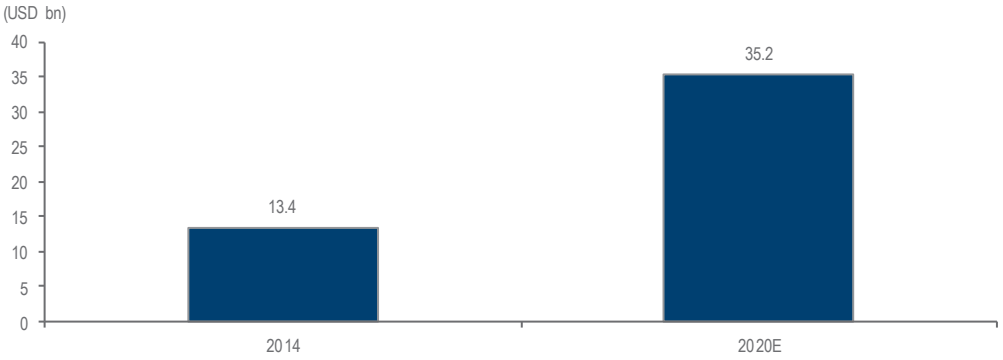


Source: Global Industry Analysts Inc., Daiwa

Smart cars: automotive infotainment to reach USD35.2bn by 2020E

According to Global Industry Analysts, the global market for automotive infotainment systems in passenger cars is projected to reach USD35.2bn by 2020, driven by modern lifestyles become more digitalised and the rise of connectivity. Europe represents the largest market worldwide. Developments in voice recognition technologies, HD in-dash display monitors, responsive touch screens and intelligent driver distraction mitigation systems, are also driving adoption of automotive infotainment systems. Asia Pacific ranks as the fastest-growing market, supported by the fact that the current improving global GDP is largely driven by Asia and the emerging markets.

Infotainment market forecasts



Source: Global Industry Analysts Inc., Daiwa

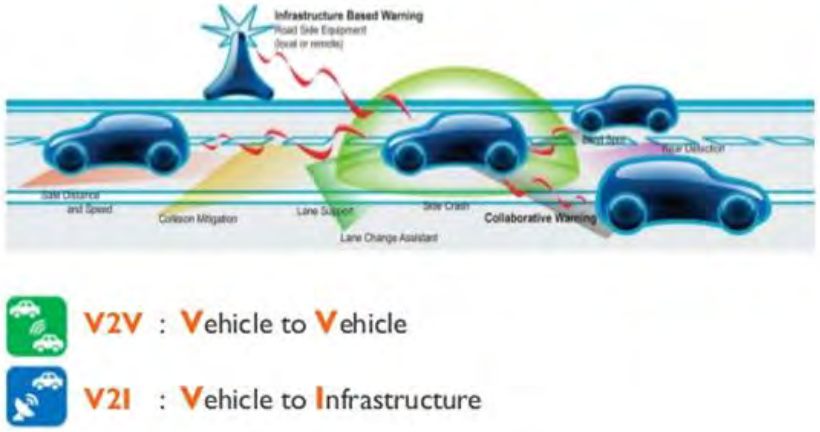
Connectivity: more vehicle-to-vehicle connectivity on the way

Most drivers have already enjoyed the first wave of autonomous driving with features such as navigation systems, in-car entertainment systems, lane-assist technologies, traffic warning systems and sensors, and self-parking cars. In the second wave, Google, Tesla, and Uber are aggressively popularising the idea of self-driving vehicles. Baidu, the owner of China's largest Internet search engine, recently highlighted the possibility of it introducing an autonomous car in the near future.

V2X connectivity is being used by the OEMs

One of the key enabling systems for the success of both is the provision of real-time data to vehicles, drivers, and pedestrians through vehicle-to-external communications (V2X) using dedicated short-range communications (DSRC). Even before there is significant deployment of automated vehicles, V2X connectivity has the potential to alleviate some of these issues. DSRC-based V2X systems are now being deployed by the OEMs, since the start of 2016. In addition to the embedded OEM systems in new vehicles, aftermarket retrofit systems and new smartphones with DSRC capability are expected to be adopted, according to Navigant Research.

V2X landscape: V2V and V2I

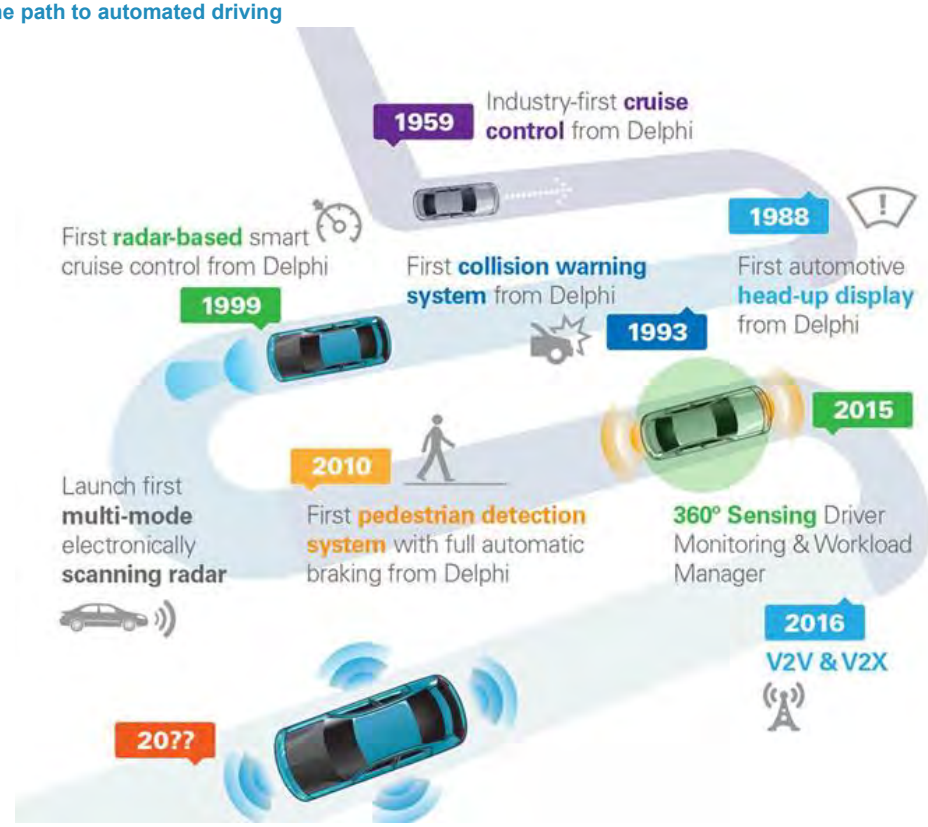


Source: Navigant research

V2X-system revenue could reach USD36bn by 2025

Through the adoption of V2X systems in autos, all the data acquired by a vehicle's on-board sensors, such as speed, position and driving direction, is made available to other traffic participants and infrastructure components (such as traffic lights and traffic guidance systems). In addition, vehicle systems can process this data and turn it into useful information for the driver, too, such as navigation advice, thereby optimising traffic flow and traffic safety at the same time. According to Navigant Research, global revenue from sales of V2X systems is projected to reach more than USD36bn by 2025.

The path to automated driving



Source: Delphi

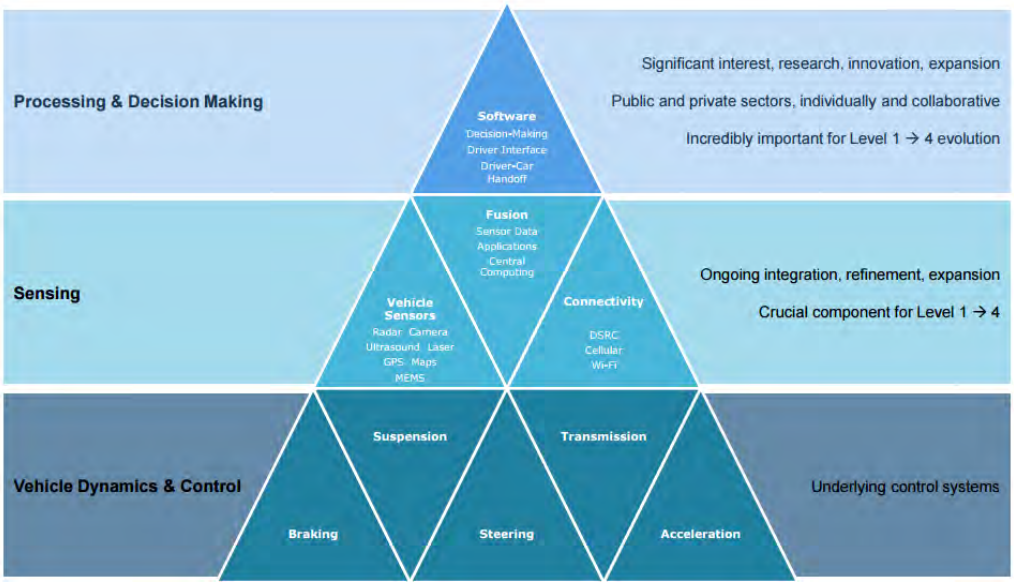
ADAS: stricter stringent regulations to provide another leg up in smart-car development

Government agencies pave the way for smart cars

Among electronic contents in a vehicle, we believe ADAS is the most important component for fully autonomous driving (level 4) with smart-car applications. Many countries and organisations have pushed to make AEB systems mandatory in all cars. For instance, the Australian Medical Association (AMA) and Australasian New Car Assessment Program (ANCAP) have started lobbying the Australia Government to make this happen as part of their “Avoid the crash, Avoid the trauma” campaign.

In the US, the National Transport Safety Board (NTSB) and NHTSA are also getting involved. The NTSB has called out the NHTSA for not making AEB mandatory already, though automotive manufacturers have shown reluctance to adopt such a requirement. According to the NTSB, over 1,700 fatalities occurred on US Highways in 2015 and 500,000 injuries. The NTSB believes over 80% of those fatalities and injuries could have been avoided with AEB technology.

Building blocks of automated driving



Source: IHS, Daiwa

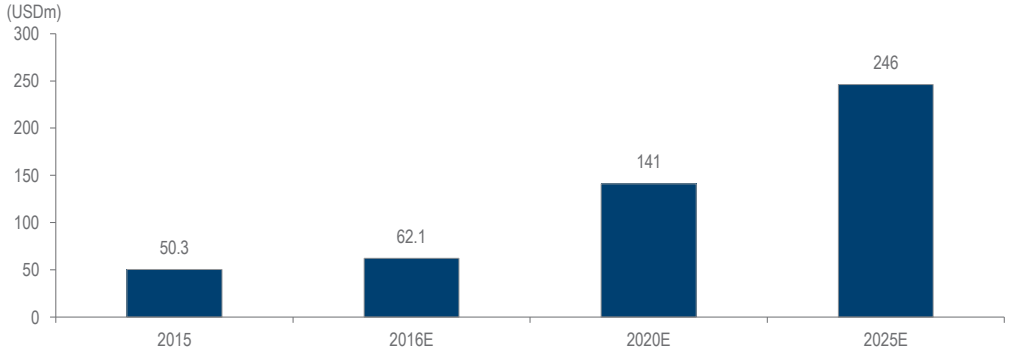
ADAS: sensing capability is pivotal for active safety

In our view, the future development of ADAS systems will focus on stereo cameras rather than mono cameras, especially in the AEB field. As AEB systems protect lives, there must be as much performance redundancy as possible, thus ensuring the safety of drivers to the utmost extent. We see pedestrian recognition as a must for next-generation AEB systems, implying that stereo cameras will have to be employed.

Global automotive camera module shipments to reach 246m units in 2025E

According to PRNewswire, global automotive camera module shipments reached 50.3m units in 2015 and are expected to reach 62.1m units in 2016, 141m units by 2020, and 246m by 2025. There are 3 cameras on each light vehicle on average for lane keeping assistance (LKA), AEB, and parking, respectively. Contrary to the modules in a mobile phone camera, automotive camera modules are more demanding in terms of reliability and range of operating temperature. Currently, the major parts makers are Panasonic (6752 JP, JPY939, Hold [3]), Sony (6758 JP, JPY3,004, Buy [1]), Valeo (FR FP, EUR45.9, not rated), Magna (MGA US, USD39.0, not rated), Gentex (GNTX, USD16.0, not rated), Continental (CON GR, EUR191, not rated) and Hitachi (6501 JP, JPY467, Outperform [2]). As described in the following chart, Panasonic ranks first globally in terms of market share.

Global automotive camera module shipment forecasts



Source: PRNewswire, Daiwa

Stringent regulations and standards, such as NCAP, should enable fully autonomous cars to take to the roads

Earlier-than-expected NCAP requirements to provide impetus for smart cars

Also, with intensifying NCAP requirements as electronic content grows, we believe these more stringent requirements would provide impetus for the adoption of automated driving and smart-car technology.

For example, Euro NCAP has created a 5-star safety rating system to help consumers, their families and businesses compare vehicles more easily and to help them identify the safest choice for their needs. The safety rating is determined from a series of vehicle tests, designed and carried out by Euro NCAP. These tests represent, in a simplified way, important real life accident scenarios that could result in car occupants or other road users being injured or even killed.

China, the biggest market globally, introduced in 2012 its own new car assessment programme (C-NCAP) with standards that will soon match those of Europe (NCAP). According to TRW, the level of safety electronics and sensing on board Chinese vehicles is now very similar to those in the US and Europe.

NCAP requirements comparison

	US NCAP	EURO NCAP	China NCAP
Organization	Government Programme Flagship consumer Information program of NHTSA	Government Programme Backed by seven EU governments, consumer groups	Government Programme China Automotive Technology and Research Center (CATARC)
Rating System	5 star rating based solely on crashworthiness Frontal Side Rollover	5-star rating based crashworthiness and feature assessments Adult protection Child protection Pedestrian protection Safety assist technologies	5-star rating (62 points in maximum) Frontal impact Side impact Whiplash test Fuel consumption test
Advanced Technology	Safety technology evaluated and classified on Safecar.gov Standard (i.e., FMVSS) Recommended (e.g., forward collision warning) Additional Safety Technology (e.g., forward collision mitigation)	Euro NCAP Advanced reward system Rewards manufacturers by publicly recognizing vehicles with advanced safety technologies	Bonus score for safety configurations Rewards for fuel-efficiency Additional safety technology
Future Plans	Extensive review of all testing and assessment procedures Goal to make 5 star rating system more meaningful in terms of real would performance and the advancement of new tech.	Advanced automatic emergency brakes Pedestrian night and bicycle (2018) Car-to-car complex trajectory (2018) Additional case studies and consultant Human-to-machine interface guidelines (2017) Mapped/motorcycle crashes (2017/2018)	Electronic Stability Control (ESC) system To prepare an advanced system by 2018 following EURO NCAP

Source: CATRC, NHTSA, EURO NCAP, Daiwa

Ingredients for faster adoption of autonomous driving are in place

The market responds quickly to government requirements, price competition and any emerging consumer demand. TRW expects 2018 to be the turning point for China's adoption of automated driving. New regulations and updates to China NCAP's star rating could mandate the fitment of radar and camera systems for automatic emergency braking. Global automakers and Chinese OEMs are already introducing cameras and radar to ensure their range is prepared.

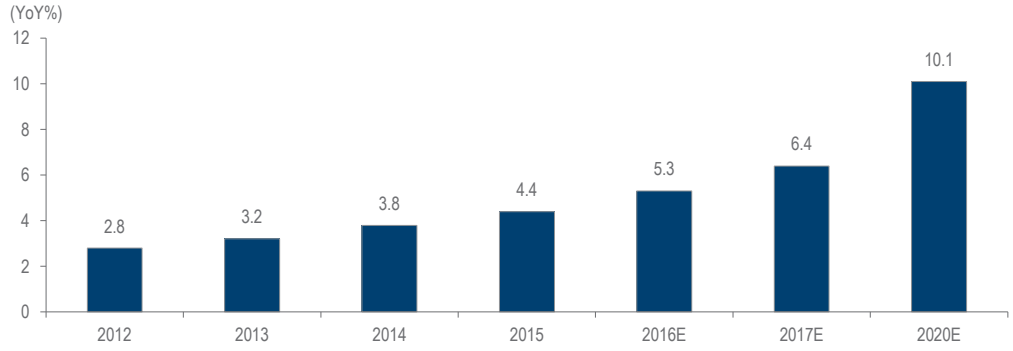
Rear sensors for autonomous driving

	Past	Current	Future
Blind spot info	Radar/Camera/US		
Cross Traffic	24 GHz UWB	77 GHz MRR	
Lane Change	24 GHz NB		
Automated Lane Change		Radar/Camera/US	79 GHz UWB
Park Assist	Ultrasound / Camera		
Autonomous Park Assist	Ultrasound / Camera	Ultra sound	
Remote Valet Park Assist		Ultra sound	

Source: IHS, Daiwa

According to Statistics MRC, the global ADAS market size was USD22.52bn in 2015 and is expected to reach USD89.09bn by 2022, rising at a CAGR of 21.7%. The stringent government norms related to safety are the primary factor driving the global ADAS market. Furthermore, consumers' preference for advanced technology, active safety features, and an increasing focus on consumer safety are the factors favouring the market growth.

Projected global ADAS revenue growth trend, 2012-20E

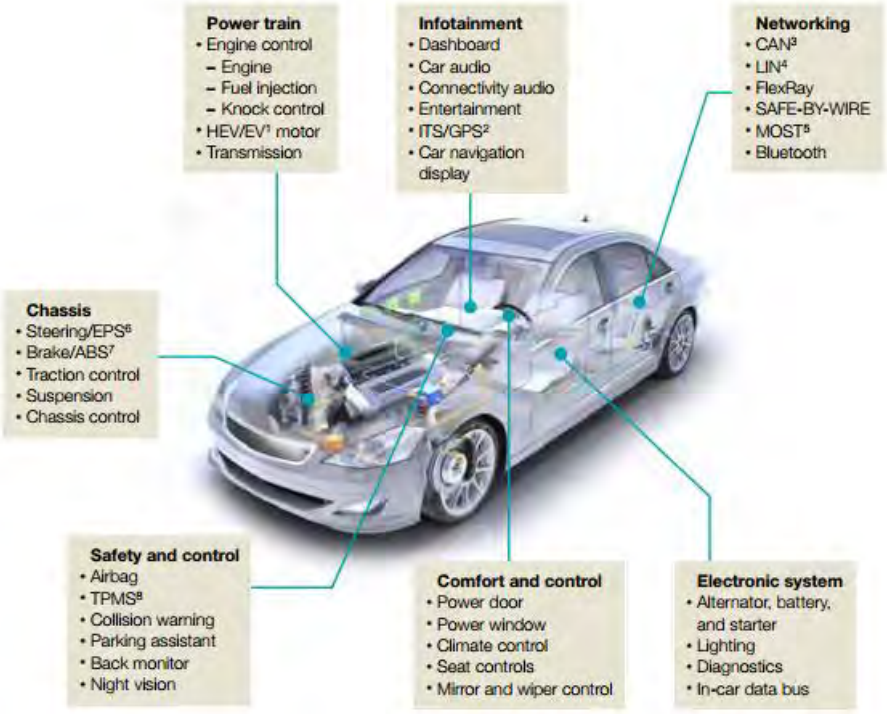


Source: Statista, Daiwa

ADAS and camera-sensor technology: core technology for autonomous driving

Overall, within smart cars, we believe ADAS and camera sensor technology innovation is racing ahead as auto makers unveil new digital services and autonomous driving features. Without autonomous driving, it is against the law for drivers to use their smartphones or infotainment functions while driving. Thus, we believe autonomous driving-related technology stands to benefit handsomely from the growth of smart cars. We now estimate that more requirements from NCAP and legislation support from governments/agencies will lead to fully autonomous vehicles being on the roads by 2025 (vs. our previous forecast of 2030).

Parts of a smart car



Source: McKinsey, Daiwa

ICT players' need to find a new growth angle provides impetus

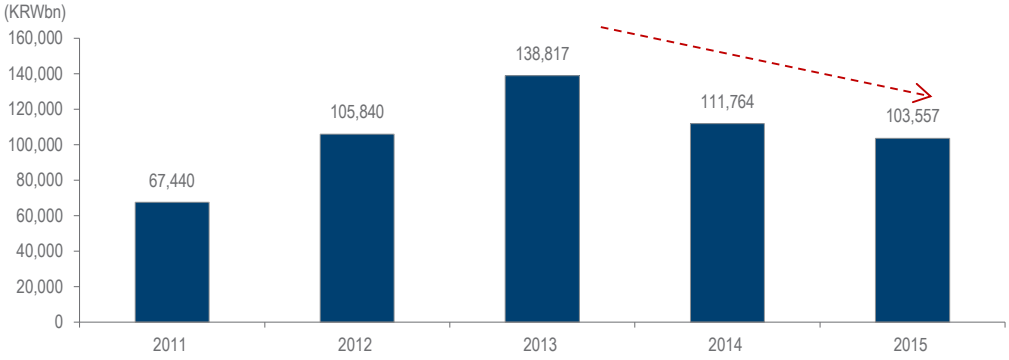
Shrinking smartphone market: ICT players are seeking a new growth angle

Smartphone shipments have already reached maturity

Global smartphone shipments dropped by 18.6% QoQ and 3% YoY in 1Q16. This decline was mainly triggered by market saturation; Apple and Samsung, the market leaders in the global smartphone market, are experiencing a decline in their shipments globally. In North America, 65% of consumers own a smartphone; in Europe, that number is 74% percent, while in China, it's 72%.

Such statistics point to markets having fewer and fewer first-time buyers. And this situation relates not only to the smartphone market but also to the D-RAM and home-appliance markets. As such, ICT players' are aggressively seeking a new growth angle.

Samsung Electronics: declining mobile communication business



Source: Company

Samsung has announced it will participate in the automotive electronics market

Samsung is following Apple's lead in the smart car race

On 9 December 2015, Samsung Electronics (SEC, 005930 KS, KRW1,445,000, Buy [1]) announced it had set foot in the automotive electronic parts industry. Its official announcement drew the attention of the industry, give that global IT giants such as Google, Apple and Amazon have thrown down the gauntlet in the fields of self-driving vehicles, EVs and the like in the interests of their future growth.

Still, SEC clearly said that its participation in the automotive electronic parts sector does not mean that it has re-entered the automobile industry. SEC entered the automobile manufacturing industry back in the mid-1990s, but entirely shut down its operations after a few years, following the repercussions of the Asian financial crisis in the late 1990s.

SEC completed its business reorganisation in December 2015 as a result of which it set up an automotive electronic parts business team. Its smartphone business has seen flagging sales of late, and the company said it established a new automotive components team to "target and pursue new business initiatives to prepare for future growth."

Also, SEG announced a partnership with Volkswagen's Audi unit to supply memory chips for dashboard, infotainment and advanced driver assistance applications.

Samsung Venture: investment in automotive start-up companies

Date	Invested corp	Amount	Description
May-14	Quanergy	450	Lidar manufacturing company
Dec-14	Seeo	1700	Developed lithium-ion battery life-cycle expansion
Jun-15	Vinli	650	Connected car system
Jan-16	nuTonomy	360	Autonomous driving software

Source: Company

Samsung Group: new business plan for the automotive industry

Samsung Group	Description
Samsung Electronics	Infotainment technology development with BMW
Samsung Display	Signed AMOLED display supply to Audi e-Tron
Samsung SDI	Decided to invest KRW 3tn on EV battery until 2020
	EV battery to BMW, Chrysler, and China local OEMs
	Developing new EV with Audi and Ford
Samco	Developing camera module to vehicles

Source: Company, compiled by Daiwa

LG Electronics expects revenue from the VC business to reach KRW4,150bn, a 2015-20 CAGR of 25%

LG Group teaming up with General Motors for EVs and smart cars

GM recently announced details of a strategic partnership with LG Group's vehicle component (VC) group for the development of the Chevrolet Bolt EV, due to go on sale in late 2016. In a statement, GM said the development of the Bolt required an "unprecedented supplier relationship."

Through the relationship, GM said it is able to combine its "proven in-house capabilities in electric motor design, battery control, system validation and vehicle body/system integration" thanks to LG Group's expertise in infotainment, battery systems and component development.

Specifically, according to GM, LG Group supplied new components and systems for the Bolt EV including: electric drive motors (GM designed); power invertor modules (converts DC power to AC for the drive unit); on-board chargers; electric climate control system compressors; battery cells and packs; high-power distribution modules (manages the flow of high voltage to various components); battery heaters; accessory power modules (maintains low-voltage power delivery to accessories); power line communication modules (communication between vehicle and a DC charging station); instrument cluster and infotainment systems.

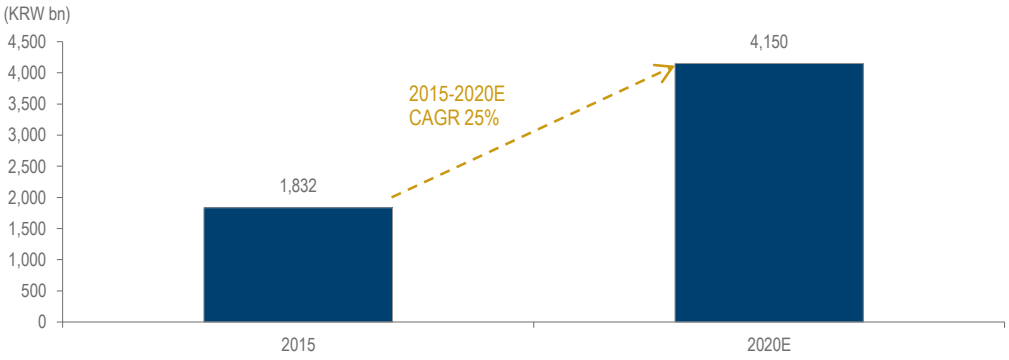
LG Group: vehicle components group's business category

Source: Company

LG Electronics seeking a new growth driver in the vehicle components' business

LG Electronics' VC group leads a team of LG companies, including LG Chem (051910 KS, KRW256,000, not rated), LG Innotek (011070 KS, KRW81,600, not rated), LG Display (034220 KS, KRW25,450, not rated) and LG Electronics (066570 KS, KRW54,900, Outperform [2]). LG Electronics has invested more than USD250m in an engineering and manufacturing facility in Korea to support component development and manufacturing of components for the vehicle. However, LG Electronics is relatively new to the EV drivetrain space, but has long supplied batteries and display technologies to automakers.

LG Electronics: vehicle components business revenue guidance



Source: Company, Daiwa

Uber's self-driving car revealed: a secret project to take on Google

In February 2015, Uber announced it had formed a partnership with Carnegie Mellon University to develop driverless car and mapping technology, potentially putting the car-hailing company in direct competition with one of its biggest investors: Google. CMU and its National Robotics Engineering Center (NREC) will be working with Uber on research and development "primarily in the areas of mapping and vehicle safety and autonomy technology."

Uber: teams up with Carnegie Mellon on self-driving cars

Source: Company

The state of play

1. BMW

BMW plans to launch an EV with smart-car technology

BMW (BMW GR, EUR72.5, not rated) has already established a strong e-mobility sub-brand with its i8 and i3 models. The BMW i3 is setting the pace when it comes to the smart technology that is revolutionising our lives. The tech-filled hatchback provides the highest level of smart-assisted driving available on the market.

In March 2016, the company developed BMW Connected, a series of services that link the car (the new i3), personal devices, and the individual to create a new form of customer service. At the end of 2016, the German car giant will launch an upgraded i3 with an extended driving distance and increased battery capacity (with BMW Connected installed), an open-top version of the i8 hybrid in 2018, and a plug-in hybrid version of the Mini in 2017. In addition, BMW expects its hotly anticipated electric model, the iNEXT, to set new standards for autonomy, connectivity, tech, mapping and sensors in 2020.

BMW Connected is facilitated through the “open mobility cloud,” where data is processed, amalgamated and analysed and then downloaded onto a customer’s devices. The cloud takes traffic data, the customer’s schedule, the weather, and more and emits contextually relevant info back on to the customer’s smartwatch, smartphone, smart car’s dash, etc. The customer can then use that info to plan his/her trip, detect traffic, even notify their smart home of their ETA.

BMW: the new i8 (launched by 2020E)

Source: Company

Cross-industry cooperation between Toyota and Microsoft to develop a smart car

2. Toyota and Microsoft co-developing a smart car

Toyota (7203 JP, JPY5,607, Outperform [2]) and Microsoft (MSFT US, USD51, not rated) formed a partnership (April 2016) to take a step toward connected cars. According to a *USA Today* article published on 4 April 2016, Toyota created a new subsidiary called Toyota Connected in conjunction with Microsoft to create data and analytics tools designed for connected car data. Toyota Connected will examine how to best apply analytics tools and artificial intelligence to data gathered from connected cars' infotainment systems, car makers' smartphone apps, and car manufacturers' and dealerships' operations.

The goal is to use this data to create a better and more personalised driving experience. Toyota said it wants to use the new subsidiary to learn more about drivers' habits and create new models for insurance based on those habits, as well as distribute real-time data about traffic and road conditions. Microsoft will have a minority stake in Toyota Connected and will dispatch engineers to work alongside Toyota employees. The subsidiary will also work closely with Toyota's Research Institute on the development of new car technologies.

Toyota: at a car show

Source: Company

Moreover, Toyota announced in November 2015 that it plans to invest USD1bn over 2016-20 to develop 2 centres for robotics and artificial intelligence research. These types of establishments would allow Toyota to develop new technologies separately from their normal day-to-day operations, which could help them keep up with industry innovation led by Google, Uber, and other companies who want to disrupt the traditional models of the automotive business.

3. Volvo: Drive Me project

As its Drive Me project enters its second year, Volvo (VOLVB AB, EUR92, not rated) is moving rapidly towards its goal of placing 100 self-driving cars in the hands of customers on selected roads around Gothenburg by 2017. The key to making this unprecedented leap is a complex network of sensors, cloud-based positioning systems and intelligent braking and steering technologies. "Making this complex system 99 per cent reliable is not good enough. You need to get much closer to 100 per cent before you can let self-driving cars mix with other road users," says Dr Erik Coelingh, a technical specialist at Volvo Cars. "Here, we have a similar approach to that of the aircraft industry. Backup systems will ensure that Autopilot will continue to function safely, also if an element of the system were to become disabled."

Volvo: car cabin for its self-driving car

Source: Company

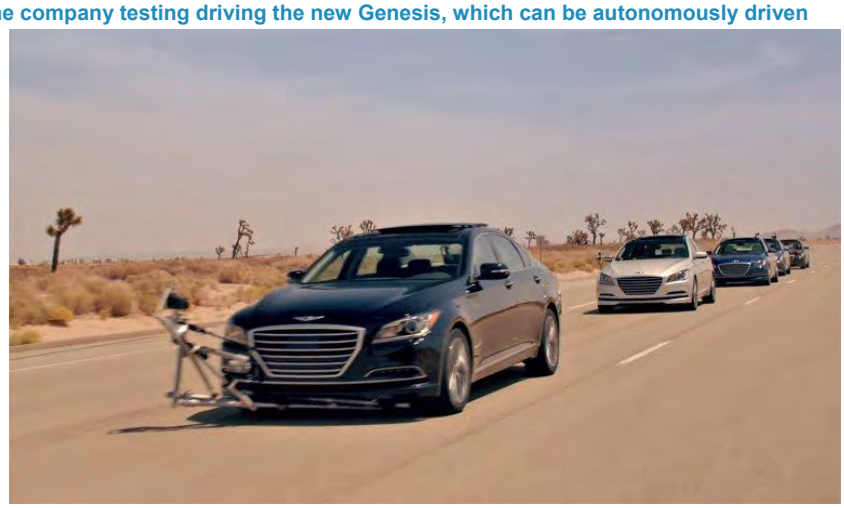
4. Hyundai Motor Group takes a step closer to connect cars to life

HMC and Kia have announced their roadmap for a smart car

Hyundai Motor Group (HMG) unveiled (April 2016) its ambitious connected car project which aims to develop a so-called hyper-connected and intelligent car that would function as a "high-performing computer." The world's fifth largest auto group, which comprises Hyundai Motor and its sister company, Kia Motors, announced its roadmap for a smart car running based on artificial intelligence technology.

According to South Korea's HMG, it will develop a car (see the following picture) that will be connected to other cars, offices and cities, enabling safer and smarter driving, easier maintenance and cleaner air. For the project, HMG will invest in 4 key technologies: smart remote maintenance services, autonomous driving, smart traffic and a mobility hub of connectivity, it said in a statement dated April 2016.

HMC: the company testing driving the new Genesis, which can be autonomously driven



Source: Company

Also, HMG has announced that it plans to collaborate with Cisco on a global connected car project. The cooperation is part of Hyundai Motor's wider strategy to establish an industry-leading connected car platform through collaboration with leading technology partners. Hyundai Motor and Cisco will join forces to create a testing environment for vehicle simulation. The companies will cooperate on basic research to thoroughly analyse the flow of data and verify new technologies for connected cars. Moreover, Hyundai Motor will invest in cloud, big data analytics and connected car security technologies, with huge investment in research and development.

EVs and smart cars: auto and ICT parts makers to lead the pack

What are the major components?

Radars/LiDARs are major ADAS components

Radars/LiDARs

Sensors are rapidly becoming an integral part of any vehicle's navigation and safety system, providing critical information about its immediate surroundings, improving users' safety as well as significantly reducing accident-related costs and social impacts. Radar is the major sensor in ADAS products; it can see through darkness and fog, and can also measure the speed and distance of objects – the main difference from a camera.

Moreover, LiDAR systems provide higher resolution and more granular details of objects. According to Frost & Sullivan, 7 out of 13 top automotive OEMs are incorporating LiDAR technology into their vehicles currently. LiDAR detection and ranging will be a key component of upcoming ADAS and autonomous driving solutions for the automotive industry. Radar and LiDAR provide highly efficient multi-zone distance measurements and multi-object detection capabilities

ADAS: radar sensor

Source: Leddar Tech

Cameras

Cameras, the growing market for ADAS in the automotive sector, is boosting the demand for image sensors, and in turn, for camera modules. ADAS makes use of image sensors to provide safety features such as parking assistance, a lane-departure warning, and collision avoidance systems.

However, the heavy maintenance and high cost of camera modules have restrained the growth of the camera modules market. The use of 3D motion sensors for indoor navigation and the increasing focus on bringing advancements to the image storage and sensor throughput of camera modules provide opportunities for this market. The major challenge in the camera modules market is the miniaturisation of image sensor chips in the development of image sensors of camera modules.

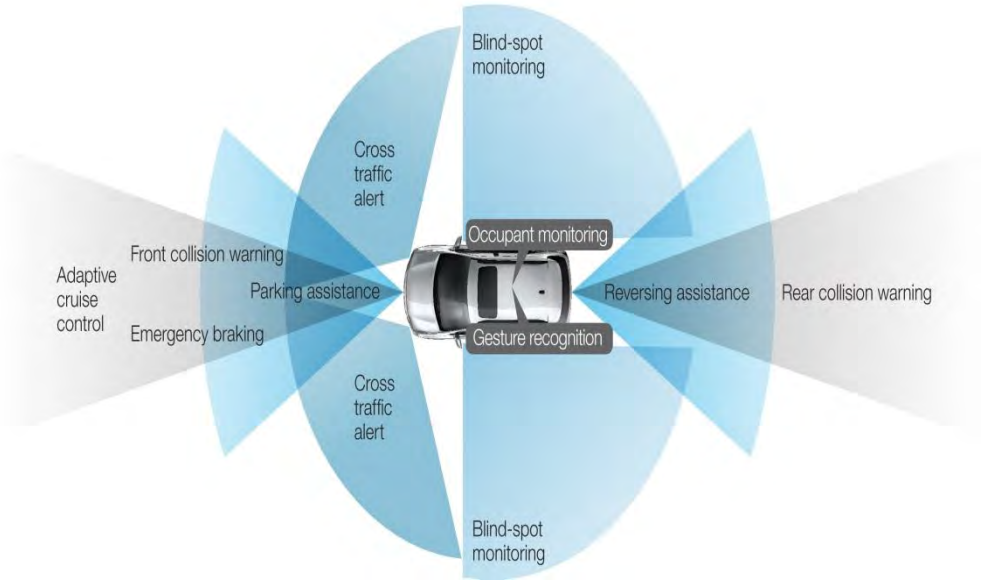
ADAS: mono, stereo type Camera

Source: Leddar Tech

Actuators (chassis and braking systems)

Actuators control a car's electric-throttle control (ETC) and electric-power-steering (EPS) functions, helping to optimise performance while improving reliability and durability.

ADAS related technology and sensors



Source: Leddar Tech

Inverters/converters for EVs

An inverter is an electrical device that converts electricity derived from a direct current (DC) source to an alternating current (AC) that can be used to drive an AC appliance. A converter, more properly called a voltage converter, changes the voltage (either AC or DC) of an electrical power source. Along with a built-in charge controller, the inverter/converter supplies current to the battery pack for recharging, as well as providing electricity to the motor/generator for vehicle propulsion.

Inverter for a Toyota Prius

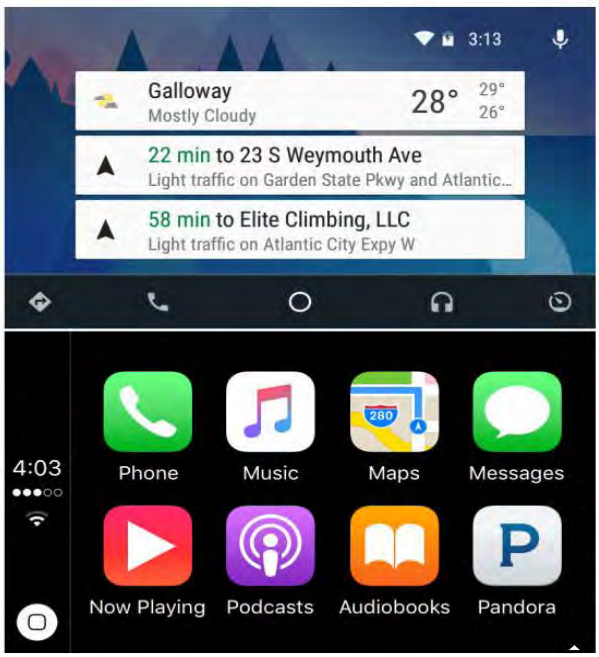
Source: Company

Infotainment

Integrated infotainment systems in autos that deliver entertainment and information content allow drivers to navigate to a destination, operate a smartphone hands-free, and play an entire digital music collection over Bluetooth.

While most auto OEMs have developed their own infotainment systems, Google and Apple's offerings (Android Auto and Car-Play, respectively) are the most popular due to their integrated software and strong connectivity to drivers' smartphones. On the face of it, Car-Play and Android Auto seem quite similar. They are both "casted" interfaces that process and render a computing environment on a smartphone and then send that interface to the car display, basically using it as an external touchscreen monitor. However, the interfaces are very different, with CarPlay featuring the tried-and-true grid of apps, while Android Auto displays a notification dashboard and uses a tabbed interface.

Infotainment: Android Auto vs. Apple Carplay



Source: Business Insider

Mobile apps (C2C apps)

The mere existence of mobile apps could alter the role of the automobile. Apps will enable consumers to treat their cars as extensions of their homes, schools, and offices rather than simply a means to travel between them. Using apps, consumers will also be able to remotely manage the energy consumption and security at these locations, including turning on an alarm system, turning down the heating, or turning lights on or off. To control these systems, drivers and passengers will be able to use their smartphones or an app integrated into the vehicle.

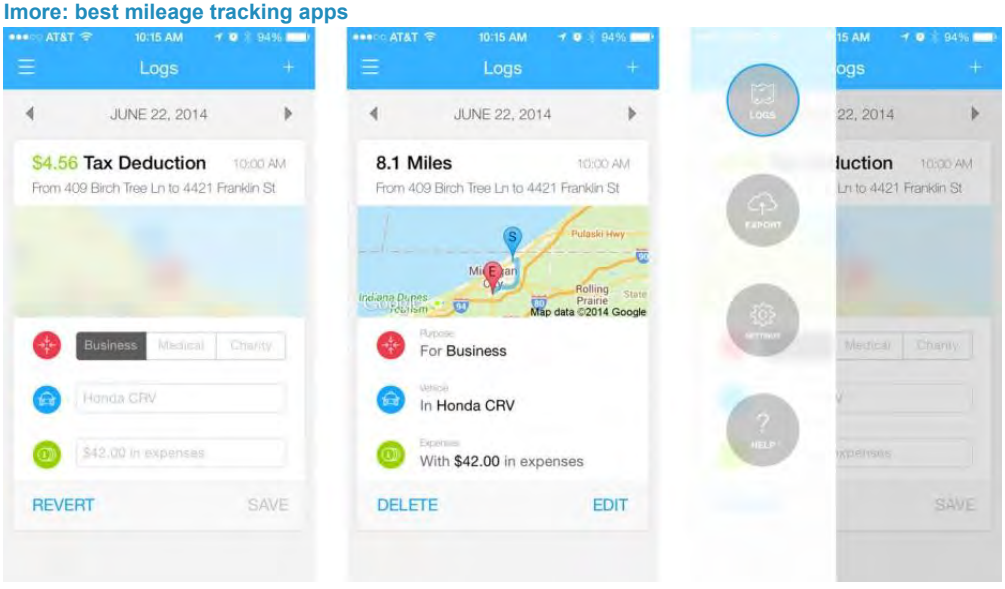
With mobile apps in a vehicle, drivers will be able to alter the role of the automobile

Consumer-to-car (C2C) apps include entertainment, multimedia, and information. With autonomous driving, a solo "driver" will be able to watch a live sports event, find a restaurant or a store, research a leisure destination, or relax and play a game, all without being distracted from driving. They will be able to stay in touch with friends, family, and colleagues, and it is entirely feasible – and perhaps very efficient – that solo 'drivers' will be able to conduct a video conference from a moving vehicle while the vehicle drives itself.

We believe these C2C apps will be freely used when autonomous driving becomes possible (without autonomous cars, consumers would not be able to use their smartphone or infotainment functions while driving, as that is against the law). Speaking at an annual developer conference in March 2015, Tesla CEO Elon Musk compared this process to taking an elevator: "They used to have elevator operators, and then we developed some simple circuitry to have elevators just automatically come to the floor you're at. The car is going to be just like that."

Apps will integrate the vehicle with a smart home, programming a person's home from the car or summoning the car from home. Apps will also provide more flexibility for insurance, safety, and legal protection. A consumer summoning a pay-as-you-go car will be able to choose an appropriate package for that day, depending on the weather, the type and length of journey, and the number of passengers.

Imore: best mileage tracking apps

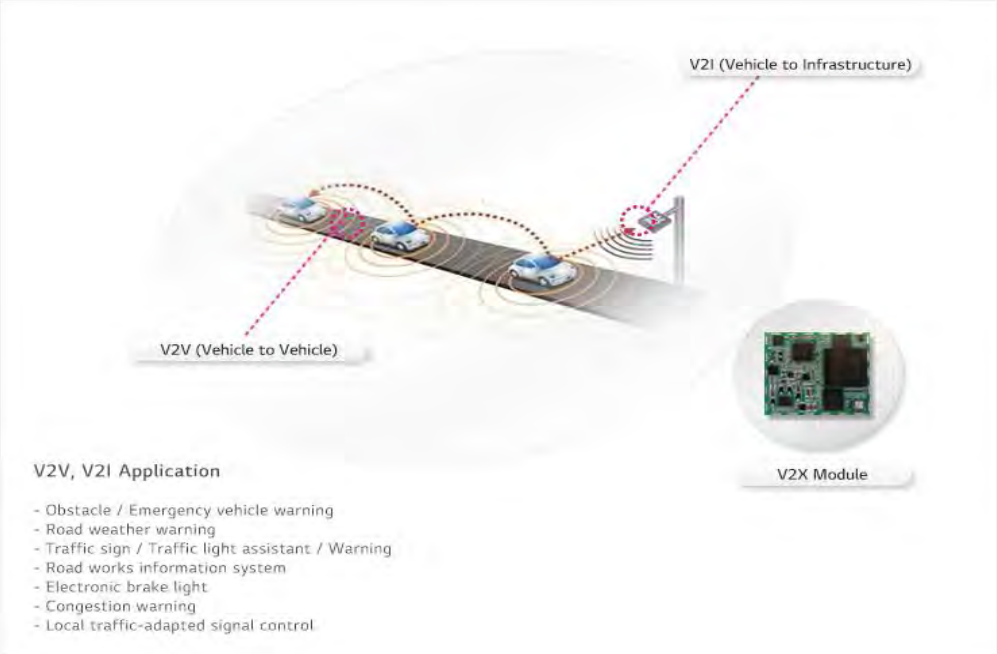


Source: Company

V2X (V2I, V2V) module

A V2X module enables wireless communication between vehicles, or between vehicles and traffic infrastructure. It features functions that secure driver safety and prevent traffic congestion, as it can secure road safety, prevent collisions, warn of potential risks, and provide speedy road information by monitoring all circumstances surrounding a vehicle while exchanging data such as location, speed and direction.

V2X module



Source: LG Electronics

Who are the major players?

1) The auto-parts makers

ADAS are intelligent concepts that improve transport safety, efficiency and comfort without placing an additional load on resources such as energy and raw material. The introduction of safety systems has forced countries to focus on reducing road accidents.

Various governments are taking active initiatives and have developed several policies to reduce fatal road accidents. The European research project, 'interactIVe', is one such safety programme that effectively facilitates accident-free traffic. 'interactIVe' has introduced advanced safety systems that autonomously brake and steer, along with warning the driver in the case of potentially dangerous situations.

Companies that supply ADAS are continuously innovating their sensor technology and applications to meet the multiple demands of customers. There are a few key components we see for potential growth as more manufacturers adapt ADAS in their vehicle line-ups.

Delphi Automotive

Integrated radar and camera systems could reduce the number of potential accidents

The US's Delphi's industry-first integrated radar and camera system (RACam) combines radar sensing, vision sensing and data fusion in a single sophisticated module. This technology integration (still too expensive, in our view) would help provide optimum value to vehicle manufacturers by enabling a suite of active safety features that includes adaptive cruise control, lane departure warning, forward collision warning, low speed collision mitigation, and autonomous braking for pedestrians and vehicles. Delphi's patent-pending RACam uses data fusion algorithms to combine inputs from the radar and camera to reduce the potential for accidents, injury and costly property damage.

Delphi: integrated radar and camera system

Source: Company

ZF TRW

ZF TRW is a leading US developer and innovator in the rapidly growing field of driver assist systems (DAS). These camera- and radar-based technologies assist drivers by providing information and acting on environmental data at the front, side and rear of vehicles to help warn drivers of impending danger. They can also provide intuitive cues or actions such as braking and steering inputs to help "coach" the driver to stay in lane or offer convenience functions like adaptive cruise control.

With the broadest array of active and passive safety systems of any global supplier, ZF TRW can leverage this strong vantage point when integrating discrete safety systems to be much more than a sum of their parts. Analyzing and reacting to the many sensor data inputs available on a vehicle's electronic communication network leads to systems that use active safety data to help ready passengers before a crash occurs and better mitigate the effects of the crash through active seat belt systems or pre-arming airbags.

TRW: ADAS and sensor programming

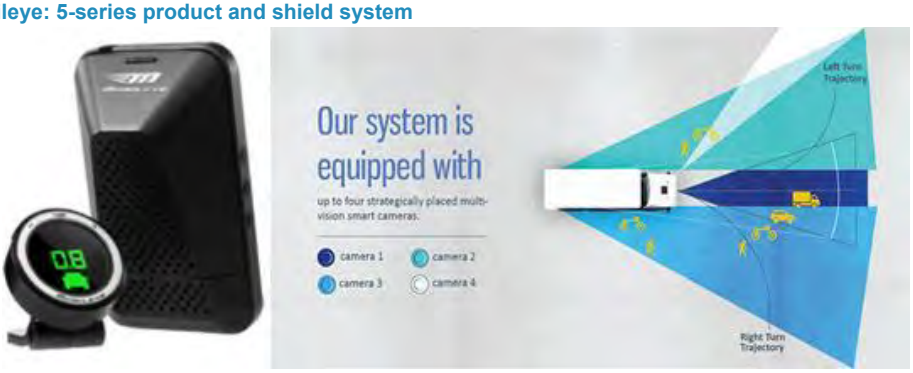
Source: Company

Mobileye

Mobileye, an Israeli company, is a technological leader in the area of software algorithms, system-on-chips and customer applications that are based on processing visual information for the market of DAS. Mobileye's technology keeps passengers safer on the roads, reduces the risks of traffic accidents, saves lives and has the potential to revolutionize the driving experience by enabling autonomous driving.

In the OEM market, Mobileye is a tier-2 supplier with core intelligence (algorithm) technology. The tier-1 auto-parts suppliers incorporate Mobileye's core technologies (EyeQ processors and algorithms) into their cameras and act as key development partners.

Mobileye: 5-series product and shield system



Source: Company

2) The Information technology players

Google: Android Auto

Android Auto is a smartphone projection standard developed by Google to allow mobile devices running the Android operating system to be operated in automobiles through the dashboard's head unit. Android Auto was announced on 25 June 2014 and the mobile app was released on 19 March 2015.

The standard offers drivers control over GPS mapping/navigation, music playback, SMS, telephony, and web search; both touchscreen and button-controlled head unit displays are supported, although hands-free operation through voice commands is emphasized to ensure safe driving.

Google: Android Auto

Android Auto is a smartphone projection standard developed by Google to allow mobile devices running the Android operating system to be operated in automobiles through the dashboard's head unit. Android Auto was announced on 25 June 2014 and the mobile app was released on 19 March 2015.

The standard offers drivers control over GPS mapping/navigation, music playback, SMS, telephony, and web search; both touchscreen and button-controlled head unit displays will be supported, although hands-free operation through voice commands is emphasized to ensure safe driving.

Google: Android Auto

Source: Company

Apple: CarPlay

CarPlay is an Apple standard that enables a car radio or head unit to be used as a display and controller for an iPhone. CarPlay is not an in-car system that runs iOS or iOS apps. It is a connectivity solution that projects a familiar iOS interface onto the car's infotainment system display, allowing drivers to control select apps and their devices either with the said infotainment screen or their voice.

Most worldwide vehicle manufacturers have said they will be incorporating CarPlay into their infotainment systems over time. CarPlay can also be retrofitted into most vehicles with aftermarket vehicle audio hardware. For example, Ford (Fusion) and Hyundai announced in May 2016 that they will install CarPlay infotainment systems into car models.

Apple: CarPlay

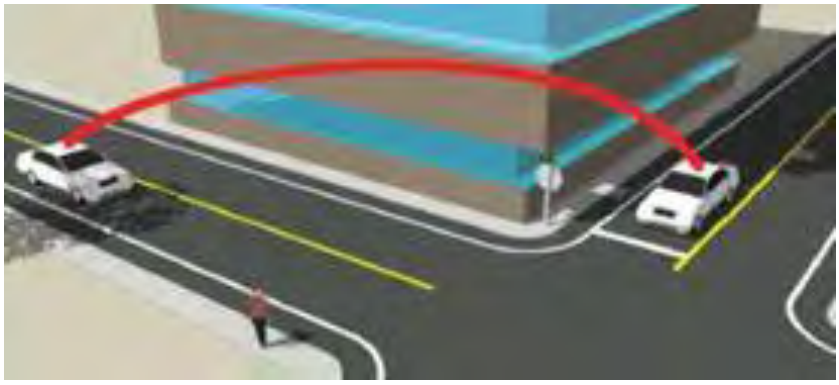
Source: Company

3) The technology players

Cohda Wireless and u-blox: co-developing advanced V2X solution

Swiss u-blox, a global leader in wireless communications and the positioning of semiconductors and modules for the industrial, automotive and consumer markets, has provided key global positioning technology for Cohda Wireless' Vehicle-to-Vehicle (V2V) and Vehicle-to-Infrastructure (V2I) equipment, collectively called V2X. Cohda's dedicated short-range communications (DSRC)-based V2X system uses accurate satellite positioning with embedded dead-reckoning technology provided by u-blox. The system allows for, for example, the early warning of an imminent collision, oncoming traffic, the presence of road workers and unsafe speeds based on vehicles in the vicinity. V2X will be a key technology for the next generation of ADAS products as well as autonomous vehicles.

U-blox and Cohda: V2X solution



Source: Company

LG Electronics

LG Electronics has a competitive advantage over its peers in that it can supply telematics products that rely on LTE connectivity (instead of 2G or 3G) and developed mobile communication technology that can be used in smart cars. LG Electronics has made significant strides in solidifying its telematics leadership in the smart-car industry. According to Strategy Analytics, it is the exclusive supplier of vehicle telematics for GM's 4G LTE OnStar telematics system, which has helped LG Electronics take the top position in the automotive-telematics market, with a 29.9% share in 2015.

Moreover, at the Mobile World Congress in Barcelona which ran on 22-25 February 2016, LG Electronics and Intel announced that they would be collaborating to develop and pilot 5G-based telematics technology, the next generation of wireless technology for cars.

LGE and Intel: collaborating to develop 5G telematics technology

Source: Company

EV battery makers

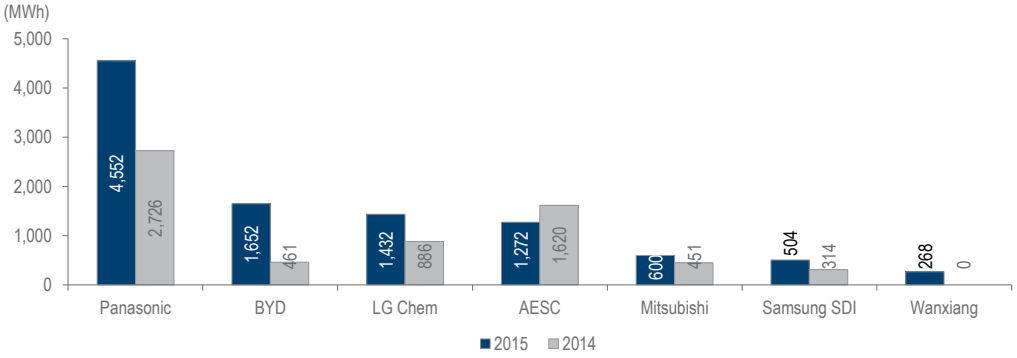
Panasonic, BYD, and LG Chem are the industry-leaders of EV batteries

An EV battery or traction battery is a battery used to power the propulsion of battery electric vehicles (BEVs). Vehicle batteries are usually rechargeable. Panasonic's consumer EV battery sales for 2015 totalled an equivalent of 4,552MWh of lithium-ion batteries. This figure represents a year-on-year rise from 2014, when 2,726MWh worth of batteries were sold by the company. The company's market share has remained steady at around 38% for 2015.

Second place goes to BYD, with 1,652MWh of batteries sold during 2015 – up from 461MWh worth of consumer EV batteries in 2014. The company's market share rose to 14% in 2015, up from 6% in 2014. Of note, BYD's substantial electric bus battery operations are not included in this number, owing to a lack of reliable figures. If they were, then BYD would no doubt be running head-to-head with Panasonic.

LG Chem took third position, with 1,432MWh of lithium-ion EV batteries sold during 2015, up from 886MWh in 2014. Its market share was flat at 12%. LG Chem is the supplier for the Chevy Volt plug-in hybrid (PHEV) and the supplier for the new GM Bolt, which will feature a notably larger battery pack than the Volt. It also supplies batteries for numerous other less-popular EVs & PHEVs across the board.

Global EV makers: EV battery sales in 2015 vs. 2014



Source: EV obsession, Daiwa

Valuations and recommendations

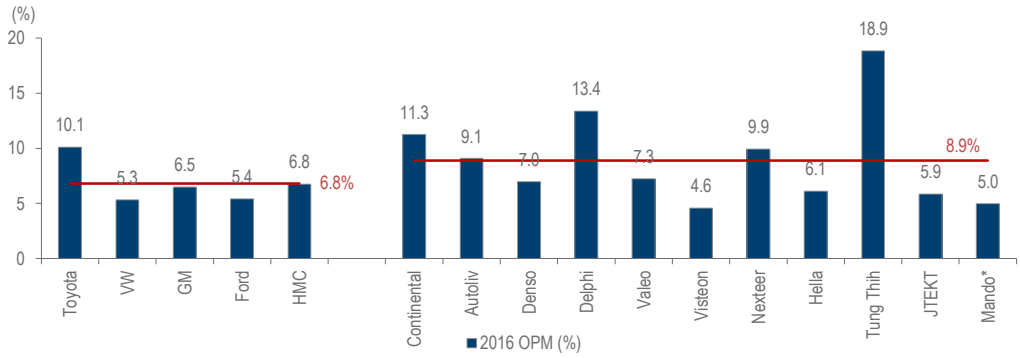
Auto/ICT-parts: valuation premium vs. OEM is justified

Active Safety and ADAS parts trading on a premium vs. global OEMs

Active-safety/ADAS parts: valuation premium vs. OEMs on better earnings outlook

As shown in the following chart, the global parts makers with a presence in the active-safety and ADAS segments could record an average operating margin of 8.9% in 2016 (based on the Bloomberg consensus), much higher than that of the international major OEMs, at 6.8%, for the same period.

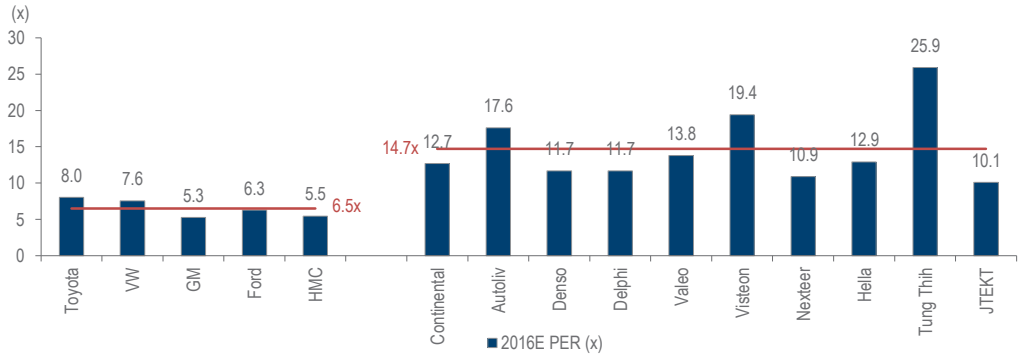
International OEMs vs. the active-safety and ADAS players: operating margin comparison (2016E)



Source: Bloomberg

The market appears to be factoring the ADAS players' increased long-term earnings visibility into their share-prices as well. As shown in the following chart, the active-safety and ADAS players are trading at an average premium to the OEMs in PER terms.

International OEMs vs. active-safety and ADAS players: PER comparison (2016E)



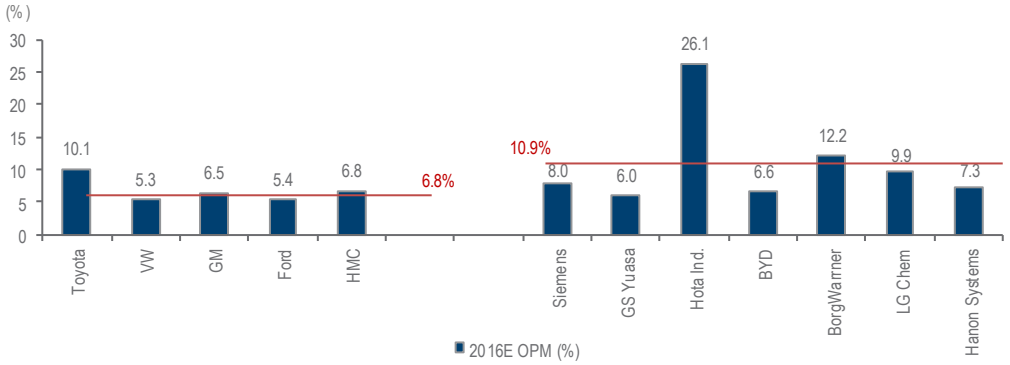
Source: Bloomberg; based on prices as at 22 June 2016

EV-related players exhibit higher profit and trade at a premium to the global OEMs

EVs: auto and ICT parts makers/players seeing higher profit vs. the OEMs

On the same note, the EV-related makers are also on track to record an average operating margin of 11.0% for 2016 (based on the Bloomberg consensus), higher than that of the international major OEMs. Although the parts makers have recorded higher operating margins than the OEMs in the EV space, their operating margins have not been as high as those supplying active-safety and ADAS components due to the smaller size of the EV market over the past 2-3 years.

International OEMs vs. EV-related players: operating margin comparison (2016E)

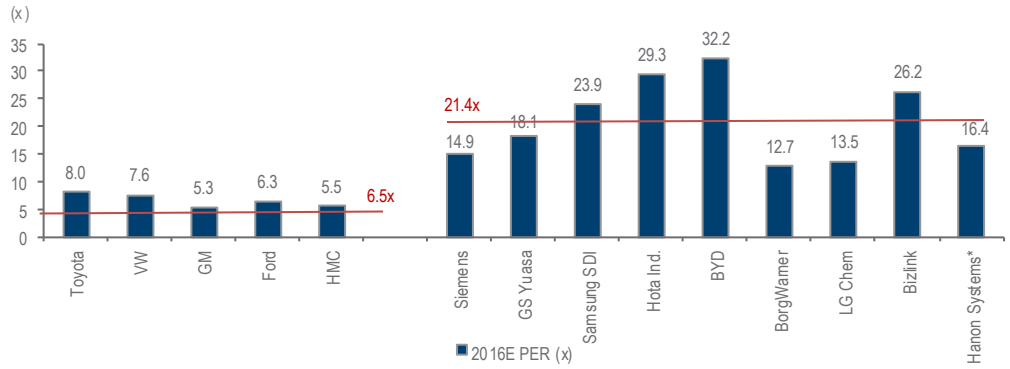


Source: Bloomberg,
Note: Samsung SDI and Tesla recorded operating losses in FY15, thus we exclude them from the peer comparison.

However, we believe that given Apple's "Project Titan" and Tesla's new mass-market EV, the Model 3, the market appears to be factoring in significantly higher earnings visibility for the EV players in the long term, in view of the stronger acceleration in EV shipments that we see for the coming years.

As shown in the following chart, the EV players are also trading at a much higher premium to the active-safety/ADAS-components makers vs. OEMs.

International OEMs vs. EV-related players: PER comparison (2016E)



Source: Bloomberg; based on prices as at 22 June 2016

Top picks over the next 12 months: Mando and Hanon

Mando: a pioneer in active safety/ADAS, raising TP to KRW300,000

Mando's strong ADAS capability leads us to believe that it is poised to benefit in the smart-car era

In line with our view that the size of the market globally in terms of shipments for smart cars over the next 4 years will be greater than we had originally anticipated, Mando is our top pick for smart cars in the Korea autos and components sector, for its strong competitive advantage in ADAS products vs. its peers.

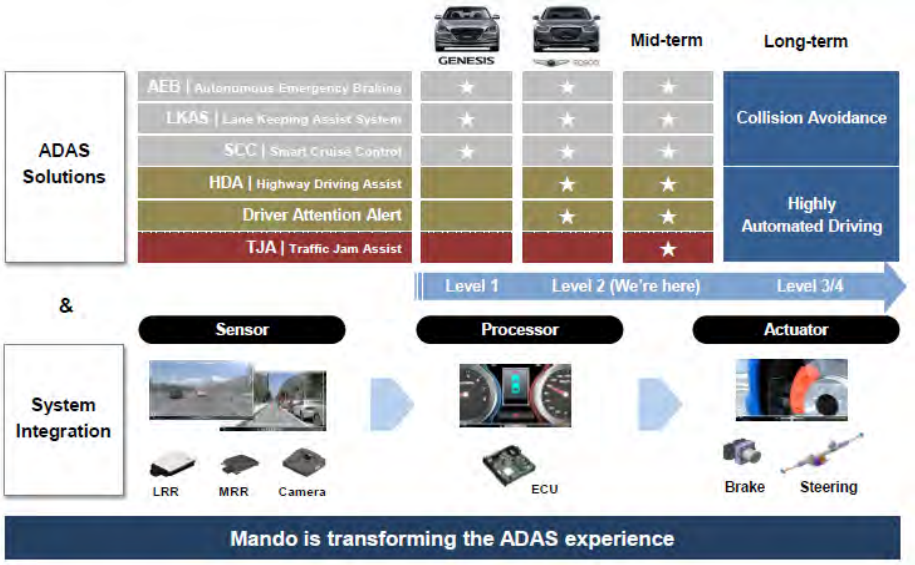
Mando: ADAS solutions

Source: Company

Main ADAS supplier for HMC's Genesis, its flagship model

Mando has been the main supplier of ADAS systems for HMC's flagship sedan the "Genesis EQ900", supplying autonomous emerging braking (AEB), lane keep assist systems (LKAS), and smart cruise control (SCC) products. Mando has the know-how to integrate systems with ADAS, including ECUs, sensors and actuators (including both conventional and electronics versions).

HMC Genesis: Mando's active-safety/ADAS products



Source: Company

Tesla has chosen Mando over the global Tier-I parts suppliers

On 23 May 2015, Tesla released a news release saying that Mando has been chosen by Tesla over the Tier-I global mega auto suppliers such as Bosch (not listed) and Continental (not rated) to start co-developing its "Fail Safety Technology" for its future automated-driving cars. The "Fail Safety Technology" works by automatically shifting into a "redundancy" system should a self-driving car experience technical failure from the malfunctioning of any of its electronic parts.

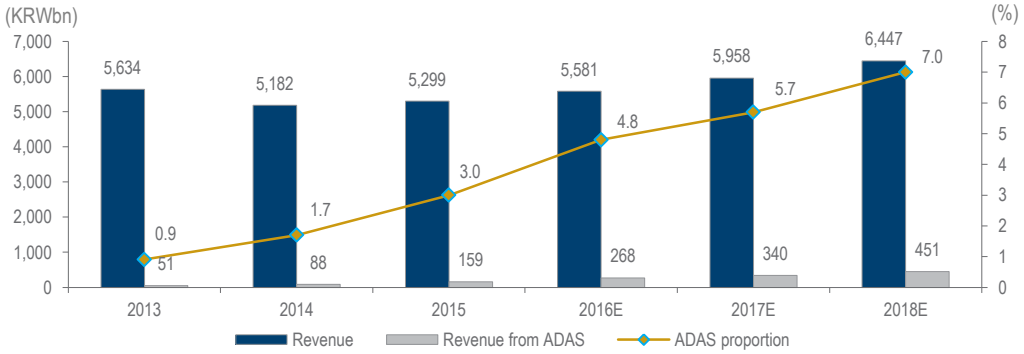
More potential to secure ADAS orders from both the ICT players and auto OEMs

Given this, coupled with Mando's strong ADAS system integration capability, we believe Tesla chose Mando because it can provide a more customised service and address Tesla's requests promptly, which we believe is important given the likely shorter life span of ICT cars vs. conventional cars. In turn, we now see more potential for the ICT players, such as Apple, and the auto OEMs to order Mando's ADAS solutions over the next 12-24 months.

ADAS is emerging as a high-margin, long-term earnings growth driver

As shown in the following chart, we continue to look for Mando's ADAS revenue contribution to rise to 4.8% in 2016, 5.7% in 2017 and 7% in 2018. More importantly, contrary to some of the Tier-I global parts suppliers, we expect Mando's ADAS business to break even in 2016 (launched in 2010), given its strategy of developing its braking- and steering-related ADAS solutions in-house, including its 77GHZ radar.

Mando: ADAS revenue proportion



Source: Company, Daiwa forecasts

12-month target price raised to KRW300,000; we think Mando deserves to trade on par with its global peers

Given Mando's stronger-than-peers long-term earnings growth profile on its smart-car business, and as its ADAS products are expected to break even in 2016 (faster than some of its global peers), we now believe Mando should at least trade on par with its global peers. As such, we raise our DCF/PER-based 12-month target price to KRW300,000 (from KRW260,000). This implies a 2016E PER of 14.4x (previously 12.4x), in line with that of the global active-safety/ADAS parts makers, based on the Bloomberg-consensus forecasts.

Favourable earnings revision cycle and multiple expansion

Although Mando's shares have rebounded by 48% YTD, we look for higher earnings visibility and multiple expansion on several potential ADAS orders to provide another leg-up for the shares over the next 12 months. Furthermore, we believe the diversification of its customer portfolio (46% of 2015 revenue from non-HMG OEMs) will provide another rerating factor for the shares.

2Q16 earnings tracking stronger and probably leading the pack QoQ

Mando's quarterly earnings have met the consensus numbers for the past four quarters, 2Q15 to 1Q16 (it missed consensus estimates for nearly 12 quarters before that), which has set a positive tone when it comes to its earnings visibility. For 2Q16, we expect Mando to lead the pack, along with Hanon, in terms of its operating margin expansion, up 1.6% QoQ to 5.7%, bolstered by our forecasts of:1) both HMG's and Geely Motors' (175HK, HKD 4.2, Buy [1]) accelerating shipments in China by 12% QoQ and 17% QoQ, 2) a higher capacity utilisation rate for Mando's domestic and overseas plants in the US, Poland and Brazil, 3) a rise in its high-margin electronic product (ABS, ESC, ADAS, etc) revenue, to 37.5% in 2Q16E, from 36.9% in 1Q16, and 4) a 2Q16 USD:KRW average rate of KRW1,162, vs. a 2Q15 USD:KRW rate of KRW1,096.

We look for Mando's 2Q16 revenue and operating profit to reach KRW1,371bn and KRW78bn, vs. Bloomberg consensus revenue and operating-profit forecasts of KRW1,401bn and KRW73bn, respectively. We reiterate our Buy (1) rating on Mando. The key risk to our call would be stronger-than-expected pricing pressure from the OEMs or the rapid appreciation of both developed and emerging-market currencies vs. the KRW.

Mando: 2Q16 earnings preview

	2Q16E-Daiwa	2Q16E-Bbg	Diff(%)	2Q15	YoY(%)	1Q16	QoQ(%)
USD/KRW (Avg)	**1,162.1**	**1,162.1**	0.0	**1,096.9**	5.9	**1,201.1**	(3.2)
Revenue	**1,371**	**1,304**	5.1	**1,321**	3.8	**1,366**	0.3
COGS	1,171			1,137	3.0	1,185	(1.2)
Gross Profit	200			183	9.2	181	10.4
GP margin(%)	14.6			13.9		13.3	
SG&A	122			118		125	
Operating profit	**78**	**54**	44.6	**66**	19.1	**56**	39.8
OP margin(%)	5.7	4.1		5.0		4.1	
Recurring Profit	**64**			**56**	13.4	**52**	22.5
RP margin(%)	4.7			4.3		3.8	
Tax	14			18		11	
Tax rate(%)	22.0			31.4		20.9	
Net profit	**50**	**29**	72.0	**39**	29.0	**41**	20.8
NP margin(%)	3.6	2.2		2.9		3.0	

Source: Company, Bloomberg, Daiwa forecasts

Hanon: market innovator deserves to trade at more of a premium

Installing thermal-energy management is critical for OEMs to comply with more stringent fuel-economy standards

To comply with the stricter fuel economy regulations, there are 2 ways for the auto OEMs to improve fuel economy for both internal combustion engines (ICE) and eco-friendly cars. One is to improve the engine-management system. Manga (not rated) is the leader in this area, and its shares are trading at both higher PERs and stronger EPS CAGRs, based on Bloomberg estimates, vs. the global automakers. ‘

The other way to improve fuel economy is through thermal-energy management. We believe Hanon’s better management of its waste heat means its waste-management system would allow for a 10-30% improvement in fuel efficiency over the systems offered by its peers. With increasingly tougher global regulations on fuel efficiency, thermal-energy management will not only become the key to achieving greater efficiency, in our view, but the market for related products should also expand alongside the market for environmentally friendly vehicles.

And even more important for EVs

As EVs don’t have combustion engines, they have to rely solely upon batteries to generate electricity to both cool and heat the passenger compartment. Unfortunately, roughly half of the energy stored in the battery is used up for cooling and heating during the summer and winter. This, in turn, affects driving ranges, leading to lower fuel economy.

Hanon has a strong competitive advantage in thermal-energy-management systems

Thus, the thermal-energy-management system becomes even more important for EVs’ fuel economy. Hanon has a strong competitive advantage in thermal-energy management for EVs, including electric compressors, battery-thermal-management systems and heat pump systems.

1. **Electric compressors:** Hanon’s electric compressors are designed to include an efficient scroll compressor controlled by an on-board electric motor and integrated power electronics. The electric compressor operates independently, enabling the cabin to be cooled even when the engine is off. Its compact design fits within the traditional belt-driven compressor package space, minimising vehicle complexity in platforms that offer hybrid-electric model variants.

Hanon: example of its e-Compressor

Source: Company

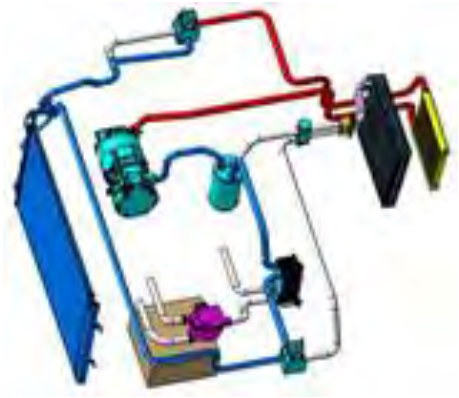
2. **Battery-thermal-management system:** The prevailing technology to meet the power demand of EVs is the lithium-ion (li-ion) battery and, for more than 10 years, Hanon has manufactured battery-thermal-management systems. Utilising is vehicle and system expertise, Hanon has developed components that can be applied in various system architectures to meet a wide array of customer requirements. The battery chiller is a compact plate-to-plate heat exchanger that transfers thermal energy from the battery coolant loop to the vehicle's refrigerant loop to maintain optimum battery temperatures. The battery contact heat exchanger is packaged in the battery pack to transfer thermal energy between the battery pack and a coolant or refrigerant loop. It provides precise temperature control, specifically in lithium ion battery applications, and the fluid circuitry delivers uniform cell cooling and heating for improved battery performance and durability.

Hanon: example of its battery-thermal-management system

Source: Company

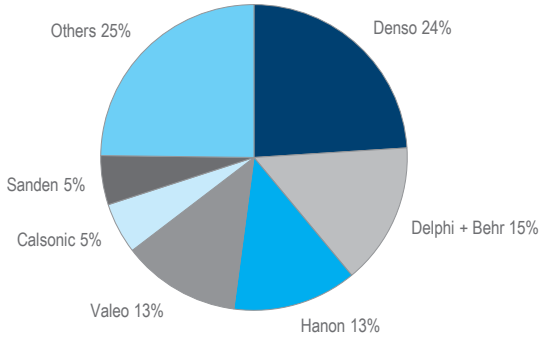
3. **Heat-pump systems:** The heat-pump system is a solution to heat electric, hybrid and internal combustion-engine vehicles where there is insufficient waste heat for cabin heating. The redirection of the refrigerant via valves allows the vehicle to be cooled using the same system components. The system can extend the driving range of environmentally friendly EVs because it can cool and heat the vehicle using a minimum amount of energy. According to Hanon, this could significantly reduce the electrical load put on a car's battery, potentially leading to a 25% increase in overall winter driving ranges, compared to positive-temperature coefficient (PTC) heaters used for current EVs.

Hanon: example of one of its heat-pump system



Source: Company

Hanon and competitors: global shares of the climate-control-system market by shipments (2015)



Source: Company

Stronger presence in EV thermal-energy management – accretive for Hanon' long-term earnings outlook

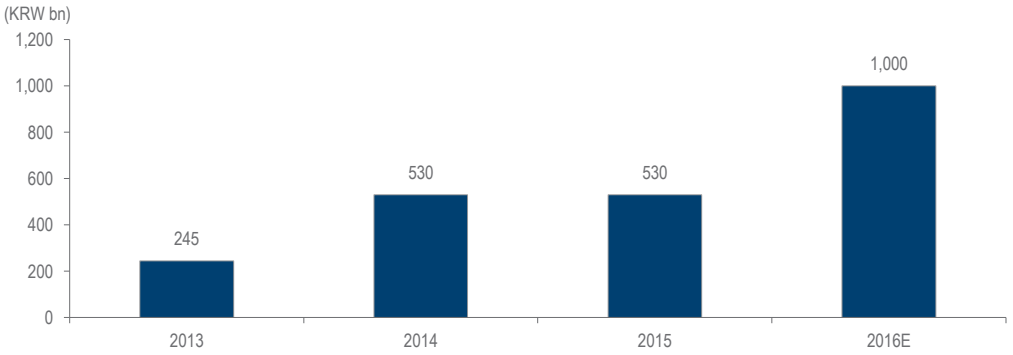
Backed by its leading auto climate control technology, Hanon looks poised to become a leading supplier of total solutions for thermal-energy management. We expect its thermal-energy-management systems for green cars as a percentage of its revenue to rise to 10% by 2020, from the 4% in 2015, and 6% in 2016. Indeed, the world leaders in EVs (Tesla, BMW and VW) all use Hanon's thermal-energy-management products. Hanon is the sole supplier of thermal-management systems for Tesla. It currently supplies Tesla's Model S, X and is currently negotiating the terms and conditions for Tesla's Model 3. We continue to expect global penetration of Hanon's thermal-energy-management business to be a long-term earnings driver for the company, due to higher ASPs for green cars vs. ICEs (the ASP for EV compressors is 3 times higher).

Raising our 12-month TP to KRW15,000 as we think Hanon deserves to trade on par with its global peers

We raise our 2016-18 EPS forecasts by 1.3%, 2.4% and 3.0%, respectively, to factor in our: 1) upward revisions to Hanon's order forecasts for 2016 to KRW1tn from KRW800bn, as we now expect Hanon to secure more EV heat-pump orders from China and thermal-energy-management-system orders for Tesla's Model 3, and 2) what we see as the stronger-than-expected post-merger integration activities, especially for its European operation.

Accordingly, we raise our 12-month target price to KRW15,000, now based on a target PER of 21.4x (previously 19x; 21.4x is the average of the global EV-related companies and also near the high end of the stock's past-3-year trading range of 11.3-22.6x). We also still like its cash-management policy, including its higher payout ratio of 35% (DPS of KRW250) for 2016, vs. those of its Korean peers, and that the company is mulling ways to seek inorganic growth through M&A opportunities.

Hanon: new business orders



Source: Company, Daiwa forecasts

Hanon: major forecast changes

	2016E			2017E			2018E		
	Previous	Revised	Diff. (%)	Previous	Revised	Diff. (%)	Previous	Revised	Diff. (%)
Revenue	**5,976**	**5,981**	**0.1**	**6,487**	**6,513**	**0.4**	**6,610**	**6,645**	**0.5**
COGS	4,918	4,915	(0.1)	5,300	5,322	0.4	5,401	5,430	0.5
Gross Profit	1,058	1,066	0.8	1,187	1,192	0.4	1,209	1,216	0.5
GP Margin (%)	*17.7*	*17.8*		*18.3*	*18.3*		*18.3*	*18.3*	
SG&A	593	598	0.8	644	636	(1.3)	699	678	(3.0)
Operating profit	**465**	**469**	**0.9**	**542**	**556**	**2.5**	**510**	**537**	**5.4**
OPM (%)	*7.8*	*7.8*		*8.4*	*8.5*		*7.7*	*8.1*	
Recurring Profit	**480**	**492**	**2.6**	**558**	**571**	**2.4**	**565**	**582**	**2.9**
RP Margin (%)	*8.0*	*8.2*		*8.6*	*8.8*		*8.6*	*8.8*	
Tax	111	118		128	131		129	133	
Tax rate(%)	*23.0*	*24.0*		*22.9*	*22.9*		*22.9*	*22.9*	
Net Income	**369**	**374**	**1.3**	**430**	**440**	**2.4**	**436**	**449**	**3.0**
NP Margin (%)	*6.2*	*6.3*		*6.6*	*6.8*		*6.6*	*6.8*	

Source: Daiwa forecasts

Favourable earnings forecast revision cycle and new orders should drive up its share price

Although Hanon's shares have rebounded by 11% YTD, we look for higher earnings visibility and multiple expansion on several potential orders for thermal-energy-management systems for EVs from Tesla and the major global and China OEMs. Furthermore, we envisage a diversification of its customer portfolio (51% of revenue from non-HMG OEMs for 2015), which should present another reason supporting the rerating of the stock.

Accordingly, we now expect Hanon's operating margin for 2Q16 to increase by 0.5pp QoQ to 7.8%, bolstered by: 1) the recovery of HMG's global shipments QoQ, especially for China (17% QoQ), 2) the positive impact of recently (2Q16) launched models such as HMG's Elantra and Sportage, and 3) stronger YoY revenue recognition from high-margin green-car thermal-energy-management products.

HS: 2Q16E earnings preview

	2Q16E-Daiwa	2Q16E-Bbg	Diff (%)	2Q15	YoY (%)	1Q16	QoQ (%)
USD/KRW (Avg)	**1,162.1**	**1,162.1**		**1,096.9**	5.9	**1,201.1**	(3.2)
Revenue	**1,521**	**1,474**	3.2	**1,375**	10.6	**1,428**	6.5
COGS	1,243			1,159		1,195	
Gross Profit	**278**			**217**	28.5	**233**	19.2
GP margin(%)	18.3			15.7		16.7	
SG&A	160			136		129	
Operating profit	**119**	**107**	11.2	**80**	47.9	**105**	13.1
OP margin(%)	7.8	7.2		5.8		6.8	
Recurring Profit	**127**			**81**	56.2	**104**	21.6
RP margin(%)	8.3			5.9		6.8	
Tax	28			21		80	
Tax rate(%)	22.0			25.4		21.7	
Net profit	**99**	**77**	27.6	**60**	63.3	**72**	36.6
NP margin(%)	6.5	5.3		4.4		5.3	

Source: Bloomberg, Company, Daiwa forecasts

Hyundai Motor: our preferred pick for 2H16

Risk/reward still the most promising among the major global OEMs

Poised for an earnings upturn in 2016, after 3 consecutive years of downward earnings

We continue to see a strong likelihood of HMC recording a YoY rise in its operating profit for 2016, ending its 3 consecutive years of downward earnings. This rebound is likely to be driven by the following factors, including: 1) its SUV margin totalling KRW265bn, in view of its SUV shipments (excluding China) rising by an additional 166,000 units (ex-China), on our forecasts, and our ASP estimate of KRW20m (operating margin of 8%), both in 2016, 2) forex tailwinds of KRW456bn, 3) an operating profit contribution from the Genesis EQ900 totalling KRW300bn, and 4) a rise of KRW120bn YoY for 2016 from Beijing Hyundai Motor Company's (BHMC) equity method income.

Upward earnings revision cycle to resume more from 2H16

We envisage that these positive factors will outstrip the following negative factors: 1) a larger decline of KRW151bn YoY (vs. our previous forecast of KRW17.7bn) for its finance division's operating profit on the likely lower residual value of second-hand cars in the US, and 2) higher R&D expenses of KRW255bn, following the launch of its exclusive green cars the 'Ionic' and 'Genesis EQ900'.

2Q16 earnings tracking stronger

Despite the still-weak auto demand from Brazil and Russia for HMC, we believe the recent stabilisation of EM currencies (55% of HMC's global shipments) will lead to the gradual recovery in these markets, too, where HMC currently commands market shares of 10.4% and 10.1%, respectively.

HMC: 2016E net profit (positive vs. negative factors)

Positives	Volume (units)	ASP (KRW mn)	OPM (%)	NP (KRW mn)
SUV	166,000	20	8	2,656
Genesis	30,000	100	10	300,000
	Forex Rate	% change	NP change (KRWbn)	NP change (%)
KRW/USD*	1,178	4.1	540	8.0
KRW/EUR*	1,320	5.1	107	1.6
KRW/RUB**	18	(4.1)	(87)	(1.3)
KRW/BRL**	327	(5.0)	(104)	(1.5)
Forex impact in total			456	
Equity method Income	2015	2016E	YoY change	YoY (%)
BHMC	677	797	120	17.7%

VS

Negatives	NP (KRW bn)	Comments
Finance division	151	Lower residual value for second-hand cars (rising operating expense) – 55% of HMC's 2016E revenue from HCA
R&D expense	255	Higher R&D expense (rising amortisation) for the new luxury brand Genesis and new green-car line-up

Source: Daiwa
*Note: 1) *Daiwa forecasts, 2) ** Bloomberg forecasts*

Still positive on its green-car strategy

In January 2016, HMC and Kia unveiled their green-car roadmap, which outlined their aim to expand their green car line-up to 26 models by 2020, from 22 planned as of November 2014. They also planned to step up the development of new green-car technology to meet the growing demand for green cars. HMC and Kia are currently ranked fourth in terms of shipments in the green-car market with 8 models, but aim to be the No.2 maker by 2020.

HMC and Kia: expansion plan for their green-car line-ups

Vehicle type	Models	2020 target
HEV	Sonata, Grandeur, Ioniq, K5, K7, Niro	10 models
PHEV	Sonata, Ioniq, K5, and Niro	8 models
EV	Ioniq, Soul, and Ray	6 models
FCEV	Tucson	2 models

Source: HMC green-car road map 2020

Launching its first battery-powered EV in 2H16 based on its exclusive green-car platform

Despite HMC's better-than-global-peers' presence in HEVs and FCEVs, the company is only launching its first EV for the mass-market in June 2016 in Korea, and 2H16 in the US. It launched its first eco-friendly model, built on its Ioniq platform in 1Q16, starting with the HEV version, and the Ioniq EV will be coming in June this year. The "Ioniq" EV packs an 28 kWh lithium-ion polymer battery from LG Chemical, and offers an estimated range of 110 miles, better than that of Nissan's Leaf with an estimated range of 107 miles. The Ioniq's electric motor in this model has an estimated maximum output of 120 horsepower and 215lb/ft of torque through a single-speed reduction gear transmission.

Hyundai: the new Ioniq

Source: Company

HMC Ioniq (2017) vs. Nissan Leaf (2016) vs. BMW i3 (2016)

	Hyundai Ioniq	Nissan Leaf	BMW i3
			
Range	155 miles	107 miles	80 miles
Battery pack	28 kWh	30 kWh	22 kWh
Torque	218 lb-ft	187 lb-ft	184 lb-ft
Time for fully charge (hours) *	1.45	1.56	1.14

Source: Companies, Daiwa
Note: charging time calculated based on charging with a level-2 charger; Hyundai Ioniq refers to the 2017 EV model

We reiterate our Buy (1) rating and 12-month target price of KRW170,000

We reiterate our Buy (1) call on HMC and 12-month DCF/PER-based target price of KRW170,000. We believe HMC's risk/reward profile is still the most promising among the major global OEMs. On the Bloomberg-consensus numbers, HMC's PBR/ROE ratio for 2016E is at a 20% discount to its past-5-year average, which we believe is excessive. We expect earnings to turn upwards in 2H16.

We continue to look for an earnings upturn in 2016 and reiterate our Buy (1) rating on the stock. The key risk to our call would be the rapid appreciation of the KRW vs. the USD, Euro, JPY, Russian Rouble and Brazilian Real.

Automakers globally: valuation data

Company	Ticker	Curr.	Share Price	Daiwa Rating	Mcap (USDm)	Absolute Performance (%) YTD	1M	3M	**Relative Performance (%) 12M	1M	3M	PER (x) 16E	17E	PBR (x) 16E	17E	EV/ EBITDA (x) 16E	17E	ROE (%) 16E	17E	Div. Yield (%) 16E	17E	EPS Growth (%) 16E	17E
US																							
FORD	F US	USD	13.2	Hold	52,362	(6.5)	(0.1)	(3.0)	(8.5)	(1.7)	(4.8)	6.3	6.2	1.5	1.3	2.9	2.8	29.7	23.2	5.2	4.8	11.8	1.2
GM	GM US	USD	29.3	Outperform	45,148	(13.8)	(4.1)	(8.1)	(15.8)	(5.7)	(9.8)	5.2	5.0	1.0	0.9	2.4	2.3	22.3	18.9	5.2	5.3	17.7	3.2
Europe																							
DAIMLER	DAI GR	EUR	58.8	Not rated	71,254	(24.2)	1.9	(12.2)	(18.0)	0.4	(13.0)	7.3	6.9	1.1	1.0	2.3	2.2	15.5	15.2	5.7	5.9	(3.5)	6.0
BMW	BMW GR	EUR	72.2	Not rated	53,129	(26.0)	0.9	(11.1)	(19.8)	(0.6)	(11.9)	7.4	7.3	1.0	0.9	6.2	6.0	14.2	13.5	4.6	4.8	2.6	2.4
VW	VOW GR	EUR	130.2	Not rated	72,241	(8.5)	(3.7)	(1.9)	(2.3)	(5.3)	(2.7)	7.0	6.1	0.7	0.7	1.5	1.3	9.9	10.3	1.6	2.5	3.6	15.8
Japan																							
HONDA	7267 JP	JPY	2,698	Hold	46,710	(31.0)	(8.5)	(12.9)	(14.0)	(4.1)	(6.6)	8.9	9.4	0.7	0.7	6.2	6.3	7.7	7.5	3.3	3.4	(2.9)	(5.4)
NISSAN	7201 JP	JPY	1,007	Hold	43,267	(21.3)	(3.7)	(6.9)	(4.3)	0.7	(0.7)	7.6	7.4	0.8	0.8	2.6	2.6	11.2	10.9	4.2	4.7	23.9	2.8
TOYOTA	7203 JP	JPY	5,607	Outperform	178,914	(25.1)	0.8	(8.1)	(8.1)	5.2	(1.8)	7.5	9.5	1.0	0.9	8.2	9.8	13.4	10.7	3.9	3.8	7.4	(20.7)
China																							
GWC	2333 HK	HKD	6.5	Hold	10,581	(27.7)	16.0	0.0	(22.6)	11.2	(0.6)	7.0	6.9	1.2	1.1	4.7	4.5	17.6	16.1	4.4	4.5	(11.0)	2.5
BAIC	1958 HK	HKD	5.5	Sell	5,346	(29.6)	(0.5)	(10.3)	(24.5)	(5.3)	(11.0)	9.2	8.4	0.9	0.9	4.1	3.3	10.4	10.5	3.7	4.1	15.1	9.1
Geely	175 HK	HKD	4.2	Buy	4,777	1.9	9.9	23.8	7.0	5.2	23.2	9.3	8.0	1.4	1.2	3.6	2.7	16.0	16.2	1.3	1.6	49.2	16.9
Korea																							
HYUNDAI*	005380 KS	KRW	140,000	Buy	26,804	(6.0)	6.1	(11.9)	(7.6)	3.8	(11.7)	5.9	5.6	0.4	0.4	4.4	4.0	9.7	9.4	3.3	3.7	12.4	5.2
KIA*	000270 KS	KRW	44,700	Outperform	15,749	(15.0)	(3.5)	(12.0)	(16.6)	(5.8)	(11.8)	6.3	6.0	0.7	0.6	3.6	3.3	11.2	10.7	2.7	2.9	8.6	6.2
Industry average					**48,175**	**(17.9)**	**0.9**	**(5.7)**	**(11.9)**	**(0.2)**	**(4.9)**	**7.3**	**7.1**	**1.0**	**0.9**	**4.1**	**3.9**	**14.5**	**13.3**	**3.8**	**4.0**	**10.4**	**3.5**

*Source: Bloomberg, *Daiwa forecasts. Note: 1) share prices are as at 22 Jun 2016; 2) **Relative to each country index*

Auto-parts makers globally: valuation data

Company	Ticker	Curr.	Share Price	Daiwa Rating	Mcap (USDm)	Absolute Performance (%) YTD	Absolute Performance (%) 1M	Absolute Performance (%) 3M	**Relative Performance (%) 12M	**Relative Performance (%) 1M	**Relative Performance (%) 3M	PER (x) 16E	PER (x) 17E	PBR (x) 16E	PBR (x) 17E	EV/ EBITDA (x) 16E	EV/ EBITDA (x) 17E	ROE (%) 16E	ROE (%) 17E	Div. Yield (%) 16E	Div. Yield (%) 17E	EPS growth (%) 16E	EPS growth (%) 17E
US																							
DELPHI AUTOMOTIVE	DLPH US	USD	69.2	Outperform	18,844	(19.5)	3.4	(5.8)	(20.5)	1.8	(7.5)	11.7	9.9	5.9	4.6	8.0	7.3	60.1	49.6	1.7	1.8	16.4	15.0
Autoliv	ALV US	USD	122.8	Hold	10,804	(1.8)	1.0	7.4	2.6	(0.7)	5.6	17.6	15.8	2.9	2.6	8.7	8.1	16.9	17.1	1.9	2.1	10.1	10.2
JOHNSON CONTROLS	JCI US	USD	44.2	Not rated	28,781	12.4	3.4	15.4	(12.5)	1.8	13.6	11.3	10.3	2.6	2.2	8.5	7.8	21.0	22.1	2.6	2.7	14.9	9.9
BORGWARNER	BWA US	USD	33.4	Not rated	7,214	(23.3)	0.9	(11.7)	(43.7)	(0.7)	(13.5)	12.7	9.2	1.9	1.6	6.3	6.0	19.1	19.2	1.6	1.6	9.2	11.1
VISTEON	VC US	USD	72.8	Not rated	2,470	(36.6)	1.5	(8.1)	(31.3)	(0.2)	(9.9)	19.6	16.3	4.1	3.3	6.8	6.1	16.2	19.5	0.0	0.0	48.3	19.8
Japan																							
DENSO	6902 JP	JPY	3,680	Outperform	31,082	(36.7)	(11.5)	(17.7)	(18.9)	(7.1)	(11.4)	11.5	11.7	0.9	0.9	4.8	4.8	7.6	7.4	3.2	3.3	(3.4)	(1.9)
AISIN SEIKI	7259 JP	JPY	4,190	Outperform	11,796	(20.0)	(0.1)	(3.6)	(0.9)	4.3	2.7	12.7	12.2	1.0	1.0	4.5	4.3	8.0	8.2	2.4	2.5	11.6	4.2
NSK	6471 JP	JPY	816	Hold	4,298	(38.5)	(14.2)	(21.9)	(36.1)	(9.8)	(15.7)	6.8	9.6	0.9	0.9	4.3	5.1	13.7	10.0	4.2	4.6	6.8	(2.9)
Korea																							
HYUNDAI MOBIS*	012330 KS	KRW	264,000	Outperform	22,309	7.1	8.4	1.5	31.5	6.1	1.8	7.2	6.9	0.9	0.8	4.6	4.2	13.0	12.1	1.5	1.8	15.1	5.1
MANDO*	204320 KS	KRW	223,000	Buy	1,818	34.7	13.2	36.8	82.2	10.9	37.0	10.7	8.9	1.2	1.0	6.7	5.9	13.3	13.9	2.3	2.9	56.2	19.2
HYUNDAI WIA*	011210 KS	KRW	92,500	Outperform	2,184	(17.4)	3.2	(19.2)	(10.1)	0.9	(19.0)	7.5	5.8	0.7	0.7	4.4	3.4	10.2	11.9	1.5	1.9	3.0	29.2
Hanon Systems*	018880 KS	KRW	11,300	Buy	5,236	8.9	(1.3)	20.0	55.5	(3.6)	20.2	16.1	13.7	3.0	2.8	9.1	7.9	19.5	21.0	2.2	2.7	62.4	17.7
Others																							
Nexteer	1316 HK	HKD	7.5	Buy	2,412	(13.1)	(4.6)	(8.0)	9.4	(9.3)	(8.6)	10.0	8.9	2.4	1.9	4.9	4.0	26.0	23.8	2.0	2.3	17.2	12.3
Continental AG	CON GR	EUR	191	Not rated	43,206	(15.1)	3.2	(2.7)	(0.3)	1.7	(3.5)	12.5	11.6	2.5	2.2	6.5	6.2	21.6	19.9	2.2	2.4	6.2	7.7
BASF SE	BAS GR	EUR	70	Not rated	73,144	(0.6)	4.7	5.0	(4.5)	3.2	4.2	15.5	14.1	2.0	2.0	7.9	7.3	13.5	14.2	4.2	4.3	(6.0)	9.8
MAGNA INTL	MG CN	CAD	51	Not rated	15,477	(10.9)	(3.7)	(9.5)	(23.9)	(4.3)	(13.3)	9.7	8.7	1.6	1.4	5.0	4.6	21.3	20.9	2.1	2.3	16.5	12.1
VALEO	FR FP	EUR	45.8	Not rated	12,390	(3.4)	4.4	2.1	7.9	3.8	3.2	12.8	11.4	2.6	2.3	5.5	5.0	22.1	21.4	2.4	2.8	18.7	12.8
Taiwan																							
Sunny optical	2382 HK	HKD	27.5	Outperform	3,903	54.9	12.9	21.6	74.4	8.1	21.0	27.9	21.9	6.4	5.2	16.6	13.2	25.4	26.6	1.0	1.2	43.3	27.2
Largan precision	3008 TT	TWD	3,050.0	Buy	12,732	34.4	15.3	17.3	(4.9)	8.1	18.1	17.8	13.7	5.3	4.2	12.3	9.6	32.9	33.7	2.1	2.4	(4.9)	30.3
Industry average					**16,321**	**(4.5)**	**2.1**	**1.0**	**2.9**	**0.8**	**1.3**	**13.2**	**11.6**	**2.6**	**2.2**	**7.1**	**6.4**	**20.1**	**19.6**	**2.2**	**2.4**	**18.0**	**13.1**

*Source: Bloomberg, *Daiwa forecasts. Note: 1) share prices are as at 22 Jun 2016; 2) **Relative to each country index*

Global active-safety and ADAS players: valuations (ex-Mando)

Company	Ticker	Curr.	Share Price	Daiwa Rating	Mcap (USDm)	Absolute Performance (%) YTD	Absolute Performance (%) 1M	Absolute Performance (%) 3M	**Relative Performance (%) 12M	**Relative Performance (%) 1M	**Relative Performance (%) 3M	PER (x) 16E	PER (x) 17E	PBR (x) 16E	PBR (x) 17E	EV/ EBITDA (x) 16E	EV/ EBITDA (x) 17E	ROE (%) 16E	ROE (%) 17E	Div. Yield (%) 16E	Div. Yield (%) 17E	EPS Growth (%) 16E	EPS Growth (%) 17E
Active safety / ADAS																							
Continental	CON GR	EUR	191	Not rated	43,057	(15.0)	3.3	(2.7)	(8.7)	1.8	(3.9)	12.5	11.6	2.5	2.2	6.6	6.2	21.6	19.9	2.2	2.4	6.2	7.7
Autoliv	ALV US	USD	123	Hold	10,826	(1.6)	1.2	8.1	(3.8)	(0.6)	6.2	17.6	15.8	2.9	2.6	8.8	8.1	16.9	17.1	1.9	2.1	10.1	10.2
Delphi	DLPH US	USD	69	Outperform	18,882	(19.3)	3.6	(4.4)	(21.5)	1.8	(6.2)	11.8	11.6	2.5	2.2	6.6	6.2	21.6	19.9	2.2	2.4	6.2	7.7
Valeo	FR FP	EUR	46	Not rated	12,399	(3.6)	4.1	2.9	1.8	3.5	3.9	13.8	15.8	2.9	2.6	8.8	8.1	16.9	17.1	1.9	2.1	10.1	10.2
Visteon	VC US	USD	73	Not rated	2,476	(36.4)	1.7	(7.4)	(38.6)	(0.1)	(9.2)	19.6	9.9	5.9	4.6	8.0	7.3	60.1	49.6	1.7	1.8	16.4	15.0
Hella	HLE GR	EUR	34	Not rated	4,246	(12.5)	1.3	(9.6)	(6.2)	(0.2)	(10.8)	12.9	11.4	2.6	2.3	5.6	5.0	22.1	21.4	2.5	2.8	18.7	12.8
Denso	6902 JP	JPY	3,680	Outperform	31,178	(36.7)	(11.5)	(17.7)	(6.2)	(7.1)	(11.4)	11.5	11.4	2.6	2.3	5.6	5.0	22.1	21.4	2.5	2.8	18.7	12.8
Nexteer	1316 HK	HKD	7	Not rated	2,412	(13.1)	(4.6)	(7.6)	(19.8)	(9.3)	(8.2)	10.9	16.1	4.4	3.4	6.8	6.1	18.0	23.8	0.0	0.0	51.2	19.3
Tung Thih	3552 TT	TWD	471	Not rated	1,232	47.0	32.0	(9.7)	(8.0)	24.8	(8.9)	25.9	10.6	1.8	1.6	4.9	4.4	14.6	15.5	2.3	2.7	(2.8)	21.0
JTEKT CORP	6473 JP	JPY	1,242	Hold	4,086	(38.1)	(14.8)	(16.5)	(21.1)	(10.4)	(10.3)	10.1	11.7	0.9	0.9	4.8	4.8	7.6	7.4	3.2	3.3	(3.4)	(1.9)
Industry average					**13,079**	**(12.9)**	**1.6**	**(6.5)**	**(13.2)**	**0.4**	**(5.9)**	**14.7**	**12.6**	**2.9**	**2.5**	**6.6**	**6.1**	**22.1**	**21.3**	**2.0**	**2.2**	**13.2**	**11.5**

*Source: Bloomberg, *Daiwa forecasts. Note: 1) share prices as at 22 June 2016 (US & others as at 21 June 2016), 2) **Relative to country index*

Global EV parts makers: valuations (ex-Hanon)

Company	Ticker	Curr.	Share Price	Daiwa Rating	Mcap (USDm)	Absolute Performance (%) YTD	Absolute Performance (%) 1M	Absolute Performance (%) 3M	**Relative Performance (%) 12M	**Relative Performance (%) 1M	**Relative Performance (%) 3M	PER (x) 16E	PER (x) 17E	PBR (x) 16E	PBR (x) 17E	EV/ EBITDA (x) 16E	EV/ EBITDA (x) 17E	ROE (%) 16E	ROE (%) 17E	Div. Yield (%) 16E	Div. Yield (%) 17E	EPS Growth (%) 16E	EPS Growth (%) 17E
EV-related																							
Siemens	SIE GR	EUR	97	Not rated	92,944	7.4	3.0	4.4	13.2	0.9	3.0	14.9	12.8	2.2	2.1	10.6	9.6	15.9	16.5	3.8	4.0	7.1	8.8
BORGWARNER	BWA US	USD	33	Not rated	7,214	(23.3)	0.9	(11.7)	(25.3)	(0.7)	(13.5)	12.7	9.2	1.9	1.6	6.3	6.0	19.1	19.2	1.6	1.6	9.2	11.1
GS Yuasa	6674 JP	JPY	405	Not rated	1,603	(10.4)	(11.0)	(15.4)	5.7	(8.0)	(10.6)	18.1	11.8	1.0	1.0	6.0	5.6	7.1	8.6	2.5	2.7	(2.2)	18.6
Hota Industrial	1536 TT	TWD	147	Outperform	1,075	21.1	(1.0)	9.3	17.0	(5.0)	10.3	29.3	20.8	7.6	6.4	19.6	15.6	32.0	34.6	2.6	3.2	25.0	25.0
BYD	1211 HK	HKD	46	Outperform	19,669	8.0	9.5	8.7	12.7	4.4	7.8	32.2	25.8	2.9	2.6	15.7	14.0	9.5	10.9	0.1	0.1	155.1	23.0
LG Chemical	051910 KS	KRW	253,000	Outperform	14,588	(23.0)	(7.7)	(18.4)	(24.3)	(9.3)	(18.0)	13.5	10.6	1.3	1.2	5.1	4.7	10.9	11.2	1.8	1.9	19.5	11.4
Samsung SDI	006400 KS	KRW	110,000	Outperform	6,581	(3.5)	2.3	6.8	(4.8)	0.7	7.2	23.9	25.2	0.7	0.7	n.a.	7.8	2.0	2.8	0.9	1.0	8.7	12.5
Bizlink	3665 TT	TWD	189	Not rated	540	29.5	0.0	16.7	25.4	(4.0)	17.7	26.2	18.1	3.8	3.6	13.0	10.8	18.8	20.7	3.3	4.1	10.5	15.7
Industry average					**18,027**	**0.7**	**(0.5)**	**0.0**	**2.4**	**(2.6)**	**0.5**	**21.4**	**16.8**	**2.7**	**2.4**	**10.9**	**9.3**	**14.4**	**15.5**	**2.1**	**2.3**	**29.1**	**13.1**

*Source: Bloomberg, *Daiwa forecasts. Note: 1) share prices as at 22 June 2016; 2) **Relative to country index*

Korea Auto Sector: 2Q16 results preview

(KRWbn)	Daiwa	BBG						
HMC	**2Q16E**	**2Q16E**	**Diff (%)**	**2Q15**	**YoY**	**1Q16**	**QoQ**	**Comments**
Sales	23,807	24,280	(1.9)	22,822	4.3	22,351	6.5	2Q16 earnings tracking in line/positives set to come from: 1) a rise in 2Q16 global shipments, 2) favorable trend of the USD and Euro, 3) an increase in high-margin SUV shipments offsetting the negatives of: 1) Hyundai Capital America (HCA), 2) higher incentives.
Auto	18,436			17,823	3.4	17,239	6.9	
Finance	3,741			3,196	17.1	3,529	6.0	
Others	1,630			1,802	(9.5)	1,583	3.0	
Operating profit	1,762	1,744	1.0	1,751	0.6	1,342	31.3	
Auto	1,567			1,427	9.8	1,096	43.0	
Finance	187			293	(36.2)	199	(6.0)	
Others	49			64	(23.6)	96	(49.1)	
OPM (%)	7.4	7.2		7.7		6.0		
Net profit	1,791	1,698	5.5	1,790	0.1	1,768	1.3	
NPM (%)	7.5	7.0		7.8		7.9		

KIA	**2Q16E**	**2Q16E**	**Diff (%)**	**2Q15**	**YoY**	**1Q16**	**QoQ**	**Comment**
Sales	13,109	13,483	(2.8)	12,441	5.4	12,649	3.6	2Q16 earnings tracking weaker than the Bloomberg-consensus forecasts on a decline in exports, leading to lower utilisation rates for its Korean factories.
Operating profit	669	730	(8.4)	651	2.8	634	5.5	
OPM (%)	5.1	5.4		5.2		5.0		
Net profit	783	782	0.1	747	4.8	945	(17.2)	
NPM (%)	6.0	5.8		6.0		7.5		

Mobis	**2Q16E**	**2Q16E**	**Diff (%)**	**2Q15**	**YoY**	**1Q16**	**QoQ**	**Comment**
Sales	9,603	9,352	2.7	8,802	9.1	9,340	2.8	2Q16 earnings tracking stronger than the Bloomberg-consensus forecasts, with positives coming from: 1) currency tailwinds, 2) better product mix for its module and core parts' division with a rise in SUV and premium sedan shipments.
Module and core	7,937			7,215	10.0	7,677	3.4	
A/S	1,667			1,587	5.0	1,663	0.2	
Operating profit	843	763	10.5	669	26.0	718	17.4	
Module and core	460			338	36.1	346	32.9	
A/S	383			373	2.7	373	2.7	
OPM (%)	8.8	8.2		7.6		7.7		
Net profit	919	839	9.6	858	7.1	795	15.6	
NPM (%)	9.6	9.0		9.7		8.5		

Wia	**2Q16E**	**2Q16E**	**Diff (%)**	**2Q15**	**YoY**	**1Q16**	**QoQ**	**Comment**
Sales	2,064	2,195	(6.0)	2,004	3.0	1,839	12.2	2Q16 earnings tracking weaker than the Bloomberg-consensus forecasts. Despite HMG's shipment recovery, Wia has zero exposure to engines below 2.0 litres, which does not allow it to benefit from purchase tax cuts in China, which are only eligible for engines at or below 1.6 litres.
Automotive	1,760			1,696	3.8	1,524	15.5	
Machinery	304			308	(1.3)	314	(3.2)	
Operating profit	119	145	(17.7)	133	(10.3)	80	49.1	
Automotive	106			116	(8.6)	66	60.6	
Machinery	14			17	-18	14	0.0	
OPM (%)	5.8	6.6		6.6		4.4		
Net profit	96	151	(36.6)	119	(19.6)	49	95.3	
NPM (%)	4.6	6.9		6.0		2.6		

Mando	**2Q16E**	**2Q16E**	**Diff (%)**	**2Q15**	**YoY**	**1Q16**	**QoQ**	**Comments**
Sales	1,371	1,304	5.1	1,366	0.4	1,366	0.4	2Q16 earnings tracking stronger than the Bloomberg-consensus forecasts, with positives from: 1) an acceleration in China shipments, 2) higher utilization rate, and 3) rise in high margin electronic braking and steering systems, including ADAS.
Operating profit	78	54	44.8	56	39.6	56	39.6	
OPM (%)	5.7	4.1		4.1		4.1		
Net profit	50	29	72.1	41	21.7	39	28.9	
NPM (%)	3.6	2.2		3.0		3.0		

Hanon systems	**2Q16E**	**2Q16E**	**Diff (%)**	**2Q15**	**YoY**	**1Q16**	**QoQ**	**Comment**
Sales	1,521	1,474	3.2	1,375	10.6	1,428	6.5	2Q16 earnings tracking stronger than the Bloomberg-consensus forecasts, with positives from a recovery in HMG's global shipments, and stronger revenue recognition of high-margin products.
Operating profit	119	107	11.2	80	48.8	105	13.3	
OPM (%)	7.8			5.8		6.8		
Net profit	99	77	28.6	60	65.0	72	37.5	
NPM (%)	6.5			4.4		5.3		

Source: Company, Daiwa forecasts

Risks to our investment case

The main risks to our thesis on the EV car market's development are: 1) a significant decline in oil prices from the current USD40-45/barrel, 2) unexpected changes in the regulatory environment for fuel-economy and carbon emission standards, especially in the US, Europe and China, and 3) a slower-than-expected decline in battery prices.

The main risk to our smart-car thesis is still a possible decline in global auto-industry demand for smart cars, especially in the developed markets. Considering: 1) the average driving time of 1-1.5 hours per day in most developed markets, and 2) the potential for fully autonomous driving leading to families and passengers sharing cars and taxis, we see a potential risk to global auto-industry demand declining from 2025 (when we expect the time frame for autonomous driving to fully take hold), from our forecast of at least 3% revenue growth per annum over 2015-25.

According to the University of Michigan Transportation Research Institute (UMTRI), the full-fledged take-off of full-autonomous driving could result in the average vehicle ownership in the US declining gradually to 1.2 vehicles per household over the next 2 decades, from the current 2.1 vehicles, with the functionality of self-driving potentially resulting in more shared vehicles within a household for daily activities (ie, commuting to/from work and school, for parent and kids). Meanwhile, under the above-mentioned assumptions, the UMTRI also envisages the average annual miles travelled per household to nearly double from the current 11,611 miles/vehicle.

Although we state this as a risk factor, we see a relatively lower likelihood of this happening, as cars are by nature defined as “consumer discretionary” rather than “commodity” items. In other words, customers have a tendency to consider cars a long-life product that often fulfils an individual’s social and cultural needs rather than a consumer discretionary product.

Appendix

Global EV and smart-car plays

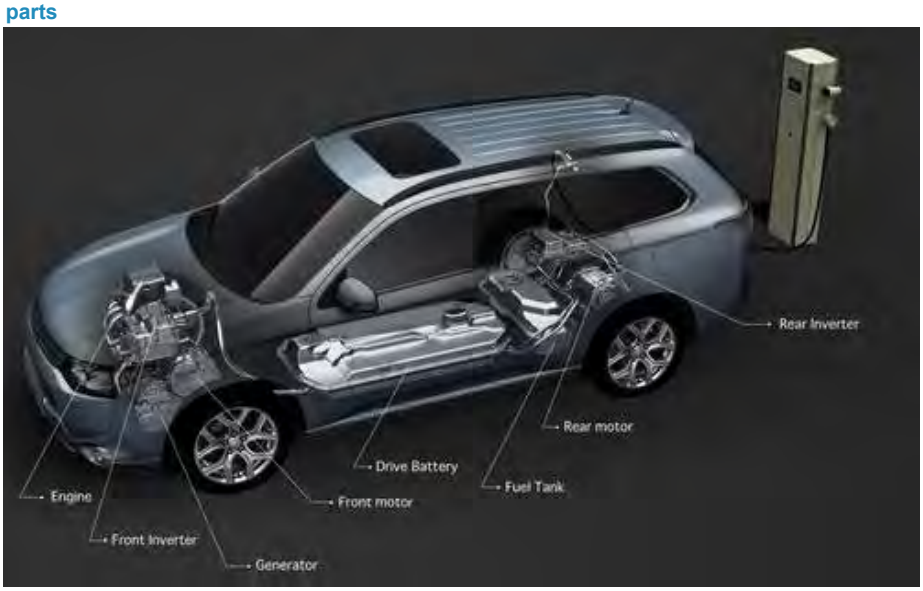
Global: potential EV and smart-car beneficiaries by industry

Company	BBG code	Share price	Mkt cap	FY15 revenue	Auto rev. (%)	FY15 Op. profit	FY15 Net profit	FY15 OPM (%)	FY15 NPM (%)	2016E EPS	2016E PER (x)	2016E PBR (x)	2016E ROE (%)	Green-car product description
Automotive OEMs														
*Toyota	7203 JP	5,607	178,914	28,403	100%	2,854	2,313	10	8.1	746	8	1.1	13.8	EV, Smart-car
Volkswagen	VOW GR	130	72,241	213,292	100%	13,540	(1,370)	6.4	-0.6	18.1	7.3	0.7	1.5	EV, Smart-car
*GM	GM US	29	45,148	152,356	100%	9,443	9,687	6.2	6.4	6.5	5.1	1.1	22.4	EV, Smart-car
*Ford	F US	13	52,362	149,558	100%	8,195	7,373	5.5	4.9	2.1	6.2	1.5	29.9	EV, Smart-car
*HMC	005380 KS	140,000	26,804	91,959	100%	6,358	6,058	6.9	6.6	23,859	5.8	0.4	9.7	EV, Smart-car
Active safety and ADAS														
Continental	CON GY	191	43,202	39,232	100%	4,176	2,727	10.6	7	15.2	12	2.4	21.6	ADAS, tier-1 auto parts supplier
*Autoliv	ALV US	123	10,804	9,170	100%	728	457	7.9	5	6.4	17.2	3.2	16.9	Radar, night vision, sensor, braking
*Denso	6902 JP	3,680	31,088	4,525	100%	316	244	7	5.4	324	12.1	0.9	7.6	ADAS, steering, and brake control
Delphi	DLPH US	69	18,844	15,165	100%	1,723	1,450	11.4	9.6	6.1	11.1	5.8	60.1	ADAS, steering, connectivity
Valeo	FR FP	46	12,389	14,544	100%	943	729	6.5	5	3.6	12.5	2.5	22.1	DAS, powertrain, thermal systems
Visteon	VC US	2,470	2,470	3,245	100%	149	2,284	4.6	70.4	3.8	19.5	4.4	18	Connectivity, clusters, display
Nexteer	1316 HK	8	2,412	3,361	100%	322	205	9.6	6.1	0.1	9.7	2.3	25.6	Electric steering, driveline (wheel)
Hella	HLE GR	34	4,224	5,835	100%	374	287	6.4	4.9	2.6	12.5	1.8	14.6	Night vision, electronics
Tung Thih	3552 TT	471	1,235	7,039	n.a.	1,094	790	15.5	11.2	18	25.3	8.3	37.5	Auto electric parts
JTEKT	6473 JP	1,242	4,074	1,400	100%	82	49	5.9	3.5	132	9.9	0.9	9.3	Steering, driveline (wheel)
*Mando	204320 KS	223,000	1,818	5,299	100%	266	126	5	2.4	20,921	10.9	1.2	13.3	Brake, steering, suspension, ADAS
EV-parts makers														
LG Chemical	051910 KS	255,500	17,363	20,207	n.a.	1,824	1,153	9	5.7	11,798	12.2	1.3	11	EV Battery
Samsung SDI	006400 KS	108,000	7,495	7,569	n.a.	71	300	1	-1.5	-1,715	n.a.	n.a.	n.a.	EV Battery
Simens	SIE GR	96	92,309	75,636	n.a.	6,041	7,282	8	9.6	6.9	13.4	2.1	15.9	EV Motor
GS Yuasa	6674 JP	403	1,592	366	n.a.	22	9	6	2.5	35.1	12.6	1.1	8.6	EV Battery, powertrain
*Hota Industrial	1536 TT	144	1,049	5,299	n.a.	1,285	1,086	24.3	20.5	5.7	27.6	8.2	32.3	Camera module
*BYD	1211 HK	46	19,924	77,612	100%	4,340	2,823	5.6	3.6	1.4	27.2	2.5	9.7	EV Battery and parts
BorgWarner	BWA US	33	7,214	8,023	100%	1,045	610	13	7.6	3.3	10.3	1.9	19.1	EV parts
Tesla	TSLA US	196.9	31,659	4,046	100%	(717)	(889)	-17.7	-22	0.7	n.a.	n.a.	n.a.	EV motor, parts
*Hanon Systems	018880 KS	11,300	5,237	5,558	100%	360	346	6.5	6.2	701	17.3	3.2	19.5	Thermal energy management

Source: Bloomberg, Daiwa,
Note: 1) share price as of 22 June 2016 for Asian stocks (others 21 June 2016), 2) relative to each country's index (US, EU, HK, and Taiwanese stock's mkt cap in million, Korean and Japan mkt cap in billion terms)

EV and smart car parts

An EV and its related parts

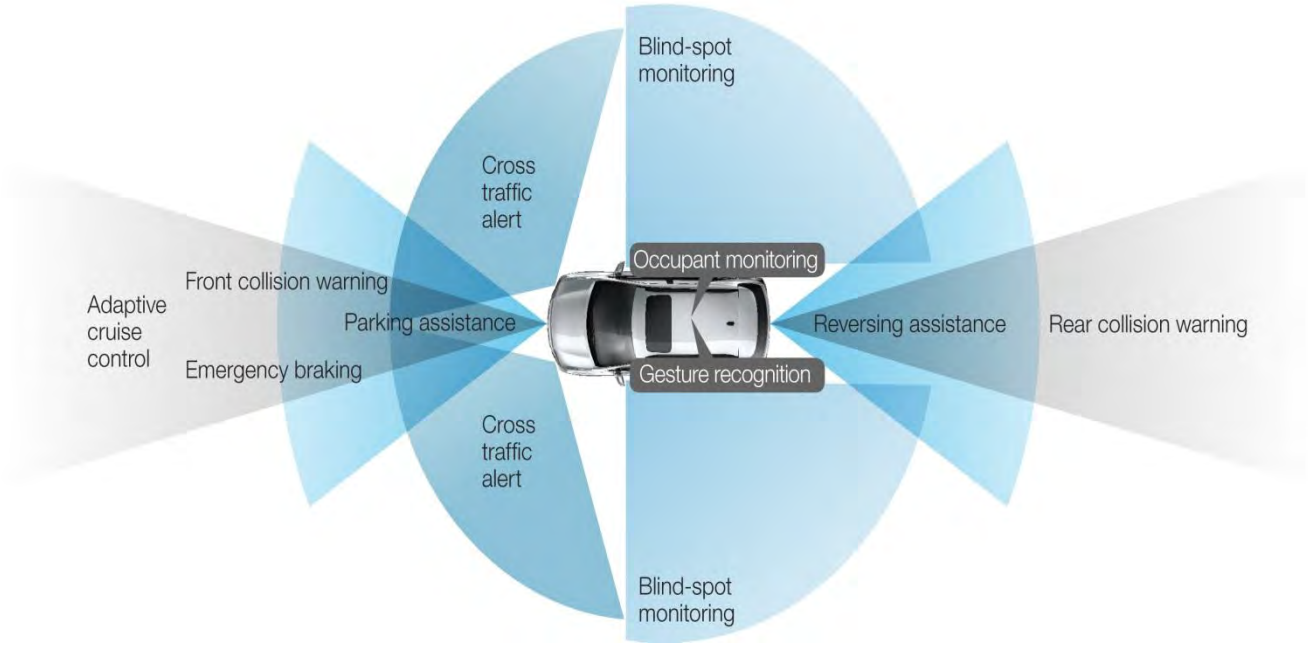


Source: Designnews

Smart car and autonomous driving parts

Source: Infineon

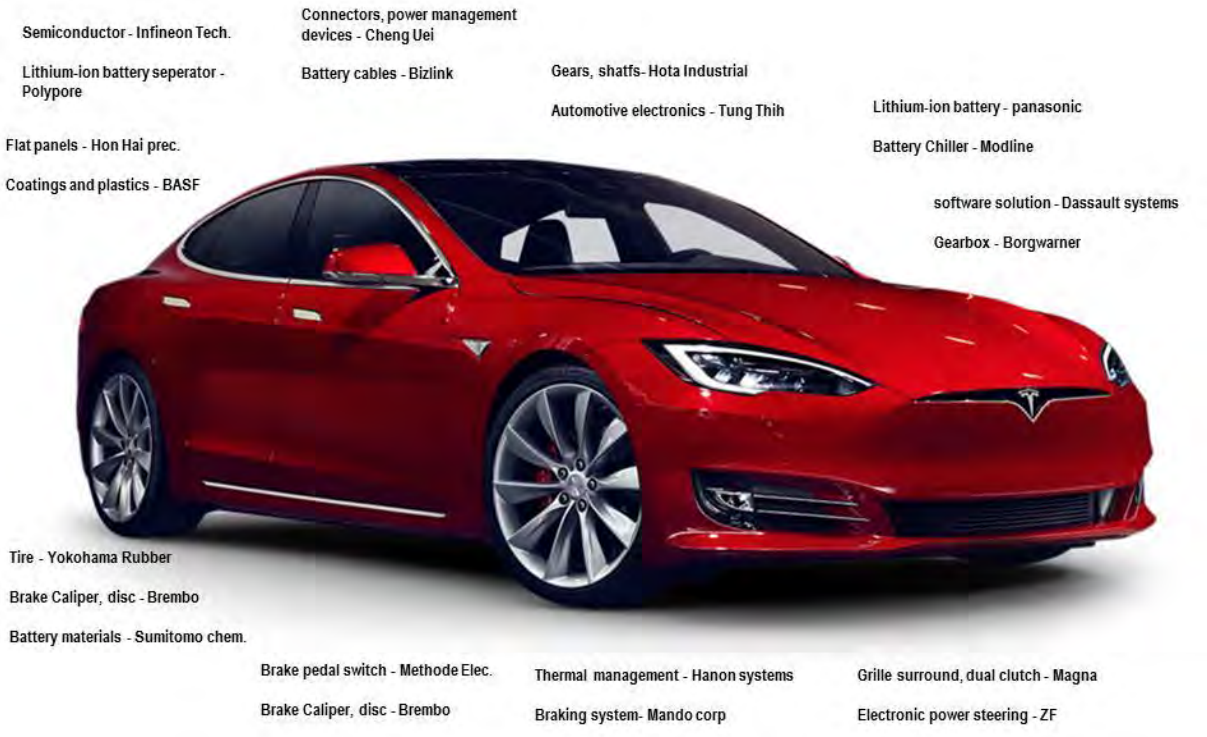
Smart car and autonomous driving parts



Source: Leddar Tech

Tesla suppliers

Tesla: Model S suppliers



Source: Company, compiled by Daiwa

Tesla: global suppliers' list

Panasonic (JPYbn)	2016	2017E	2018E	Description
Sales	7,554	7,664	7,900	Panasonic manufactures electric and electronic products (EV batteries for Tesla).
Operating profit	416	381	422	
Operating margin (%)	5.5	5.0	5.3	
Net profit	193.3	171.2	360	
Net margin (%)	2.6	2.2	4.6	

Yokohama rubber (JPYbn)	2015	2016E	2017E	Description
Sales	630	638	671	Supplies tyres to Tesla's Model S.
Operating profit	55	52	57	
Operating margin (%)	8.7	8.2	8.5	
Net profit	36	32	37	
Net margin (%)	5.8	5.0	5.5	

Tung Thih (TWDbn)	2015	2016E	2017E	Description
Sales	7	11	14	Supplies automotive electronics to Tesla.
Operating profit	1	2	3	
Operating margin (%)	15.5	18.8	20.8	
Net profit	1	2	2	
Net margin (%)	11.2	13.8	15.2	

Hota Industrial (TWDbn)	2015	2016E	2017E	Description
Sales	5	6	7	Manufactures gear shafts and powertrains, and supplies gearboxes to Tesla.
Operating profit	1	2	2	
Operating margin (%)	24.2	26.1	27.0	
Net profit	1	1	2	
Net margin (%)	20.5	21.6	23.1	

Cheng Uei Precision (TWDbn)	2015	2016E	2017E	Description
Sales	108	99	95	Supplies power management devices to Tesla.
Operating profit	0	1	1	
Operating margin (%)	0.3	0.7	1.2	
Net profit	2	1	1	
Net margin (%)	1.5	1.5	1.4	

Infineon Technologies (EURbn)	2015	2016E	2017E	Description
Sales	5,795	6,522	7,021	Supplies semiconductors for Tesla's EVs.
Operating profit	555	853	1,017	
Operating margin (%)	9.6	13.1	14.5	
Net profit	767	719	840	
Net margin (%)	13.2	11.0	12.0	

Brembo (EURbn)	2015	2016E	2017E	Description
Sales	2,073	2,287	2,457	Brake caliper and disc manufacturer (supplies brake calipers and discs to Tesla).
Operating profit	242	262	307	
Operating margin (%)	11.7	11.5	12.5	
Net profit	184	199	219.0	
Net margin (%)	8.9	8.7	8.9	

Bizlink Holding (TWDbn)	2015	2016E	2017E	Description
Sales	8	9	11	Manufactures connectors and cables (supplies battery cables to Tesla).
Operating profit	1	1	1	
Operating margin (%)	9.3	11.2	11.9	
Net profit	1	1	1	
Net margin (%)	9.0	9.1	9.7	

Magna International (USDm)	2015	2016E	2017E	Description
Sales	32,134	36,238	38,436	Auto-parts maker supplying dual clutches, gearboxes, and grille surrounds to Tesla.
Operating profit	2,325	2,552	2,851	
Operating margin (%)	7.2	7.0	7.4	
Net profit	2,013	2,018	2,191	
Net margin (%)	6.3	5.6	5.7	

Hon Hai Precision (TWDbn)	2015	2016E	2017E	Description
Sales	4,482	4,367	4,546	Supplies gears and shafts to Tesla.
Operating profit	164	162	170	
Operating margin (%)	3.7	3.7	3.7	
Net profit	147	135	144	
Net margin (%)	3.3	3.1	3.2	

BorgWarner (USDm)	2015	2016E	2017E	Description
Sales	8,023	9,124	9,553	Supplies gearboxes and single speed clutches to Tesla.
Operating profit	940	1,112	1,194	
Operating margin (%)	11.7	12.2	12.5	
Net profit	680	703	765	
Net margin (%)	8.5	7.7	8.0	

Methode Electronics (USDm)	2015	2016E	2017E	Description
Sales	809	798	852	Supplies brake pedal switches to Tesla.
Operating profit	109	104	113	
Operating margin (%)	13.5	13.0	13.3	
Net profit	85	82	88	
Net margin (%)	10.5	10.2	10.4	

Hanon Systems (KRWbn)	2015	2016E	2017E	Description
Sales	5,558	5,806	6,115	Supplies thermal management systems to Tesla.
Operating profit	360	425	470	
Operating margin (%)	6.5	7.3	7.7	
Net profit	231	301	340	
Net margin (%)	4.1	5.2	5.6	

Mando (KRWbn)	2015	2016E	2017E	Description
Sales	5,297	5,590	5,958	Manufactures braking systems and selected for fail safety technology development with Tesla.
Operating profit	266	279	310	
Operating margin (%)	5.0	5.0	5.2	
Net profit	126	177	201	
Net margin (%)	2.4	3.2	3.4	

Sumitomo Chem (JPYbn)	2015	2016E	2017E	Description
Sales	2,102	2,085	2,125	Supplies battery materials to Tesla.
Operating profit	164	147	160	
Operating margin (%)	7.8	7.0	7.5	
Net profit	81	84	93	
Net margin (%)	3.9	4.0	4.4	

Polypore Inter. (USDm)	2015	2016E	2017E	Description
Sales	658	631	722	Lithium-ion battery separator manufacturer supplier for Tesla and Panasonic.
Operating profit	85	95	139	
Operating margin (%)	12.9	15.1	19.2	
Net profit	65	60	88	
Net margin (%)	9.9	9.6	12.1	

Dassault Systems (EURm)	2015	2016E	2017E	Description
Sales	2,840	3,032	3,281	Software solutions provider for Apple and Tesla.
Operating profit	633	879	985	
Operating margin (%)	22.3	29.0	30.0	
Net profit	402	500	571	
Net margin (%)	14.2	16.5	17.4	

BASF (EURm)	2015	2016E	2017E	Description
Sales	70,449	57,821	60,413	Supplies coating and plastics to Tesla.
Operating profit	6,322	5,948	6,570	
Operating margin (%)	9.0	10.3	10.9	
Net profit	3,987	3,871	4,318	
Net margin (%)	5.7	6.7	7.1	

Source: Bloomberg, Media, Daiwa analysis

Daiwa Capital Markets

Mando Corp (204320 KS)

Target price: **KRW300,000** (from KRW260,000)

Share price (22 Jun): **KRW223,000** | Up/downside: **+34.5%**

5 4 3 2 **1**

Buy (unchanged)

In the vanguard of active safety and ADAS

- Stands to benefit the most from the smart-car era
- Leading the pack in terms of 2Q16 earnings visibility QoQ
- TP raised to KRW300,000; reaffirm Buy (1); top pick with Hanon

Sung Yop Chung
(82) 2 787 9157
sychung@kr.daiwacm.com

What's new: Bolstered by Mando's strong competitive advantage in active safety and advanced driver assistance systems (ADAS), we now see grounds for the stock to trade on par with the global safety/ADAS parts makers. We also look for it to lead the way in 2Q16 earnings visibility.

What's the impact: Given Mando's strong system integration capability in active safety (electronic brakes and steering) and ADAS products, we expect it to benefit the most from the rapid expansion of the smart-car market globally. Mando's solid track record in recent months of securing the mandates to supply its major products to global OEMs and US Information & Communication Technology (ICT) players sets a positive tone for its order outlook over the next 12 months. We look for Mando's ADAS revenue contribution to rise to 4.8% in 2016, 5.7% in 2017 and 7% in 2018. More importantly, contrary to some tier-1 global parts suppliers, we think Mando is likely to reach break-even for its ADAS products in 2016 (launched in 2010), given its strategy of focusing on developing braking and steering related ADAS solutions in-house, including 77GHZ radar.

Meanwhile, we expect Mando to lead the pack, along with Hanon Systems (018880 KS, KRW11,300, Buy [1]), in 2Q16 in expanding its operating margin, which we forecast to rise by 1.6pp QoQ to 5.7%, backed by: 1) 12% QoQ and 17% QoQ increases in Hyundai Motor Group's (HMG) and Geely Automobile's (175 HK, HKD4.21, Buy [1]) shipments to China, respectively, 2) higher capacity utilisation rates for both its domestic and overseas plants in the US, Poland and Brazil, 3) a rise in the proportion of high-margin electronic products (ABS, ESC, ADAS, etc) to 37.5% in 2Q16, from 36.9% in 1Q16, and 4) a favourable USD:KRW exchange rate trend (average rate of USD:KRW1,162 in 2Q16 vs. USD:KRW1,096 in 2Q15).

What we recommend: We now believe Mando should at least trade on par with its global peers, as: 1) we think it has a stronger long-term earnings growth profile relative to smart cars, and 2) ADAS products are expected to break even in 2016, faster than some of its global peers. As such, we lift our equally-weighted DCF/PER-based 12-month TP to KRW300,000 (from KRW260,000), implying a 2016E PER of 14.4x (previously 12.4x), in line with global active safety/ADAS parts makers' 2016E average PER of 14.7x (Bloomberg forecasts). Despite its shares rebounding 38% YTD, we look for an upward earnings revision cycle and expansion of its trading multiples on orders for ADAS from auto OEMs and ICTs to provide a leg up.

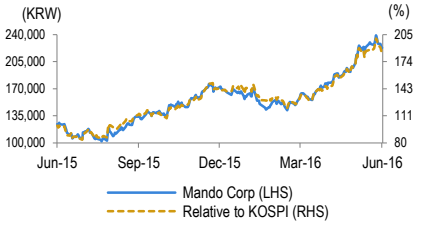
How we differ: Our 2016-18E EPS are 9-12% higher than the consensus, as we believe the market has yet to factor in the better product mix from ADAS (4.5% of 2016E revenue, vs. 3% in 2015) and electronic products.

Forecast revisions (%)

Year to 31 Dec	16E	17E	18E
Revenue change	-	-	-
Net profit change	-	-	-
Core EPS (FD) change	-	-	-

Source: Daiwa forecasts

Share price performance



12-month range	102,000-239,000
Market cap (USDbn)	1.81
3m avg daily turnover (USDm)	13.32
Shares outstanding (m)	9
Major shareholder	Halla (27.7%)

Financial summary (KRW)

Year to 31 Dec	16E	17E	18E
Revenue (bn)	5,581	5,958	6,447
Operating profit (bn)	292	331	365
Net profit (bn)	196	234	263
Core EPS (fully-diluted)	20,921	24,938	28,038
EPS change (%)	56.2	19.2	12.4
Daiwa vs Cons. EPS (%)	8.6	11.9	9.1
PER (x)	10.7	8.9	8.0
Dividend yield (%)	2.3	2.9	3.3
DPS	5,200	6,500	7,300
PBR (x)	1.2	1.0	0.9
EV/EBITDA (x)	6.7	5.9	5.3
ROE (%)	13.3	13.9	13.8

Source: FactSet, Daiwa forecasts

Financial summary

Key assumptions

Year to 31 Dec	2011	2012	2013	2014	2015	2016E	2017E	2018E
Global new orders (KRW bn)	0.0	0.0	0.0	10,100.0	11,000.0	8,360.0	9,196.0	9,573.0
New orders from HMG (KRW bn)	0.0	0.0	0.0	5,181.3	6,182.0	4,180.0	4,138.2	3,829.2
New orders from China local OEMs (KRW bn)	0.0	0.0	0.0	585.8	935.0	1,504.8	1,931.2	2,010.3
New orders from GM (KRW bn)	0.0	0.0	0.0	2,090.7	2,332.0	1,755.6	2,023.1	2,297.5
Revenue from Korea (KRW bn)	0.0	0.0	0.0	1,061.4	3,145.4	3,038.3	3,184.5	3,411.3
Revenue from China (KRW bn)	0.0	0.0	0.0	483.4	1,434.6	1,685.4	1,730.3	2,021.5
Revenue from US (KRW bn)	0.0	0.0	0.0	352.5	1,024.1	1,101.2	1,239.4	1,361.0

Profit and loss (KRWbn)

Year to 31 Dec	2011	2012	2013	2014	2015	2016E	2017E	2018E
Korea Revenue	0	0	0	1,061	3,145	3,038	3,185	3,411
China Revenue	0	0	0	483	1,435	1,685	1,730	2,021
Other Revenue	0	0	0	177	719	858	1,043	1,014
Total Revenue	**0**	**0**	**0**	**1,721**	**5,299**	**5,581**	**5,958**	**6,447**
Other income	0	0	0	8	26	27	28	30
COGS	0	0	0	(1,487)	(4,548)	(4,785)	(5,073)	(5,484)
SG&A	0	0	0	(155)	(485)	(505)	(554)	(598)
Other op.expenses	0	0	0	(8)	(26)	(27)	(28)	(30)
Operating profit	**0**	**0**	**0**	**79**	**266**	**292**	**331**	**365**
Net-interest inc./(exp.)	0	0	0	(11)	(31)	(28)	(25)	(22)
Assoc/forex/extraord./others	0	0	0	(8)	(33)	(6)	1	1
Pre-tax profit	**0**	**0**	**0**	**60**	**201**	**258**	**307**	**344**
Tax	0	0	0	(12)	(72)	(56)	(67)	(76)
Min. int./pref. div./others	0	0	0	0	0	0	0	0
Net profit (reported)	**0**	**0**	**0**	**48**	**130**	**201**	**239**	**268**
Net profit (adjusted)	**0**	**0**	**0**	**48**	**126**	**196**	**234**	**263**
EPS (reported)(KRW)	**n.a.**	**n.a.**	**n.a.**	**5,100**	**13,797**	**21,454**	**25,470**	**28,570**
EPS (adjusted)(KRW)	**n.a.**	**n.a.**	**n.a.**	**5,061**	**13,395**	**20,921**	**24,938**	**28,038**
EPS (adjusted fully-diluted)(KRW)	**n.a.**	**n.a.**	**n.a.**	**5,061**	**13,395**	**20,921**	**24,938**	**28,038**
DPS (KRW)	**0**	**0**	**0**	**2,000**	**4,800**	**5,200**	**6,500**	**7,300**
EBIT	**0**	**0**	**0**	**79**	**266**	**292**	**331**	**365**
EBITDA	**0**	**0**	**0**	**162**	**451**	**458**	**509**	**556**

Cash flow (KRWbn)

Year to 31 Dec	2011	2012	2013	2014	2015	2016E	2017E	2018E
Profit before tax	0	0	0	60	201	258	307	344
Depreciation and amortisation	0	0	0	83	185	167	177	191
Tax paid	0	0	0	(12)	(72)	(56)	(67)	(76)
Change in working capital	0	0	0	128	(138)	190	52	98
Other operational CF items	0	0	0	(91)	41	(19)	100	12
Cash flow from operations	**0**	**0**	**0**	**167**	**218**	**539**	**568**	**569**
Capex	0	0	0	(131)	(270)	(377)	(347)	(319)
Net (acquisitions)/disposals	0	0	0	(69)	19	(3)	27	(1)
Other investing CF items	0	0	0	10	3	39	(2)	(80)
Cash flow from investing	**0**	**0**	**0**	**(189)**	**(249)**	**(342)**	**(322)**	**(400)**
Change in debt	0	0	0	8	(102)	(15)	(12)	(28)
Net share issues/(repurchases)	0	0	0	0	0	0	0	0
Dividends paid	0	0	0	0	(19)	(49)	(61)	(69)
Other financing CF items	0	0	0	(6)	192	5	5	6
Cash flow from financing	**0**	**0**	**0**	**2**	**71**	**(58)**	**(68)**	**(90)**
Forex effect/others	0	0	0	0	0	0	0	0
Change in cash	**0**	**0**	**0**	**(20)**	**40**	**139**	**178**	**78**
Free cash flow	n.a.	n.a.	n.a.	36	(52)	162	221	249

Source: FactSet, Daiwa forecasts

Financial summary continued …

Balance sheet (KRWbn)

As at 31 Dec	2011	2012	2013	2014	2015	2016E	2017E	2018E
Cash & short-term investment	n.a.	n.a.	n.a.	306	228	253	281	313
Inventory	0	0	0	325	321	338	358	305
Accounts receivable	0	0	0	1,018	1,260	1,096	1,150	1,245
Other current assets	0	0	0	116	137	144	130	131
Total current assets	**0**	**0**	**0**	**1,765**	**1,946**	**1,832**	**1,920**	**1,993**
Fixed assets	0	0	0	1,710	1,784	2,052	2,289	2,498
Goodwill & intangibles	0	0	0	128	157	160	133	133
Other non-current assets	n.a.	n.a.	n.a.	244	272	280	231	235
Total assets	**0**	**0**	**0**	**3,846**	**4,160**	**4,323**	**4,573**	**4,859**
Short-term debt	0	0	0	711	665	679	694	693
Accounts payable	0	0	0	1,075	1,155	1,215	1,339	1,523
Other current liabilities	0	0	0	107	116	117	119	107
Total current liabilities	**0**	**0**	**0**	**1,892**	**1,936**	**2,012**	**2,152**	**2,323**
Long-term debt	0	0	0	604	574	545	518	492
Other non-current liabilities	0	0	0	252	284	181	108	13
Total liabilities	**0**	**0**	**0**	**2,748**	**2,794**	**2,737**	**2,777**	**2,828**
Share capital	0	0	0	47	47	47	47	47
Reserves/R.E./others	0	0	0	1,051	1,319	1,539	1,748	1,985
Shareholders' equity	**0**	**0**	**0**	**1,098**	**1,366**	**1,585**	**1,795**	**2,032**
Minority interests	0	0	0	0	0	0	0	0
Total equity & liabilities	**0**	**0**	**0**	**3,846**	**4,160**	**4,323**	**4,573**	**4,859**
EV	n.a.	n.a.	n.a.	3,103	3,105	3,065	3,025	2,966
Net debt/(cash)	**n.a.**	**n.a.**	**n.a.**	**1,009**	**1,011**	**970**	**931**	**871**
BVPS (KRW)	**n.a.**	**n.a.**	**n.a.**	**116,930**	**145,426**	**188,941**	**213,955**	**242,100**

Key ratios (%)

Year to 31 Dec	2011	2012	2013	2014	2015	2016E	2017E	2018E
Sales (YoY)	n.a.	n.a.	n.a.	n.a.	n.a.	5.3	6.7	8.2
EBITDA (YoY)	n.a.	n.a.	n.a.	n.a.	n.a.	1.6	11.0	9.4
Operating profit (YoY)	n.a.	n.a.	n.a.	n.a.	n.a.	9.8	13.6	10.2
Net profit (YoY)	n.a.	n.a.	n.a.	n.a.	n.a.	56.2	19.2	12.4
Core EPS (fully-diluted) (YoY)	n.a.	n.a.	n.a.	n.a.	n.a.	56.2	19.2	12.4
Gross-profit margin	n.a.	n.a.	n.a.	13.6	14.2	14.3	14.9	14.9
EBITDA margin	n.a.	n.a.	n.a.	9.4	8.5	8.2	8.5	8.6
Operating-profit margin	n.a.	n.a.	n.a.	4.6	5.0	5.2	5.6	5.7
Net profit margin	n.a.	n.a.	n.a.	2.8	2.4	3.5	3.9	4.1
ROAE	n.a.	n.a.	n.a.	8.7	10.2	13.3	13.9	13.8
ROAA	n.a.	n.a.	n.a.	2.5	3.1	4.6	5.3	5.6
ROCE	n.a.	n.a.	n.a.	6.6	10.6	10.8	11.4	11.7
ROIC	n.a.	n.a.	n.a.	6.0	7.6	9.2	9.8	10.1
Net debt to equity	n.a.	n.a.	n.a.	91.9	74.0	61.2	51.8	42.9
Effective tax rate	n.a.	n.a.	n.a.	20.3	35.6	21.8	22.0	22.0
Accounts receivable (days)	n.a.	n.a.	n.a.	107.9	78.4	77.0	68.8	67.8
Current ratio (x)	n.a.	n.a.	n.a.	0.9	1.0	0.9	0.9	0.9
Net interest cover (x)	n.a.	n.a.	n.a.	7.0	8.5	10.3	13.1	16.6
Net dividend payout	n.a.	n.a.	n.a.	39.2	34.8	24.2	25.5	25.6
Free cash flow yield	n.a.	n.a.	n.a.	1.7	n.a.	7.7	10.5	11.9

Source: FactSet, Daiwa forecasts

Company profile

Mando Corporation is Korea's second-largest auto-parts manufacturer by sales and produces suspension, steering, brake systems and other parts. Mando has one of the most diversified global customer bases among the Korea component makers and generated 45% of its 2015 consolidated sales from non-Korean automakers.

At the vanguard of active safety and ADAS

Competitive advantage in active safety/ADAS products

Mando's system integration capability in ADAS should position it to benefit handsomely in the smart-car era

In line with our view that the market for smart cars by 2020 will be larger than we had originally expected (smart-car market to reach USD 97.8bn in 2020E vs. our previous forecast of USD 90.9bn), we highlight Mando as our top pick for smart cars in the Korea Automobile and Components Sector along with Hanon Systems on its strong competitive advantage in ADAS products.

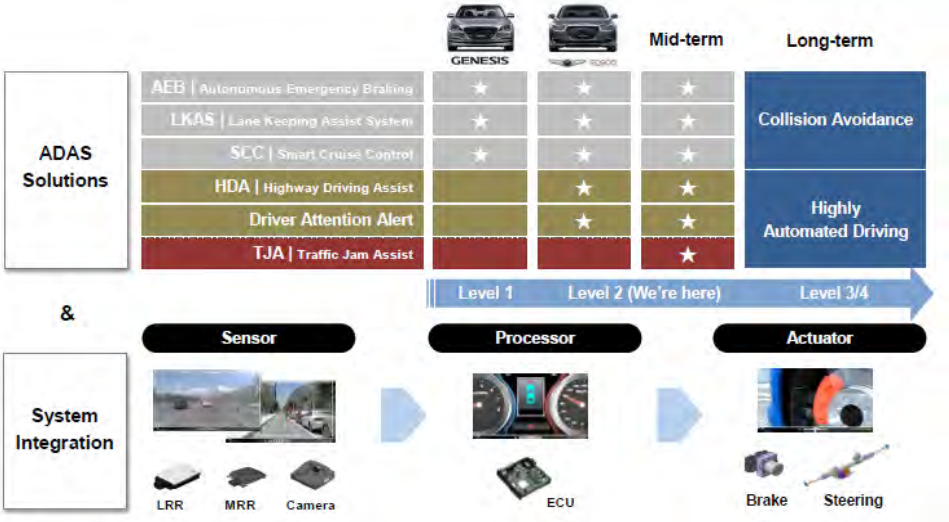
Mando: ADAS solutions

Source: Company

Main ADAS supplier for HMC's Genesis flagship model

Mando is the main supplier of ADAS for HMC's flagship sedan, the Genesis EQ900, supplying Autonomous Emerging Braking (AEB) systems, Lane Keep Assist Systems (LKAS), and Smart Cruise Control (SCC). Mando has system integration capability in ADAS, including ECUs, sensors and actuators (both conventional and electronics).

HMC Genesis: Mando's active safety/ADAS products



Source: Company

Tesla has also chosen Mando over other global tier-1 parts suppliers

As such, on 23 May 2015, Bloomberg reported that Mando had been chosen by Tesla over other tier-1 global mega auto suppliers, such as Bosch (not listed) and Continental (not rated), to co-develop the Fail Safety Technology for future autonomous vehicles from late-2015. The Fail Safety Technology works by launching a redundancy system should a self-driving car experience technical failure from the malfunctioning of any of its electronic parts.

ADAS emerging as high-margin, long-term growth driver

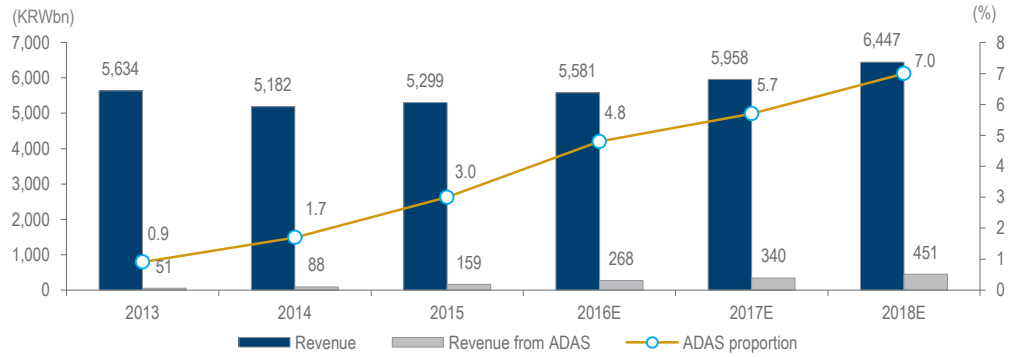
More potential to secure ADAS orders from both ICT makers and auto OEMs

With Mando's ADAS integration capability, we believe Tesla chose Mando over other global peers for its ability to provide it with a more customised service and address Tesla's requests in a prompt manner, which we believe are important criteria for ICT makers, given the shorter life span of ICT products vs. cars. In turn, we now see greater potential for other ICT makers, such as Apple and auto OEMs, to give out more mandates for Mando's ADAS solutions over the next 12-24 months.

ADAS is emerging as a high-margin, long-term earnings-growth driver

As shown in the following chart, we forecast Mando's ADAS revenue contribution to rise to 4.8% in 2016, 5.7% in 2017 and 7.0% in 2018. More importantly, contrary to some tier-1 global parts suppliers, Mando is also likely to reach break-even for its ADAS products in 2016 (many were launched in 2010), given its strategy of focusing on developing braking and steering related ADAS solutions in-house, including 77GHZ radar.

Mando: ADAS revenue proportion



Source: Company, Daiwa forecasts

Leading the pack on 2Q16E earnings visibility

2Q16E earnings tracking stronger and probably leading the pack QoQ

Mando's quarterly earnings met consensus forecasts for 4 quarters in a row from 2Q15 to 1Q16 (after missing consensus forecasts for nearly 12 quarters before), which sets a positive tone on the earnings visibility front. For 2Q16, we expect Mando to lead the pack, along with Hanon Systems (018880KS, KRW11,300, Buy [1]), in terms of the expansion of its operating-profit margin in 2Q16, which we forecast to rise by 1.6pp QoQ to 5.7%, bolstered by: 1) 12% QoQ and 17% QoQ increases in Hyundai Motor Group's (HMG) and Geely Automobile's (175 HK, HKD4.21, Buy [1]) shipments to China, respectively, 2) higher capacity utilisation rates for both its domestic and overseas plants in the US, Poland and Brazil, 3) a rise in the proportion of high-margin electronic products (ABS, ESC, ADAS, etc) to 37.5% in 2Q16E, from 36.9% in 1Q16, and 4) a favourable USD:KRW exchange rate trend (average rate of USD:KRW1,162 in 2Q16 vs. USD:KRW1,097 in 2Q15).

We forecast revenue of KRW1,371bn and an operating profit of KRW78bn for 2Q16, vs. the Bloomberg consensus forecasts of KRW1,401bn and KRW73bn, respectively.

Mando: 2Q16 earnings preview

(in KRWbn)	2Q16E-Daiwa	2Q16E-Bbg	Diff (%)	2Q15	YoY (%)	1Q16	QoQ (%)
USD/KRW (Avg)	**1,162.1**	**1,162.1**	0.0	**1,096.9**	5.9	**1,201.1**	(3.2)
Revenue	**1,371**	**1,304**	5.1	**1,321**	3.8	**1,366**	0.3
COGS	1,171			1,137	3.0	1,185	(1.2)
Gross profit	200			183	9.2	181	10.4
Gross margin (%)	14.6			13.9		13.3	
SG&A	122			118		125	
Operating profit	**78**	**54**	44.6	**66**	19.1	**56**	39.8
Operating margin (%)	5.7	4.1		5.0		4.1	
Recurring Profit	**64**			**56**	13.4	**52**	22.5
Recurring-profit margin (%)	4.7			4.3		3.8	
Tax	14			18		11	
Tax rate (%)	22.0			31.4		20.9	
Net profit	**50**	**29**	72.0	**39**	29.0	**41**	20.8
Net margin(%)	3.6	2.2		2.9		3.0	

Source: Company, Bloomberg, Daiwa forecasts

Valuation and recommendation

12-month TP raised to KRW300,000; we believe Mando should trade on par with its global peers

We reaffirm our Buy (1) rating on the stock. We now believe the stock should at least trade on a par with its global peers, given its: 1) stronger long-term earnings growth profile from smart cars, and 2) ADAS products broke even in 2015, faster than some its global peers, As such, we raise our equally-weighted DCF/PER-based 12-month target price to KRW300,000 (from KRW260,000).

Mando: DCF calculation

Target gearing (debt/capital) (%)	**54**
Market risk premium (%)	**11.5**
Risk-free rate (%)	**2.1**
Cost of debt (%)	**3.9**
Cost of equity (%)	**16.6**
WACC (%)	**9.28%**
Terminal Value	
Terminal Growth Rate	3.00%
Terminal WACC	9.28%
Estimated Terminal Free Cash Flow (KRWbn)	364
NPV of Terminal Value (KRWbn, as at 2026E)	5,971
NPV of Terminal Value (KRWbn, as at 22 June 2016)	2,351
DCF Valuation	
NPV of Forecasts (KRWbn)	1,429
NPV of Terminal Value (KRWbn)	2,351
Enterprise Value (KRWbn)	3,780
Less: Net Debt (KRWbn, as at end-2016E)	970
Equity Value (KRWbn)	2,810
No. Shares (m)	9
Per Share Equity Value (KRW)	**299,179**

Source: Daiwa estimates and forecasts

Mando: DCF sensitivity

Discount Rate	NPV of Terminal FCF (KRWbn)	Enterprise Value (KRWbn)	Equity Value (KRWbn)	Equity value per share (KRW)
7.28%	4,188	4,879	3,908	416,128
7.78%	3,571	4,518	3,547	377,718
8.28%	3,080	4,225	3,255	346,581
8.78%	2,681	3,984	3,013	320,830
9.28%	**2,351**	**3,780**	**2,810**	**299,179**
9.78%	2,076	3,607	2,636	280,720
10.28%	1,843	3,457	2,487	264,796
10.78%	1,645	3,327	2,356	250,919
11.28%	1,474	3,212	2,242	238,717

Source: Daiwa estimates and forecasts

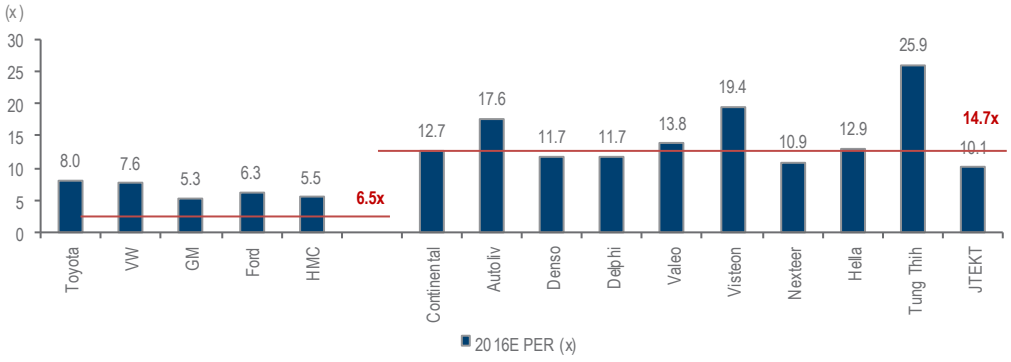
PER-based valuation

Target PER (x)	14.4x
2016E EPS (KRW)	20,921
Per Share Equity Value (KRW)	**300,822**

Source: Daiwa forecasts

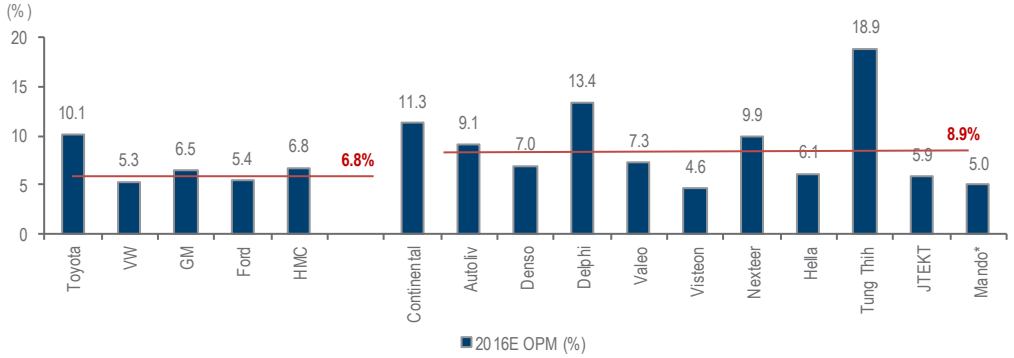
Our new target price implies a 2016E PER of 14.4x (previously 12.4x), in line with global active safety/ADAS parts makers' 2016E average PER of 14.7x, based on the Bloomberg-consensus forecasts.

International OEMs vs. active safety and ADAS players: PER (x) comparison (2016E)



Source: Bloomberg

International OEMs vs. active safety and ADAS players: Operating-profit margin comparison (2016E)



Source: Bloomberg, Daiwa forecasts (Mando)

Global active safety and ADAS players' valuation (ex-Mando)

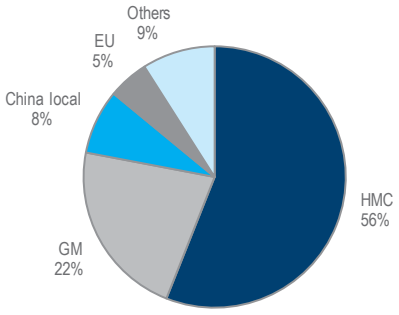
Company	Ticker	Curr.	Share Price	Daiwa Rating	Mcap (USDm)	Absolute Performance (%)				Relative Performance (%)		PER (x)		PBR (x)		EV/ EBITDA (x)		ROE (%)		Div. Yield (%)		EPS Growth (%)	
						YTD	1M	3M	12M	1M	3M	16E	17E	16E	17E	16E	17E	16E	17E	16E	17E	16E	17E
Active safety / ADAS																							
Continental	CON GR	EUR	190.9	Not rated	43,057	(15.0)	3.3	(2.7)	(8.7)	1.8	(3.9)	12.7	11.6	2.5	2.2	6.6	6.2	21.6	19.9	2.2	2.4	6.2	7.7
Autoliv	ALV US	USD	122.8	Hold	10,826	(1.6)	1.2	8.1	(3.8)	(0.6)	6.2	17.6	15.8	2.9	2.6	8.8	8.1	16.9	17.1	1.9	2.1	10.1	10.2
Delphi	DLPH US	USD	69.2	Outperform	18,882	(19.3)	3.6	(4.4)	(21.5)	1.8	(6.2)	11.7	11.6	2.5	2.2	6.6	6.2	21.6	19.9	2.2	2.4	6.2	7.7
Valeo	FR FP	EUR	45.8	Not rated	12,399	(3.6)	4.1	2.9	1.8	3.5	3.9	13.8	15.8	2.9	2.6	8.8	8.1	16.9	17.1	1.9	2.1	10.1	10.2
Visteon	VC US	USD	72.8	Not rated	2,476	(36.4)	1.7	(7.4)	(38.6)	(0.1)	(9.2)	19.4	9.9	5.9	4.6	8.0	7.3	60.1	49.6	1.7	1.8	16.4	15.0
Hella	HLE GR	EUR	33.7	Not rated	4,246	(12.5)	1.3	(9.6)	(6.2)	(0.2)	(10.8)	12.9	11.4	2.6	2.3	5.6	5.0	22.1	21.4	2.5	2.8	18.7	12.8
Denso	6902 JP	JPY	3,680	Outperform	31,178	(36.7)	(11.5)	(17.7)	(6.2)	(7.1)	(11.4)	11.7	11.4	2.6	2.3	5.6	5.0	22.1	21.4	2.5	2.8	18.7	12.8
Nexteer	1316 HK	HKD	7.5	Buy	2,412	(13.1)	(4.6)	(7.6)	(19.8)	(9.3)	(8.2)	10.9	16.1	4.4	3.4	6.8	6.1	18.0	23.8	0.0	0.0	51.2	19.3
Tung Thih	3552 TT	TWD	470.5	Not rated	1,232	47.0	32.0	(9.7)	(8.0)	24.8	(8.9)	25.9	10.6	1.8	1.6	4.9	4.4	14.6	15.5	2.3	2.7	(2.8)	21.0
JTEKT CORP	6473 JP	JPY	1,242	Hold	4,086	(38.1)	(14.8)	(16.5)	(21.1)	(10.4)	(10.3)	10.1	11.7	0.9	0.9	4.8	4.8	7.6	7.4	3.2	3.3	(3.4)	(1.9)
Industry average					**13,079**	**(12.9)**	**1.6**	**(6.5)**	**(13.2)**	**0.4**	**(5.9)**	**14.7**	**12.6**	**2.9**	**2.5**	**6.6**	**6.1**	**22.1**	**21.3**	**2.0**	**2.2**	**13.2**	**11.5**

*Source: Bloomberg, *Daiwa forecasts. Note: 1) share prices as of 22 June 2016, 2) **Relative to country index*

Favourable earnings revision cycle and expansion of trading multiples

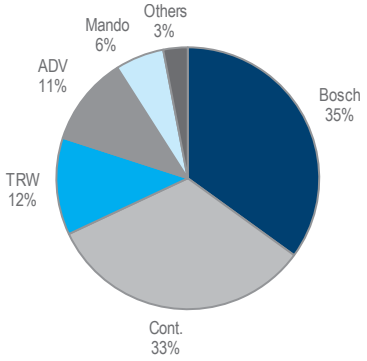
Despite Mando's shares staging a 38% rebound YTD, we look for a potential upward earnings revision cycle and expansion of its trading multiples on several potential orders for ADAS from both auto OEMs and ICTs to provide a leg up for the shares. Furthermore, we believe the diversification of its customer base (44% of revenue from non-HMG OEMs), which along with Hanon Systems' we consider to be among the most diverse in the Korea automobile and component universe, would provide another a rerating driver for the shares.

Mando: revenue by customer (2015)



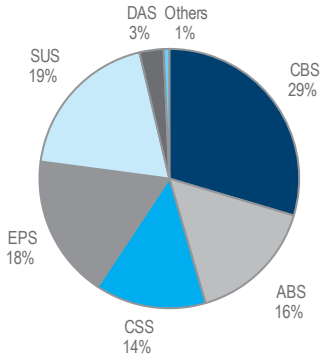
Source: Company, Daiwa

Mando: global market position in braking systems (ABS/ESC) (2015)



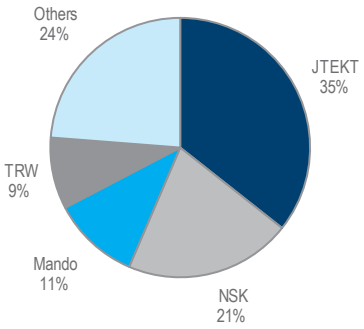
Source: Company, Daiwa

Mando: revenue by product (2015)



Source: Company, Daiwa
Notes: 1: Electronics include ABS, EPS, and DAS (36.7% of 2015 revenue)
2: ABS-Anti-lock Brake System/ EPS-Electronic Power Steering/ DAS-Driving Assistant System/ CBS-Caliper Brake System/ SUS- Suspension / CSS-Steering system

Mando: global market position in steering systems (C-EPS) (2015)



Source: Company, Daiwa

Key risks

Stronger-than-expected pricing pressure or rapid currency moves

The main risk to our rating, target price and forecasts for Mando is a rapid appreciation of the KRW against the USD and Brazil Real, which could lead to greater-than-expected pricing pressure from OEMs.

A secondary risk to our call on the stock would be larger-than-expected non-contractual pricing pressure from HMG, which still accounts for 46% of its revenue.

Daiwa Capital Markets

Hanon Systems (018880 KS)

Target price: **KRW15,000** (from KRW13,000)

Share price (22 Jun): **KRW11,300** | Up/downside: **+32.7%**

5 4 3 2 **1**

Buy (unchanged)

Global innovator merits valuation premium

- Impetus from potential order wins from China, ICT makers
- Earnings upside potential; PMI and better product mix
- Reiterating Buy; raising TP to KRW15,000; top sector pick with Mando

Sung Yop Chung
(82) 2 787 9157
sychung@kr.daiwacm.com

What's new: Given Hanon Systems' (HS) strong position in the global market for thermal-energy-management systems in EVs, we believe the stock should trade on par with the global EV parts makers and that it merits the highest valuation premium in the Korea autos and components segment.

What's the impact: For EVs, roughly half the energy stored in the battery is used for cooling and heating during the summer and winter, which affects the driving range and reduces fuel economy. Hence, thermal-energy-management systems are key to an EV's fuel economy. We believe HS has an industry-leading position in thermal-energy management for EVs. With its competitive advantage in climate-control technology, we expect HS to become a leading supplier of thermal-energy-management systems. Also, HS forecasts an organic top-line CAGR of 7% over 2015-20. It expects inorganic growth of KRW1tn until 2020, which could help its 2025 revenue nearly double to KRW10.3tn from 2014. HS classifies its customers into 3 segments: 1) core (HMG and Ford: 71% of current revenue), 2) growth (other mass market OEMs: 24% of current revenue), and 3) technology (luxury and EV makers: 5% of current revenue).

Thus, we expect HS to gain more presence globally on: 1) the continued penetration of its thermal-energy-management business globally (it expects its thermal-energy-management systems for green cars to account for 10% of HS's revenue by 2020, up from 4% in 2015 and 6% in 2016), and 2) inorganic growth and client diversification over our forecast period.

What we recommend: We raise our EPS forecasts by 1.3% for 2016, 2.4% for 2017 and 3.0% for 2018, factoring in: 1) an upward revision to our HS order forecast for 2016 to KRW1tn (from KRW800bn), as we now look for HS to secure orders for EV heat pumps from China and thermal-energy-management systems for Tesla's Model 3, and 2) stronger-than-expected post-merger integration, especially for its Europe operation. In turn, we lift our equally-weighted DCF/PER-based 12-month target price to KRW15,000 (from KRW13,000), which implies a 2016E PER of 21x, the average PER for the global EV-related companies.

Also, we continue to like HS's cash-management policy, including its higher payout ratio of 35% (DPS: KRW250) for 2016E vs. its local peers, and its interest in realising inorganic growth through M&A opportunities.

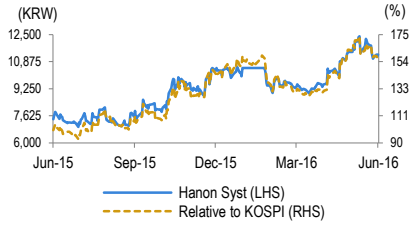
How we differ: Our 2016-18E EPS are much higher than the Bloomberg consensus, as we believe the market has yet to incorporate the better product mix from high-margin thermal energy management, and stronger earnings from China and PMI activities across the board.

Forecast revisions (%)

Year to 31 Dec	16E	17E	18E
Revenue change	0.1	0.4	0.5
Net profit change	1.3	2.4	3.0
Core EPS (FD) change	1.3	2.4	3.0

Source: Daiwa forecasts

Share price performance



12-month range	6,950-12,400
Market cap (USDbn)	5.22
3m avg daily turnover (USDm)	11.07
Shares outstanding (m)	534
Major shareholder	Hahn & Co Auto Holdings (50.5%)

Financial summary (KRW)

Year to 31 Dec	16E	17E	18E
Revenue (bn)	5,981	6,513	6,645
Operating profit (bn)	469	556	537
Net profit (bn)	374	440	449
Core EPS (fully-diluted)	701	825	841
EPS change (%)	62.4	17.7	1.9
Daiwa vs Cons. EPS (%)	24.7	29.5	22.8
PER (x)	16.1	13.7	13.4
Dividend yield (%)	2.2	2.7	2.7
DPS	250	310	310
PBR (x)	3.0	2.8	2.6
EV/EBITDA (x)	9.1	7.9	7.9
ROE (%)	19.5	21.0	20.1

Source: FactSet, Daiwa forecasts

Financial summary

Key assumptions

Year to 31 Dec	2011	2012	2013	2014	2015	2016E	2017E	2018E
Korea Revenue (KRW bn)	2,005.8	2,172.8	2,349.4	2,342.7	2,273.9	2,403.4	2,595.7	2,638.8
China Revenue (KRW bn)	627.6	755.7	1,050.5	1,104.5	1,135.9	1,240.5	1,376.9	1,409.4
North America Revenue (KRW bn)	506.1	559.4	886.7	850.7	973.8	1,078.4	1,186.3	1,211.3
Europe Revenue (KRW bn)	440.2	491.9	1,985.7	2,279.6	2,371.7	2,550.9	2,624.6	2,651.6
Others (KRW bn)	438.7	543.2	645.5	622.9	603.7	638.1	684.0	696.1
Internal adj. (KRW bn)	(706.2)	(869.8)	(1,728.5)	(1,745.3)	(1,801.0)	(1,929.9)	(1,954.1)	(1,961.8)

Profit and loss (KRWbn)

Year to 31 Dec	2011	2012	2013	2014	2015	2016E	2017E	2018E
Korea	2,006	2,173	2,349	2,343	2,274	2,403	2,596	2,639
China	628	756	1,051	1,104	1,136	1,240	1,377	1,409
Other Revenue	679	725	1,789	2,008	2,148	2,338	2,541	2,597
Total Revenue	**3,312**	**3,653**	**5,189**	**5,455**	**5,558**	**5,981**	**6,513**	**6,645**
Other income	0	0	0	0	0	0	0	0
COGS	(2,769)	(3,067)	(4,326)	(4,546)	(4,697)	(4,915)	(5,322)	(5,430)
SG&A	(272)	(277)	(500)	(538)	(502)	(598)	(636)	(678)
Other op.expenses	0	0	0	0	0	0	0	0
Operating profit	**271**	**310**	**364**	**370**	**360**	**469**	**556**	**537**
Net-interest inc./(exp.)	6	5	(3)	(8)	(6)	(4)	(4)	(4)
Assoc/forex/extraord./others	34	28	37	8	(8)	28	19	49
Pre-tax profit	**311**	**343**	**397**	**371**	**346**	**492**	**571**	**582**
Tax	(77)	(97)	(85)	(80)	(102)	(113)	(126)	(128)
Min. int./pref. div./others	0	0	0	0	0	0	0	0
Net profit (reported)	**234**	**245**	**312**	**290**	**243**	**379**	**445**	**454**
Net profit (adjusted)	**223**	**232**	**296**	**275**	**231**	**374**	**440**	**449**
EPS (reported)(KRW)	**438**	**459**	**585**	**544**	**456**	**710**	**834**	**850**
EPS (adjusted)(KRW)	**418**	**434**	**555**	**516**	**432**	**701**	**825**	**841**
EPS (adjusted fully-diluted)(KRW)	**418**	**434**	**555**	**516**	**432**	**701**	**825**	**841**
DPS (KRW)	**133**	**143**	**194**	**194**	**194**	**250**	**310**	**310**
EBIT	**271**	**310**	**364**	**370**	**360**	**469**	**556**	**537**
EBITDA	**397**	**422**	**525**	**536**	**525**	**655**	**758**	**757**

Cash flow (KRWbn)

Year to 31 Dec	2011	2012	2013	2014	2015	2016E	2017E	2018E
Profit before tax	311	343	397	371	346	492	571	582
Depreciation and amortisation	140	120	170	174	174	195	212	230
Tax paid	(77)	(97)	(85)	(80)	(102)	(113)	(126)	(128)
Change in working capital	(99)	(153)	(30)	(62)	170	(51)	(61)	(50)
Other operational CF items	(28)	65	(34)	(56)	(140)	(46)	(66)	(67)
Cash flow from operations	**247**	**278**	**418**	**347**	**448**	**477**	**530**	**567**
Capex	(145)	(134)	(193)	(269)	(227)	(238)	(250)	(263)
Net (acquisitions)/disposals	35	6	(34)	22	(31)	64	42	44
Other investing CF items	0	1	(327)	(34)	2	(45)	(97)	(97)
Cash flow from investing	**(109)**	**(128)**	**(554)**	**(282)**	**(256)**	**(219)**	**(304)**	**(315)**
Change in debt	10	(4)	213	75	(4)	16	17	18
Net share issues/(repurchases)	0	0	0	0	0	0	0	0
Dividends paid	(77)	(75)	(77)	(119)	(108)	(133)	(165)	(165)
Other financing CF items	0	0	(35)	0	0	(67)	(21)	(21)
Cash flow from financing	**(67)**	**(79)**	**101**	**(44)**	**(112)**	**(185)**	**(170)**	**(169)**
Forex effect/others	0	0	0	0	0	0	0	0
Change in cash	**70**	**71**	**(35)**	**21**	**80**	**73**	**56**	**83**
Free cash flow	102	143	225	77	221	239	280	304

Source: FactSet, Daiwa forecasts

Financial summary continued …

Balance sheet (KRWbn)

As at 31 Dec	2011	2012	2013	2014	2015	2016E	2017E	2018E
Cash & short-term investment	353	427	358	388	460	467	479	493
Inventory	201	217	347	372	382	397	458	497
Accounts receivable	589	695	900	963	1,039	1,072	1,212	1,305
Other current assets	34	35	100	133	113	171	105	105
Total current assets	**1,177**	**1,373**	**1,705**	**1,856**	**1,994**	**2,106**	**2,255**	**2,399**
Fixed assets	661	655	970	1,053	1,093	1,181	1,281	1,394
Goodwill & intangibles	155	154	156	172	207	193	195	195
Other non-current assets	55	53	123	159	166	166	161	161
Total assets	**2,048**	**2,236**	**2,954**	**3,240**	**3,459**	**3,646**	**3,892**	**4,150**
Short-term debt	90	83	71	123	335	351	369	387
Accounts payable	495	552	810	815	832	894	903	979
Other current liabilities	105	99	153	186	264	246	308	308
Total current liabilities	**689**	**733**	**1,034**	**1,124**	**1,431**	**1,492**	**1,580**	**1,675**
Long-term debt	0	0	219	258	46	45	44	43
Other non-current liabilities	75	64	159	189	183	78	103	128
Total liabilities	**765**	**798**	**1,413**	**1,570**	**1,660**	**1,615**	**1,727**	**1,846**
Share capital	53	53	53	53	53	53	53	53
Reserves/R.E./others	1,230	1,385	1,487	1,617	1,746	1,978	2,112	2,251
Shareholders' equity	**1,283**	**1,439**	**1,541**	**1,670**	**1,799**	**2,032**	**2,166**	**2,304**
Minority interests	0	0	0	0	0	0	0	0
Total equity & liabilities	**2,048**	**2,236**	**2,954**	**3,240**	**3,459**	**3,646**	**3,892**	**4,150**
EV	5,769	5,688	5,965	6,024	5,953	5,961	5,966	5,970
Net debt/(cash)	**(263)**	**(344)**	**(67)**	**(8)**	**(79)**	**(70)**	**(66)**	**(62)**
BVPS (KRW)	**2,404**	**2,695**	**2,887**	**3,128**	**3,371**	**3,813**	**4,065**	**4,324**

Key ratios (%)

Year to 31 Dec	2011	2012	2013	2014	2015	2016E	2017E	2018E
Sales (YoY)	11.1	10.3	42.1	5.1	1.9	7.6	8.9	2.0
EBITDA (YoY)	(1.2)	6.4	24.5	1.9	(2.0)	24.7	15.8	(0.2)
Operating profit (YoY)	(3.8)	14.4	17.4	1.9	(2.9)	30.4	18.5	(3.3)
Net profit (YoY)	10.2	3.8	28.0	(7.1)	(16.3)	62.4	17.7	1.9
Core EPS (fully-diluted) (YoY)	(33.9)	3.8	28.0	(7.1)	(16.3)	62.4	17.7	1.9
Gross-profit margin	16.4	16.0	16.6	16.7	15.5	17.8	18.3	18.3
EBITDA margin	12.0	11.6	10.1	9.8	9.4	10.9	11.6	11.4
Operating-profit margin	8.2	8.5	7.0	6.8	6.5	7.8	8.5	8.1
Net profit margin	6.7	6.3	5.7	5.0	4.1	6.3	6.8	6.8
ROAE	18.4	17.0	19.9	17.2	13.3	19.5	21.0	20.1
ROAA	11.4	10.8	11.4	8.9	6.9	10.5	11.7	11.2
ROCE	20.9	21.4	21.7	19.1	17.0	20.4	22.2	20.2
ROIC	21.5	21.0	22.3	18.5	15.0	19.6	21.4	19.3
Net debt to equity	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Effective tax rate	24.8	28.4	21.3	21.7	29.6	23.0	22.0	22.0
Accounts receivable (days)	58.6	64.1	56.1	62.3	65.7	64.4	64.0	69.1
Current ratio (x)	1.7	1.9	1.6	1.7	1.4	1.4	1.4	1.4
Net interest cover (x)	n.a.	n.a.	107.6	49.3	57.8	119.0	132.3	119.9
Net dividend payout	30.3	31.2	33.2	35.7	42.6	35.2	37.2	36.5
Free cash flow yield	1.7	2.4	3.7	1.3	3.7	4.0	4.6	5.0

Source: FactSet, Daiwa forecasts

Company profile

Hanon Systems (HS, previously Halla Visteon Climate Control) manufactures automotive climate control systems and components, such as air conditioners, front-end modules, compressors and heat exchangers. HS was established in 1986 as a joint venture between Ford Motor Company and Mando Machinery, and its shares were listed on the KOSPI in 1996. Following its acquisition of the automotive climate business of Visteon Corporation in 2013, the company had the second-largest market share in the world.

Global innovator merits valuation premium, in our view

Thermal management particularly important for EVs

Thermal-energy management is central to OEM efforts to comply with more stringent fuel-economy standards…

To comply with stricter fuel economy regulations globally, there are 2 ways for auto OEMs to improve the fuel economy for internal combustion engines (ICE) and eco-friendly cars. First, they can improve their engine management systems. Magna (MG CN, CAD50.0, not rated) is the leader in this area, and its shares are trading at a higher PER and offers a stronger EPS CAGR for 2016-17, based on Bloomberg estimates, relative to the global automakers.

Second, they can improve their fuel economy through thermal-energy management. Given the increasingly tough regulations on fuel efficiency, we believe that thermal-energy management will not only become key to achieving greater efficiency, but also that the market for related products will expand alongside the market for environmentally friendly vehicles.

…particularly for EVs

As EVs don't have combustion engines, they are dependent upon batteries to generate the electricity used to cool and heat the passenger compartment. We believe around half of the energy stored in the battery is used for cooling and heating during the summer and winter, which in turn affects the vehicle's driving range and reduces fuel economy.

Market leader in thermal energy management

HS has a competitive advantage in thermal energy management systems

Thus, thermal energy management systems are particularly important factors in the overall fuel economy of EVs. In our view, HS has a strong competitive advantage in thermal energy management for EVs, including electric compressors, battery thermal management systems and heat pump systems.

1. **Electric compressors:** HS's electric compressors are designed to include an efficient scroll compressor controlled by an on-board electric motor and integrated power electronics. The electric compressor operates independently, enabling the cabin to be cooled even when the engine is off. Its compact design fits within the traditional belt-driven compressor package space, minimising vehicle complexity in platforms that offer hybrid-electric model variants.

HS: E-compressor

Source: Company

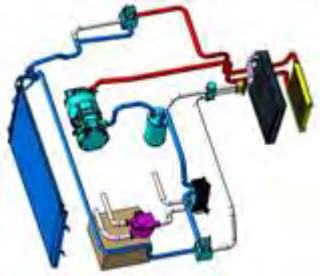
2. **Battery thermal management systems:** The technology used to meet the power demand of EVs today is the lithium-ion (li-ion) battery, and for more than 10 years HS has been manufacturing battery thermal management systems. Harnessing its vehicle and system expertise, HS has developed components that can be used in various system architectures to meet a range of customer requirements. The battery chiller is a compact plate-to-plate heat exchanger that transfers thermal energy from the battery coolant loop to the vehicle's refrigerant loop to maintain optimum battery temperatures. The battery contact heat exchanger is packaged in the battery pack to transfer thermal energy between the battery pack and a coolant or refrigerant loop. It provides precise temperature control, specifically in li-ion battery applications, and the fluid circuitry delivers uniform cell cooling and heating for improved battery performance and durability.

HS: battery thermal management

Source: Company

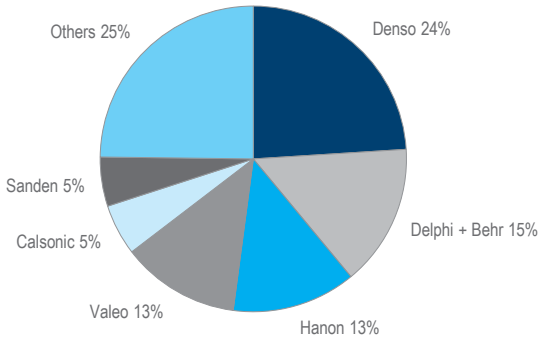
3. **Heat pump systems:** The heat pump system is a solution for heating electric, hybrid and internal-combustion-engine vehicles where there is insufficient waste heat for cabin heating. Redirection of the refrigerant via valves allows cooling of the vehicle using the same system components. The system can extend the driving range of environmentally friendly EVs because it can cool and heat the vehicle using a minimum amount of energy. According to HS, this approach can significantly reduce the electrical load put on a car's battery, potentially leading to a 25% increase in overall winter driving ranges compared with the positive temperature coefficient (PTC) heaters used for today's EVs.

HS: heat pump system



Source: Company

HS and competitors: global share of climate control systems market by shipments (2015)



Source: Company

Edge in thermal energy management systems positive for long-term earnings

Stronger presence in EVs' thermal energy management

We believe HS has a competitive edge in thermal-energy management for EVs, including electric compressors, battery thermal management systems and heat pump systems. Backed by its automotive climate control technology, we see HS as poised to become a leading supplier of total solutions for thermal-energy management. Indeed, the world leaders in EVs (Tesla, BMW and VW) all use HS's thermal-energy-management products. HS is the sole supplier of thermal-management systems for Tesla Motors' Models S and X, and we believe it is in negotiations to do the same for Tesla's forthcoming Model 3.

Hence, we view the continued global penetration of HS's thermal-energy-management business as a long-term earnings driver, as the ASPs are higher for green cars vs. ICEs (the ASP for EV compressors is 3 times higher). We forecast thermal-energy-management systems for green cars to contribute 10% of HS's revenue by 2020, up from 4% in 2015 and 6% in 2016.

2Q16E earnings tracking stronger

2Q16E earnings tracking stronger

We now expect HS's 2Q16E operating profit margin to widen by 0.5pp QoQ to 7.8% (previous forecast of 7.7%) as a result of: 1) a recovery in HMG's global shipments QoQ, especially for China (17% QoQ), 2) the positive impact of recently launched models such as HMG's the Elantra and Sportage, and 3) greater revenue recognition of high-margin green-car thermal energy management products.

HS: 2Q16E earnings preview

(in KRWbn)	2Q16E-Daiwa	2Q16E-Bbg	Diff (%)	2Q15	YoY (%)	1Q16	QoQ (%)
USD/KRW (Avg)	**1,162.1**	**1,162.1**		**1,096.9**	5.9	**1,201.1**	(3.2)
Revenue	**1,521**	**1,474**	3.2	**1,375**	10.6	**1,428**	6.5
COGS	1,243			1,159		1,195	
Gross Profit	**278**			**217**	28.5	**233**	19.2
Gross margin (%)	18.3			15.7		16.7	
SG&A	160			136		129	
Operating profit	**119**	**107**	11.2	**80**	47.9	**105**	13.1
Operating margin (%)	7.8	7.2		5.8		6.8	
Recurring Profit	**127**			**81**	56.2	**104**	21.6
Recurring-profit margin (%)	8.3			5.9		6.8	
Taxes	28			21		80	
Tax rate (%)	22.0			25.4		21.7	
Net profit	**99**	**77**	27.6	**60**	63.3	**72**	36.6
Net margin (%)	6.5	5.3		4.4		5.3	

Source: Company, Bloomberg, Daiwa forecasts

Valuation and recommendation

Raising 12-month TP to KRW15,000; in our view, HS deserves to trade at a PER on par with global peers

We revise up our EPS estimates by 1.3% for 2016, 2.4% for 2017 and 3.0% for 2018, as a result of: 1) the upward revision to our forecast of HS's orders for 2016 to KRW1tn (from KRW800bn) as we now expect it to secure orders for EV heat pumps from China and thermal-energy-management systems for the Tesla Model 3, and 2) stronger-than-expected post-merger integration, especially for its European operation.

In turn, we lift our equally-weighted DCF/PER-based 12-month target price to KRW15,000 (from KRW13,000),which implies a 2016E PER of 21x (average of the global EV-related peers).

Global EV parts makers' valuation

Company	Ticker	Curr.	Share Price	Daiwa Rating	Mcap (USDm)	Absolute Performance (%) YTD	1M	3M	Relative Performance (%)** 12M	1M	3M	PER (x) 16E	17E	PBR (x) 16E	17E	EV/ EBITDA (x) 16E	17E	ROE (%) 16E	17E	Div. Yield (%) 16E	17E	EPS Growth (%) 16E	17E
EV-related																							
Siemens	SIE GR	EUR	97	Not rated	92,944	7.4	3.0	4.4	13.2	0.9	3.0	14.9	12.8	2.2	2.1	10.6	9.6	15.9	16.5	3.8	4.0	7.1	8.8
BORGWARNER	BWA US	USD	33	Not rated	7,214	(23.3)	0.9	(11.7)	(25.3)	(0.7)	(13.5)	12.7	9.2	1.9	1.6	6.3	6.0	19.1	19.2	1.6	1.6	9.2	11.1
GS Yuasa	6674 JP	JPY	405	Not rated	1,603	(10.4)	(11.0)	(15.4)	5.7	(8.0)	(10.6)	18.1	11.8	1.0	1.0	6.0	5.6	7.1	8.6	2.5	2.7	(2.2)	18.6
Hota Industrial*	1536 TT	TWD	147	Outperform	1,075	21.1	(1.0)	9.3	17.0	(5.0)	10.3	29.3	20.8	7.6	6.4	19.6	15.6	32.0	34.6	2.6	3.2	25.0	25.0
BYD*	1211 HK	HKD	46	Outperform	19,669	8.0	9.5	8.7	12.7	4.4	7.8	32.2	25.8	2.9	2.6	15.7	14.0	9.5	10.9	0.1	0.1	155.1	23.0
LG Chemical*	051910 KS	KRW	253,000	Outperform	14,588	(23.0)	(7.7)	(18.4)	(24.3)	(9.3)	(18.0)	13.5	10.6	1.3	1.2	5.1	4.7	10.9	11.2	1.8	1.9	19.5	11.4
Samsung SDI*	006400 KS	KRW	110,000	Outperform	6,581	(3.5)	2.3	6.8	(4.8)	0.7	7.2	23.9	25.2	0.7	0.7	n.a.	7.8	2.0	2.8	0.9	1.0	8.7	12.5
Bizlink	3665 TT	TWD	189	Not rated	540	29.5	0.0	16.7	25.4	(4.0)	17.7	26.2	18.1	3.8	3.6	13.0	10.8	18.8	20.7	3.3	4.1	10.5	15.7
Industry average					**18,027**	**0.7**	**(0.5)**	**0.0**	**2.4**	**(2.6)**	**0.5**	**21.4**	**16.8**	**2.7**	**2.4**	**10.9**	**9.3**	**14.4**	**15.5**	**2.1**	**2.3**	**29.1**	**13.1**

*Source: Bloomberg, *Daiwa forecasts. Note: 1) share prices as of 22 June 2016, 2) **Relative to country index*

HS: DCF calculation

Target gearing (debt/capital) (%)	**40**
Market risk premium (%)	**11.5**
Risk-free rate (%)	**2.2**
Cost of debt (%)	**3.6**
Cost of equity (%)	**13.5**
WACC (%)	**9.23%**
Terminal Value	
Terminal Growth Rate	2.50%
Terminal WACC	9.23%
Estimated Terminal Free Cash Flow (KRWbn)	837
NPV of Terminal Value (KRWbn, as at 2026E)	12,741
NPV of Terminal Value (KRWbn, as at 22 June 2016)	4,998
DCF Valuation	
NPV of Forecasts (KRWbn)	3,206
NPV of Terminal Value (KRWbn)	4,998
Enterprise Value (KRWbn)	8,204
Less: Net Debt (KRWbn, as at end-2016E)	70
Equity Value (KRWbn)	8,274
No. Shares (m)	534
Per Share Equity Value	**15,500**

Source: Daiwa estimates and forecasts

HS: DCF sensitivity

Discount Rate	NPV of Terminal FCF	Enterprise Value	Equity Value	Equity value per share
7.23%	8,650	12,228	12,298	23,039
7.73%	7,446	10,925	10,996	20,599
8.23%	6,471	9,855	9,926	18,595
8.73%	5,668	8,961	9,032	16,920
9.23%	**4,998**	**8,204**	**8,274**	**15,500**
9.73%	4,432	7,554	7,624	14,283
10.23%	3,951	6,991	7,062	13,229
10.73%	3,537	6,500	6,570	12,308
11.23%	3,179	6,067	6,137	11,497

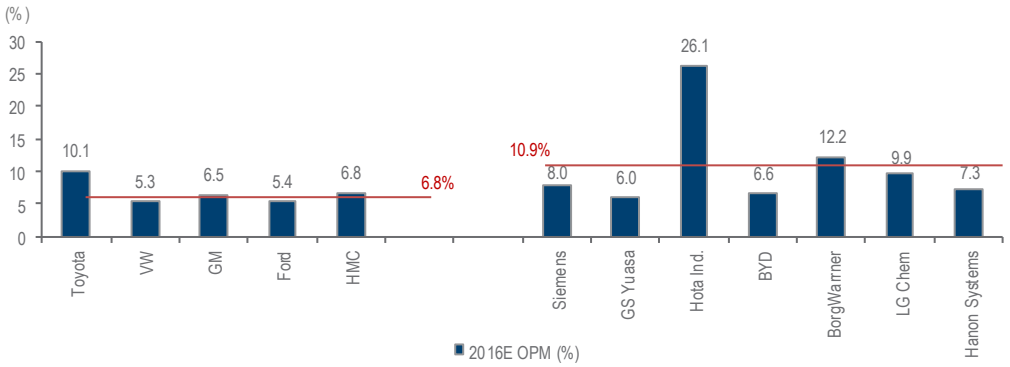
Source: Daiwa estimates and forecasts

PER-based valuation

Target PER (x)	20.7x
2016E EPS (KRW)	701
Per Share Equity Value (KRW)	**14,499**

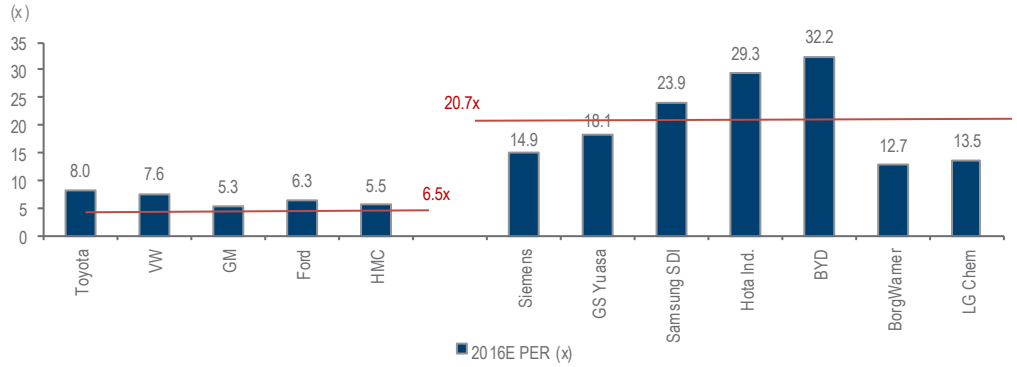
Source: Daiwa forecasts

International OEMs vs. EV parts' makers: operating-profit comparison (2016E)



Source: Bloomberg, Daiwa estimates
Note: Samsung SDI and Tesla recorded operating losses in 2015 and hence are not included.

International OEMs vs. EV parts' makers: PER comparison (2016E)

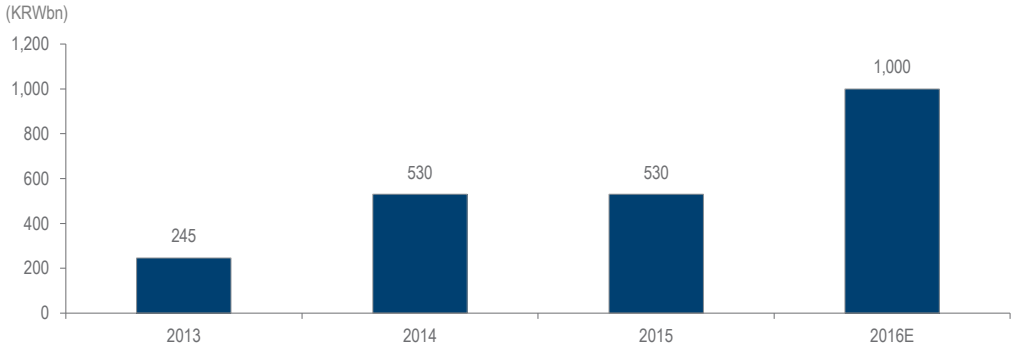


Source: Bloomberg, Daiwa forecasts

We see earnings upside on potential new order wins as share-price catalysts

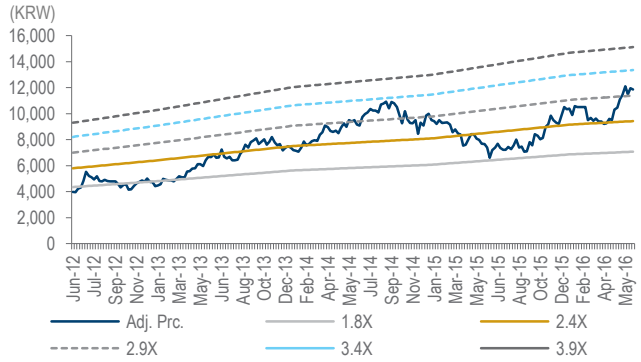
HS's share price has rebounded by 9% YTD, and we foresee earnings upside and multiple expansion on orders for thermal-energy-management systems for EVs from Tesla, as well as global and China OEMs. Furthermore, we would see a diversification of its customer portfolio (51% of its revenue from non-HMG OEMs), already the most diverse in our Korea automobile and component universe, as another rerating driver for the shares.

HS: new business wins outlook



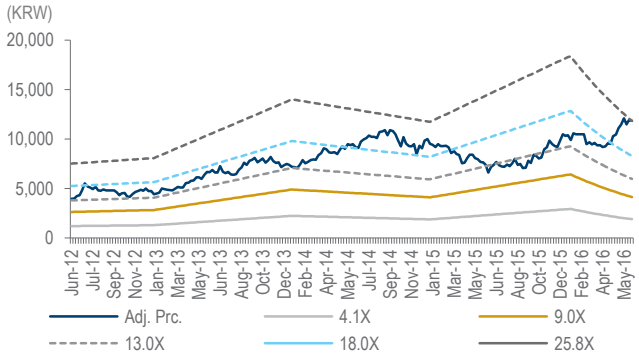
Source: Company, Daiwa forecasts

HS: one-year-forward PBR bands



Source: Bloomberg, Daiwa forecasts

HS: one-year-forward PER bands



Source: Bloomberg, Daiwa forecasts

Key risks

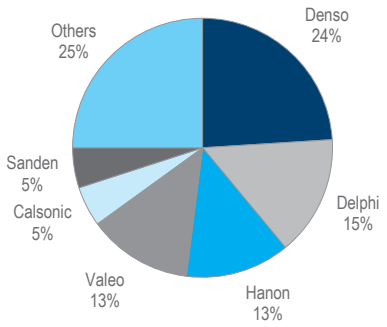
Stronger-than-expected pricing pressure, rapid currency moves or new entry from a Korea auto and ICT parts maker

The main risk to our rating, target price and forecasts for HS would be a rapid appreciation of the KRW against both developed-market and emerging-market currencies, which would create a negative operating environment for HS. As of mid-June 2016, HS has 15,500 employees and 40 factories globally (9 in Europe, 11 in China, 10 in North America, 3 in Korea, 7 in Asia excluding Korea). A secondary risk to our call on the stock would be larger-than-expected non-contractual pricing pressure from HMG, which still accounts for 51% of its revenue.

Finally, the potential entry of a Korea auto or ICT parts maker into the climate control business could be a drag on investor sentiment toward HS, potentially leading to a derating of its multiples.

Appendix

HS: regional sales breakdown (end-1Q16)



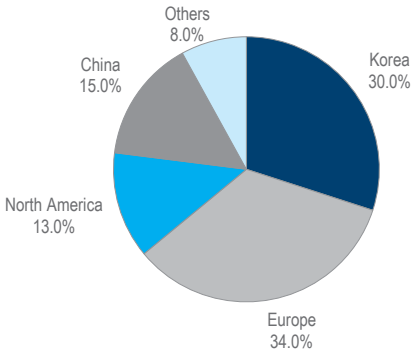
Source: Company, Daiwa

HS: thermal system loops in a vehicle

Loop	Funtion	Applicable				
Loop 1	A/C system loop (HVAC, CCh, Condenser, FT)	ICE	S/S	PHEV	EV	FCV
		V	V	V	V	V
Loop 2	Engine / Powertrain codant loop (M-Pump, Hoses, Fan)	ICE	S/S	PHEV	EV	FCV
		V	V	V	V	V
Loop 3	Engine air intake / Exhauster loop (ACAC, WCAC, Fan, Hoses, EGR systems, EHRS, Valves tec)	ICE	S/S	PHEV	EV	FCV
		V	V	V		V
Loop 4	Battery / Stack thermal management loop (e-pumps, LTR, Chiller, AC loop, e-valves, battery cooler, etc)	ICE	S/S	PHEV	EV	FCV
				V	V	
Loop 5	Electronics cooling loop (e-pump, chiller, LTR, AC loop, codant valves, etc)	ICE	S/S	PHEV	EV	FCV
			V	V	V	

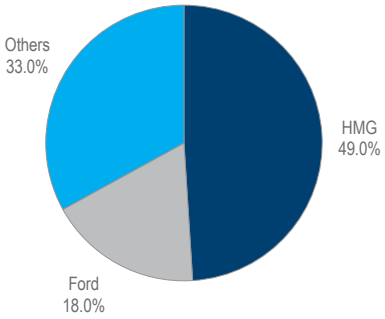
Source: Company, Daiwa

HS: regional sales breakdown (end-1Q16)



Source: Company, Daiwa

HS: customer breakdown (end-1Q16)



Source: Company, Daiwa

Daiwa Capital Markets

Hyundai Motor (005380 KS)

Target price: **KRW170,000** (from KRW170,000)

Share price (22 Jun): **KRW140,000** | Up/downside: **+21.4%**

5 4 3 2 **1**

Buy (unchanged)

Buy on expected 2H16 earnings revival

- 2Q16 earnings tracking in line with our and consensus forecasts
- Stronger YoY earnings upturn from 2H16E; trading near trough levels
- Still positive on green-car roadmap; reaffirm Buy (1) call and TP

Sung Yop Chung
(82) 2 787 9157
sychung@kr.daiwacm.com

What's new: With HMC's global shipments finally turning the tide in May, and backed by currency tailwinds from mid-May, we forecast the company's 2Q16 earnings to meet both our and the Bloomberg-consensus forecasts. We expect HMC's earnings to begin trending up from 2H16 after 3 years of trending down. As such, we reaffirm our Buy (1) call.

What's the impact: HMC is scheduled to report its 2Q16 earnings on 26 July. After 8 consecutive quarters of YoY operating-profit declines, we expect HMC's 2Q16 operating profit (our forecast: KRW1,762bn) to be similar to that for 2Q15 (KRW1,751bn). We expect a number of positives (roughly flat global shipments YoY for 2Q16, favourable forex trends, a rising contribution from high-margin SUV shipments) to offset the negatives from lacklustre operating profit from its finance division, as well as a shipment decline in the Middle East and North Africa (MENA).

As such, we look for 2Q16 revenue of KRW23,807bn and operating profit of KRW1,762bn, similar to the Bloomberg forecasts of KRW23,897bn and KRW1,761bn, respectively.

We still see strong potential for HMC to record a YoY rise in operating profit for 2016, particularly from 2H16 – on strong SUV shipments, forex tailwinds, robust operating profit for the Genesis EQ900, and a rise in equity-method income from Beijing HMC.

What we recommend: We reiterate our Buy (1) call and equally-weighted DCF/PER-based 12-month target price of KRW170,000. In our view, HMC's risk/reward profile continues to be the most promising among the major global OEMs. Based on the consensus numbers, HMC's 2016E current PBR/ROE ratio is at a 20% discount to its 5-year average, which we view as excessive.

Also, we remain positive on the company's green-car roadmap, following the scheduled launch of its first battery powered EV, the Ioniq, in June 2016. The key risk to our call is a rapid appreciation of the KRW vs. the USD, Euro, JPY, Russian Rouble and Brazilian Real.

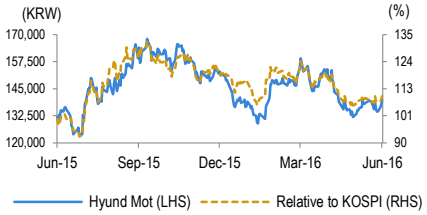
How we differ: Our 2016-18E EPS are 5-9% higher than those of the Bloomberg consensus, as we believe the market has yet to factor in the company's better product mix (ie, greater portion of high-margin SUV shipments) and stabilising emerging-market economies.

Forecast revisions (%)

Year to 31 Dec	16E	17E	18E
Revenue change	-	-	-
Net profit change	-	-	-
Core EPS (FD) change	-	-	-

Source: Daiwa forecasts

Share price performance



12-month range	123,500-168,000
Market cap (USDbn)	26.66
3m avg daily turnover (USDm)	51.58
Shares outstanding (m)	220
Major shareholder	Hyundai Mobis (20.8%)

Financial summary (KRW)

Year to 31 Dec	16E	17E	18E
Revenue (bn)	93,034	95,851	100,374
Operating profit (bn)	6,714	7,016	7,851
Net profit (bn)	6,811	7,166	7,696
Core EPS (fully-diluted)	23,859	25,103	26,958
EPS change (%)	12.4	5.2	7.4
Daiwa vs Cons. EPS (%)	5.1	7.0	8.9
PER (x)	5.9	5.6	5.2
Dividend yield (%)	3.3	3.7	4.2
DPS	4,600	5,200	5,900
PBR (x)	0.4	0.4	0.4
EV/EBITDA (x)	4.4	4.0	3.6
ROE (%)	9.7	9.4	9.5

Source: FactSet, Daiwa forecasts

Financial summary

Key assumptions

Year to 31 Dec	2011	2012	2013	2014	2015	2016E	2017E	2018E
Sales volume ex. China ('000 Units)	3,319	3,546	3,656	3,815	3,866	3,855	3,946	3,964
Average Selling Price ex. China (KRW '000)	18,578	18,813	19,652	18,796	18,100	18,187	18,058	19,502
Sales volume in. China ('000 Units)	4,051.1	4,398.3	4,732.1	4,961.1	4,942.7	4,943.8	5,176.7	5,214.8

Profit and loss (KRWbn)

Year to 31 Dec	2011	2012	2013	2014	2015	2016E	2017E	2018E
Auto Revenues	67,128	71,307	71,535	72,307	72,680	70,974	71,867	77,910
Finance Revenues	7,288	8,663	9,893	10,772	12,436	15,438	16,890	15,789
Other Revenue	3,382	4,500	5,880	6,177	6,843	6,623	7,094	6,676
Total Revenue	**77,798**	**84,470**	**87,308**	**89,256**	**91,959**	**93,034**	**95,851**	**100,374**
Other income	0	0	0	0	0	0	0	0
COGS	(58,902)	(64,967)	(67,859)	(70,126)	(73,701)	(74,208)	(76,553)	(79,844)
SG&A	(10,867)	(11,062)	(11,133)	(11,580)	(11,900)	(12,112)	(12,282)	(12,680)
Other op.expenses	0	0	0	0	0	0	0	0
Operating profit	**8,029**	**8,441**	**8,315**	**7,550**	**6,358**	**6,714**	**7,016**	**7,851**
Net-interest inc./(exp.)	(36)	164	240	352	232	387	455	514
Assoc/forex/extraord./others	2,454	3,006	3,141	2,049	1,870	2,150	1,967	1,779
Pre-tax profit	**10,447**	**11,610**	**11,697**	**9,951**	**8,459**	**9,251**	**9,439**	**10,144**
Tax	(2,342)	(2,549)	(2,703)	(2,302)	(1,950)	(2,137)	(2,180)	(2,343)
Min. int./pref. div./others	0	0	0	0	0	0	0	0
Net profit (reported)	**8,105**	**9,061**	**8,993**	**7,649**	**6,509**	**7,114**	**7,258**	**7,801**
Net profit (adjusted)	**7,035**	**6,519**	**8,545**	**7,155**	**6,058**	**6,811**	**7,166**	**7,696**
EPS (reported)(KRW)	**28,390**	**31,740**	**31,503**	**26,795**	**22,801**	**24,919**	**25,425**	**27,325**
EPS (adjusted)(KRW)	**24,642**	**22,837**	**29,930**	**25,063**	**21,219**	**23,859**	**25,103**	**26,958**
EPS (adjusted fully-diluted)(KRW)	**24,642**	**22,837**	**29,930**	**25,063**	**21,219**	**23,859**	**25,103**	**26,958**
DPS (KRW)	**1,750**	**1,900**	**1,950**	**3,000**	**4,000**	**4,600**	**5,200**	**5,900**
EBIT	**8,029**	**8,441**	**8,315**	**7,550**	**6,358**	**6,714**	**7,016**	**7,851**
EBITDA	**9,615**	**10,130**	**10,062**	**9,335**	**8,197**	**9,505**	**9,892**	**10,773**

Cash flow (KRWbn)

Year to 31 Dec	2011	2012	2013	2014	2015	2016E	2017E	2018E
Profit before tax	10,447	11,610	11,697	9,951	8,459	9,251	9,439	10,144
Depreciation and amortisation	1,586	1,689	1,746	1,785	1,839	2,791	2,876	2,922
Tax paid	(2,342)	(2,549)	(2,703)	(2,302)	(1,950)	(2,137)	(2,180)	(2,343)
Change in working capital	20,756	6,249	4,925	2,910	(3,530)	1,820	2,010	2,157
Other operational CF items	(26,270)	(11,647)	(14,075)	(8,519)	(3,774)	(5,185)	(5,488)	(5,235)
Cash flow from operations	**4,177**	**5,353**	**1,589**	**3,825**	**1,044**	**6,539**	**6,655**	**7,645**
Capex	(2,899)	(3,000)	(3,171)	(3,354)	(8,142)	(4,680)	(4,914)	(5,160)
Net (acquisitions)/disposals	(4,224)	(4,048)	(3,819)	(4,596)	370	(1,349)	(1,377)	(1,406)
Other investing CF items	14	4	4	74	(71)	0	(787)	(310)
Cash flow from investing	**(7,109)**	**(7,044)**	**(6,986)**	**(7,876)**	**(7,843)**	**(6,029)**	**(7,078)**	**(6,875)**
Change in debt	3,928	2,684	6,083	5,269	8,864	(139)	(73)	(8)
Net share issues/(repurchases)	0	0	0	0	0	0	0	0
Dividends paid	(458)	(523)	(633)	(587)	(1,353)	(1,013)	(1,145)	(1,300)
Other financing CF items	(414)	243	250	1	(311)	2,470	3,457	2,995
Cash flow from financing	**3,056**	**2,404**	**5,700**	**4,683**	**7,201**	**1,318**	**2,239**	**1,688**
Forex effect/others	0	0	0	0	0	0	0	0
Change in cash	**125**	**713**	**303**	**633**	**402**	**1,828**	**1,816**	**2,458**
Free cash flow	1,278	2,353	(1,582)	472	(7,098)	1,859	1,741	2,485

Source: FactSet, Daiwa forecasts

Financial summary continued …

Balance sheet (KRWbn)

As at 31 Dec	2011	2012	2013	2014	2015	2016E	2017E	2018E
Cash & short-term investment	35,429	40,120	43,434	48,482	48,348	50,122	51,953	53,549
Inventory	6,238	6,773	7,073	7,417	9,199	8,245	8,293	8,650
Accounts receivable	6,013	5,925	6,547	7,441	8,286	8,369	8,453	8,706
Other current assets	1,247	2,030	1,802	1,685	1,695	1,899	1,994	2,093
Total current assets	**48,926**	**54,848**	**58,856**	**65,026**	**67,529**	**68,635**	**70,693**	**72,998**
Fixed assets	19,548	20,740	21,463	22,542	28,699	37,170	39,208	41,445
Goodwill & intangibles	2,660	2,883	3,129	3,822	4,298	4,341	4,384	4,428
Other non-current assets	38,345	43,067	49,974	55,836	64,842	66,513	67,265	68,029
Total assets	**109,480**	**121,538**	**133,421**	**147,225**	**165,368**	**176,659**	**181,550**	**186,901**
Short-term debt	15,048	11,050	11,118	14,475	16,427	16,354	16,322	16,331
Accounts payable	10,887	11,881	11,856	12,019	12,255	12,868	13,511	14,187
Other current liabilities	7,229	9,904	8,946	8,685	12,531	11,278	10,714	10,178
Total current liabilities	**33,164**	**32,836**	**31,920**	**35,180**	**41,214**	**40,500**	**40,548**	**40,696**
Long-term debt	27,138	30,513	33,989	37,733	44,760	44,695	44,654	44,637
Other non-current liabilities	8,850	10,271	10,930	11,692	12,513	18,146	17,890	17,879
Total liabilities	**69,152**	**73,620**	**76,839**	**84,605**	**98,487**	**103,340**	**103,091**	**103,213**
Share capital	1,489	1,489	1,489	1,489	1,489	1,489	1,489	1,489
Reserves/R.E./others	38,839	46,429	55,094	61,132	65,392	71,829	76,970	82,200
Shareholders' equity	**40,328**	**47,918**	**56,583**	**62,621**	**66,881**	**73,318**	**78,459**	**83,689**
Minority interests	0	0	0	0	0	0	0	0
Total equity & liabilities	**109,480**	**121,538**	**133,421**	**147,225**	**165,368**	**176,659**	**181,550**	**186,901**
EV	37,596	32,282	32,512	34,565	43,678	41,765	39,862	38,258
Net debt/(cash)	**6,757**	**1,443**	**1,673**	**3,726**	**12,839**	**10,927**	**9,023**	**7,420**
BVPS (KRW)	**183,078**	**217,534**	**256,872**	**284,282**	**303,625**	**332,847**	**356,184**	**379,926**

Key ratios (%)

Year to 31 Dec	2011	2012	2013	2014	2015	2016E	2017E	2018E
Sales (YoY)	16.1	8.6	3.4	2.2	3.0	1.2	3.0	4.7
EBITDA (YoY)	18.7	5.4	(0.7)	(7.2)	(12.2)	16.0	4.1	8.9
Operating profit (YoY)	35.7	5.1	(1.5)	(9.2)	(15.8)	5.6	4.5	11.9
Net profit (YoY)	22.0	(7.3)	31.1	(16.3)	(15.3)	12.4	5.2	7.4
Core EPS (fully-diluted) (YoY)	22.0	(7.3)	31.1	(16.3)	(15.3)	12.4	5.2	7.4
Gross-profit margin	24.3	23.1	22.3	21.4	19.9	20.2	20.1	20.5
EBITDA margin	12.4	12.0	11.5	10.5	8.9	10.2	10.3	10.7
Operating-profit margin	10.3	10.0	9.5	8.5	6.9	7.2	7.3	7.8
Net profit margin	9.0	7.7	9.8	8.0	6.6	7.3	7.5	7.7
ROAE	18.3	14.8	16.4	12.0	9.4	9.7	9.4	9.5
ROAA	6.2	5.6	6.7	5.1	3.9	4.0	4.0	4.2
ROCE	9.7	9.8	8.7	7.0	5.2	5.1	5.1	5.5
ROIC	11.1	13.7	11.9	9.3	6.7	6.3	6.3	6.8
Net debt to equity	16.8	3.0	3.0	5.9	19.2	14.9	11.5	8.9
Effective tax rate	22.4	22.0	23.1	23.1	23.1	23.1	23.1	23.1
Accounts receivable (days)	34.7	25.8	26.1	28.6	31.2	32.7	32.0	31.2
Current ratio (x)	1.5	1.7	1.8	1.8	1.6	1.7	1.7	1.8
Net interest cover (x)	223.1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Net dividend payout	7.1	8.3	6.5	12.0	18.9	19.3	20.7	21.9
Free cash flow yield	4.1	7.6	n.a.	1.5	n.a.	6.0	5.6	8.1

Source: FactSet, Daiwa forecasts

Company profile

Established in 1967, HMC is the largest vehicle manufacturer in Korea. With the 33.58%-owned Kia Motors, it has 8m units of production capacity globally. The company produces a range of vehicles, including passenger cars, SUVs, minivans and commercial vehicles.

Buy on expected 2H16 earnings revival

Earnings look poised to recover in 2016

2Q16 earnings tracking in line

HMC is scheduled to report its 2Q16 earnings on 26 July. After 8 consecutive quarters of YoY operating-profit declines, HMC's 2Q16 operating profit (KRW1,762bn, on our forecasts) looks likely come in at a similar level to 2Q15 (KRW1,751bn). We see a number of positive factors – 1) 2Q16E global (ex-China) shipments reaching 992K units on a rise in domestic and US factory shipments, vs 993K units in 2Q15, 2) a favourable trend for both the USD and Euro against the Won, and a stabilising trend for the Real and Rouble, 3) high-margin SUV shipments (ex-China) rising to 23% of HMC's overall shipments in 2Q16E from 18% in 2Q15E – offsetting the negatives from: 1) lacklustre operating profit for its finance division throughout 2016E on higher delinquency rates and lower residual value from Hyundai Capital America (HCA), and 2) higher incentives and a significant decline in shipments from the MENA markets.

As such, we look for HMC's 2Q16 revenue and operating profit to reach KRW23,807bn and KRW1,762bn, similar to the Bloomberg-consensus forecasts of KRW23,897bn and KRW1,761bn, respectively.

HMC: 2Q16 earnings preview

(KRWbn)	2Q16E-Daiwa	2Q16E-Bbg	Diff (%)	2Q15	YoY (%)	1Q16	QoQ (%)
USD:KRW (Quarter Avg)	**1,162.10**	**1,162.10**	0.0	**1,096.90**	5.9	**1,201.00**	(3.2)
Total shipments ('000 Unit, Inc.China)	1,238			1,233	0.4	1,095	13.1
Total shipments ('000 Unit, Ex-China)	992			993	(0.2)	866	14.5
HMC (Korea)	484			498	(2.8)	400	21.0
HMI (India)	161			156	3.0	145	10.7
HAOS (Turkey)	61			60	2.0	61	(0.5)
HMMA (US)	93			91	3.0	94	(0.7)
HMMC (Czech)	89			87	2.0	90	(2.1)
HMMR (Russia)	60			59	2.0	41	46.8
HMB (Brazil)	44			43	2.0	34	28.6
BHMC & CHMC (China)	246			240	2.7	229	7.6
ASP ('000 KRW, Inc.China)	18,435			17,679	4.3	19,725	(6.5)
ASP ('000 KRW, Ex-China)	18,373			17,815	3.1	19,499	(5.8)
HMC (Korea)	22,772			23,331	(2.4)	25,355	(10.2)
HMI (India)	9,672			7,848	23.2	9,390	3.0
HAOS (Turkey)	14,334			13,644	5.1	14,192	1.0
HMMA (US)	22,047			18,805	17.2	21,981	0.3
HMMC (Czech)	19,732			15,755	25.2	19,440	1.5
HMMR (Russia)	8,853			8,756	1.1	8,431	5.0
HMB (Brazil)	9,746			10,299	(5.4)	9,462	3.0
BHMC & CHMC (China)	18,682			17,116	9.2	20,580	(9.2)
Revenue	**23,807**	**23,897**	(0.4)	**22,822**	4.3	**22,351**	6.5
Auto	**18,436**			**17,823**	3.4	**17,239**	6.9
HMC (Korea)	11,030			11,629	(5.2)	10,146	8.7
HMI (India)	1,555			1,225	26.9	1,364	14.0
HAOS (Turkey)	877			818	7.2	872	0.5
HMMA (US)	2,058			1,704	20.8	2,067	(0.4)
HMMC (Czech)	1,746			1,367	27.7	1,758	(0.7)
HMMR (Russia)	530			514	3.1	344	54.1
HMB (Brazil)	427			442	(3.5)	322	32.5
Others	214			124	n.m.	350	(38.8)
Finance	3,741			3,196	17.0	3,529	6.0
Others	1,630			1,802	(9.5)	1,583	3.0
COGS	18,927			18,179	4.1	18,111	4.5
Gross profit	**4,880**			**4,642**	5.1	**4,239**	15.1
Gross margin(%)	20.5			20.3	-	19	-
SG&A	3,119			2,891	7.9	2,897	7.7
Salary and Wage	833			779	7.0	774	7.7
% to Revenue	3.5			3.4	-	3.5	-
Marketing Expense	738			693	6.5	695	6.2
% to Revenue	3.1			3	-	3.1	-
Warranty Provision	262			268	n.m.	215	21.8
% to Revenue	1.1			1.2	-	1	-
Others	1,286			1,152	11.6	1,213	6.0
% to Revenue	5.4			5	-	5.4	-
Operating profit	**1,762**	**1,761**	0.0	**1,751**	0.6	**1,342**	31.2
Operating margin(%)	7.4	7.4		7.7	-	6	-
Auto	1,567			1,427	9.8	1,096	43.0
Operating margin (%)	8.5			8	-	6.4	-
Finance	187			293	(36.2)	199	(6.0)
Operating margin (%)	5			9.2	-	5.6	-
Others	49			64	(23.6)	96	(49.0)
Operating margin (%)	3			3.6	-	6.1	-
Equity method gain	430			478	(10.0)	470	(8.5)
Recurring profit	2,329			2,370	(1.7)	2,163	7.7
Recurring-profit Margin (%)	9.8			10.4	-	9.7	-
Tax	538			579.3	-	395.3	-
Tax rate (%)	23.1			24.4	-	18.3	-
Net profit	**1,791**	**1,634**	9.6	**1,790**	0.0	**1,768**	1.3
Net-profit margin (%)	7.5	6.8		7.8	-	7.9	-

Source: Company, Bloomberg, Daiwa forecasts

Looks poised for an earnings upturn in 2016 after 3 years of earnings declines

We see strong potential for HMC to record a YoY rise in operating profit for 2016, ending 3 consecutive years of downward earnings. Such a turnaround could be driven by: 1) the SUV operating margin totalling KRW265bn, thanks to SUV shipments (ex-China) rising by 187,000 units vs. 2015, and our ASP estimate of KRW20m (operating margin of 8%), both for 2016, 2) forex tailwinds of KRW456bn (see page 5, 'HMC's positive vs. negative factors), 3) higher-than-expected operating profit of KRW300bn (as per our estimates) generated by the Genesis EQ900, and 4) a KRW120bn YoY rise in BHMC's equity-method income for 2016.

We envisage these positive factors outstripping the negative factors, namely: 1) a KRW151bn YoY decline in the finance division's operating profit on the lower residual value of second-hand cars in the US, and 2) a KRW255bn increase in R&D expenses following the launch of its exclusive green cars, the Ioniq and Genesis EQ900.

We believe the upward earnings revision cycle could resume from 2H16

We expect the above-mentioned positives to become more apparent to the market in 2H16 and look for HMC's operating profit to see YoY growth of 6.6% YoY in 2H16, partly as a result of the low base in 2H15 on several negatives such as: 1) a significant HoH decline in the finance division's profit for 2H15 on rising delinquencies and lower residual value for second-hand cars for Hyundai Capital America (55% of the finance division's revenue), 2) a deterioration in HMC's operating profit generated by its emerging-market factories in Brazil and Russia on a steep decline in both these currencies and industry demand in those countries, and a 3) a HoH rise in incentives for 2H15, reflecting the aged model line-up for sedans for both the US and emerging markets.

Despite still-weak auto industry demand in Brazil and Russia, we believe the recent stabilisation of emerging-market currencies (55% of HMC's global shipments) will provide more impetus for a gradual recovery in shipments to these markets, too, where HMC currently commands market shares of 10.4% and 10.1%, respectively.

HMC: 2016E net profit (positive vs. negative factors)

Positives	Volume (units)	ASP (KRWm)	OPM (%)	NP (KRWm)
SUV	166,000	20	8	2,656
Genesis	30,000	100	10	300,000
	Forex rate	**% change**	**NP change (KRWbn)**	**NP change (%)**
KRW/USD*	1,183	4.1	540	8.0
KRW/EUR*	1,320	5.1	107	1.6
KRW/RUB**	18	(4.1)	(87)	(1.3)
KRW/BRL**	327	(5.0)	(104)	(1.5)
Forex impact in total			456	
Equity method Income	**2015**	**2016E**	**YoY change**	**YoY (%)**
BHMC	677	797	120	17.7%

VS

Negatives	NP (KRWbn)	Description
Finance division	151	Lower residual value on second-hand cars (rising OP expense) - 55% of HMC's revenue from HCA
R&D expense	255	Higher R&D expense (rising amortisation) on new luxury brand Genesis and new green-car line-up

Source: Daiwa
*Note: 1) *Daiwa forecast, 2) ** Bloomberg forecast*

Still positive on its green-car strategy

In January 2016, HMC and Kia unveiled their green-car roadmap, which outlined their aim to expand their green car line-up to 26 models by 2020, from 22 planned as of November 2014. They also planned to step up the development of new green-car technology to meet the growing demand for green cars. HMC and Kia are currently ranked 4th in terms of shipments in the green-car market with 8 models, but aim to be the No.2 maker by 2020.

HMC and Kia: expansion plan for green-car line-ups

Vehicle type	Models	2020 target
HEV	Sonata, Grandeur, Ioniq, K5, K7, Niro	10 models
PHEV	Sonata, Ioniq, K5, and Niro	8 models
EV	Ioniq, Soul, and Ray	6 models
FCEV	Tucson	2 models

Source: HMC Green-car Roadmap 2020
Note: HEV = Hybrid Electric Vehicle; PHEV = Plug-in Hybrid Electric Vehicle EV = electric vehicle; FCEV = Fuel Cell Electric Vehicle

Launching first battery-powered EV based on a green-car exclusive platform

Although we believe HMC leads its peers in terms of its presence in HEVs and FCEVs, the company plans to launch its first EV for the mass market in June 2016 for Korea and 2H16 for the US market. HMC launched its first eco-friendly model, the Ioniq, built on an exclusive platform, in 1Q16, starting with the HEV version. In June 2016, HMC will also launch its first battery-powered Ioniq EV; it also plans to launch this vehicle in the US in 2H16. The Ioniq EV packs a 28kWh lithium-ion polymer battery from LG Chemical, and features an estimated range of 110 miles, better than the Nissan Leaf's estimated range of 107 miles. The electric motor in the 2016 Ioniq has an estimated max output of 120 horsepower and 215 lb-ft. of torque through a single-speed reduction gear transmission.

Hyundai: the new Ioniq

Source: Autoblog

HMC Ioniq (2017) vs. Nissan Leaf (2016) vs. BMW i3 (2016)

	Hyundai Ioniq	Nissan Leaf	BMW i3
			
Range	155 miles	107 miles	80 miles
Battery pack	28 kWh	30 kWh	22 kWh
Torque	218 lb-ft	187 lb-ft	184 lb-ft
Time for fully charge (hour) *	1.45	1.56	1.14

Source: Companies, Daiwa
Note: charge time calculated based on charging with level 2 charger; Hyundai Ioniq refers to 2017 EV model

Valuation and recommendation

We reiterate our Buy rating and 12-month target price of KRW170,000

We reiterate our Buy (1) call on HMC and equally-weighted DCF/PER-based 12-month target price of KRW170,000. We believe HMC's risk/reward profile is still the most promising among the major global OEMs. On Bloomberg consensus numbers, HMC's 2016E PBR/ROE ratio is at a 20% discount to its 5-year average, which we believe is excessive. We expect earnings to turn upwards in 2H16.

HMC: DCF calculation and PER valuation

Target gearing (debt/capital) (%)		**40.0**
Market risk premium (%)		**11.5**
Risk-free rate (%)		**2.1**
Cost of debt (%)		**3.3**
Cost of equity (%)		**15.6**
WACC (%)		**10.40%**
Terminal Value		
	Terminal Growth Rate	2.00%
	Terminal WACC	10.40%
	Estimated Terminal Free Cash Flow (KRWbn)	8,463
	NPV of Terminal Value (KRWbn, as at 2026E)	102,764
	NPV of Terminal Value (KRWbn, as at 22 June 2016E)	36,006
DCF Valuation		
	NPV of Forecasts (KRWbn)	24,945
	NPV of Terminal Value (KRWbn)	36,006
	Enterprise Value (KRWbn)	60,951
	Less: Net Debt (KRWbn, as at end-2016E)	10,927
	Equity Value (KRWbn)	50,024
	No. Shares (m)	285
	Per Share Equity Value (KRW)	**175,229**
PER Valuation		
Target PER (x)		6.6
2016E EPS (KRW)		24,919
Per Share Value (KRW)		**164,772**
Target Price (KRW)		**170,000**

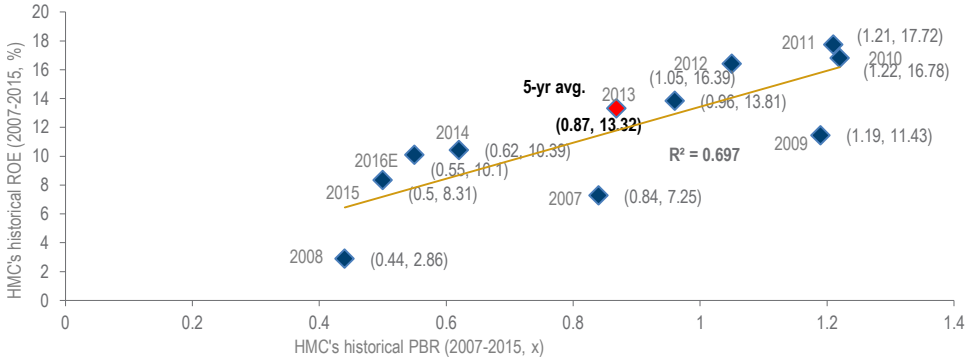
Source: Daiwa estimates and forecasts

HMC: DCF sensitivity

Discount Rate	NPV of Terminal FCF	Enterprise Value	Equity Value	Equity value per share
8.40%	57,363	85,641	74,714	261,716
8.90%	50,673	78,067	67,140	235,184
9.40%	45,010	71,554	60,628	212,372
9.90%	40,172	65,901	54,974	192,567
10.40%	**36,006**	**60,951**	**50,024**	**175,229**
10.90%	32,393	56,586	45,659	159,938
11.40%	29,242	52,710	41,784	146,363
11.90%	26,478	49,250	38,323	134,242
12.40%	24,042	46,144	35,217	123,361

Source: Daiwa estimates

HMC: PBR vs. ROE



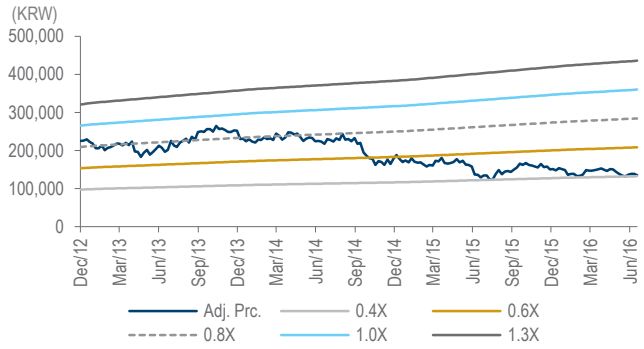
Source: Bloomberg, Daiwa

Automakers globally: valuation data

Company	Ticker	Curr.	Share Price	Daiwa Rating	Mcap (USDm)	Absolute Performance (%)			Relative Performance (%)**			PER (x)		PBR (x)		EV/ EBITDA (x)		ROE (%)		Div. Yield (%)		EPS Growth (%)	
						YTD	1M	3M	12M	1M	3M	16E	17E	16E	17E	16E	17E	16E	17E	16E	17E	16E	17E
US																							
FORD	F US	USD	13.2	Hold	52,362	(6.5)	(0.1)	(3.0)	(8.5)	(1.7)	(4.8)	6.3	6.2	1.5	1.3	2.9	2.8	29.7	23.2	5.2	4.8	11.8	1.2
GM	GM US	USD	29.3	Outperform	45,148	(13.8)	(4.1)	(8.1)	(15.8)	(5.7)	(9.8)	5.2	5.0	1.0	0.9	2.4	2.3	22.3	18.9	5.2	5.3	17.7	3.2
Europe																							
DAIMLER	DAI GR	EUR	58.8	Not rated	71,254	(24.2)	1.9	(12.2)	(18.0)	0.4	(13.0)	7.3	6.9	1.1	1.0	2.3	2.2	15.5	15.2	5.7	5.9	(3.5)	6.0
BMW	BMW GR	EUR	72.2	Not rated	53,129	(26.0)	0.9	(11.1)	(19.8)	(0.6)	(11.9)	7.4	7.3	1.0	0.9	6.2	6.0	14.2	13.5	4.6	4.8	2.6	2.4
VW	VOW GR	EUR	130.2	Not rated	72,241	(8.5)	(3.7)	(1.9)	(2.3)	(5.3)	(2.7)	7.0	6.1	0.7	0.7	1.5	1.3	9.9	10.3	1.6	2.5	3.6	15.8
Japan																							
HONDA	7267 JP	JPY	2,698	Hold	46,710	(31.0)	(8.5)	(12.9)	(14.0)	(4.1)	(6.6)	8.9	9.4	0.7	0.7	6.2	6.3	7.7	7.5	3.3	3.4	(2.9)	(5.4)
NISSAN	7201 JP	JPY	1,007	Hold	43,267	(21.3)	(3.7)	(6.9)	(4.3)	0.7	(0.7)	7.6	7.4	0.8	0.8	2.6	2.6	11.2	10.9	4.2	4.7	23.9	2.8
TOYOTA	7203 JP	JPY	5,607	Outperform	178,914	(25.1)	0.8	(8.1)	(8.1)	5.2	(1.8)	7.5	9.5	1.0	0.9	8.2	9.8	13.4	10.7	3.9	3.8	7.4	(20.7)
China																							
GWC	2333 HK	HKD	6.5	Hold	10,581	(27.7)	16.0	0.0	(22.6)	11.2	(0.6)	7.0	6.9	1.2	1.1	4.7	4.5	17.6	16.1	4.4	4.5	(11.0)	2.5
BAIC	1958 HK	HKD	5.5	Sell	5,346	(29.6)	(0.5)	(10.3)	(24.5)	(5.3)	(11.0)	9.2	8.4	0.9	0.9	4.1	3.3	10.4	10.5	3.7	4.1	15.1	9.1
Geely	175 HK	HKD	4.2	Buy	4,777	1.9	9.9	23.8	7.0	5.2	23.2	9.3	8.0	1.4	1.2	3.6	2.7	16.0	16.2	1.3	1.6	49.2	16.9
Korea																							
HYUNDAI*	005380 KS	KRW	140,000	Buy	26,804	(6.0)	6.1	(11.9)	(7.6)	3.8	(11.7)	5.9	5.6	0.4	0.4	4.4	4.0	9.7	9.4	3.3	3.7	12.4	5.2
KIA*	000270 KS	KRW	44,700	Outperform	15,749	(15.0)	(3.5)	(12.0)	(16.6)	(5.8)	(11.8)	6.3	6.0	0.7	0.6	3.6	3.3	11.2	10.7	2.7	2.9	8.6	6.2
Industry average					**48,175**	**(17.9)**	**0.9**	**(5.7)**	**(11.9)**	**(0.2)**	**(4.9)**	**7.3**	**7.1**	**1.0**	**0.9**	**4.1**	**3.9**	**14.5**	**13.3**	**3.8**	**4.0**	**10.4**	**3.5**

*Source: Bloomberg, *Daiwa forecasts.*
*Note: 1) share prices are as of 22 June 2016; 2) **Relative to each country index*

HMC: PBR bands



Source: Bloomberg, Daiwa

HMC: PER bands

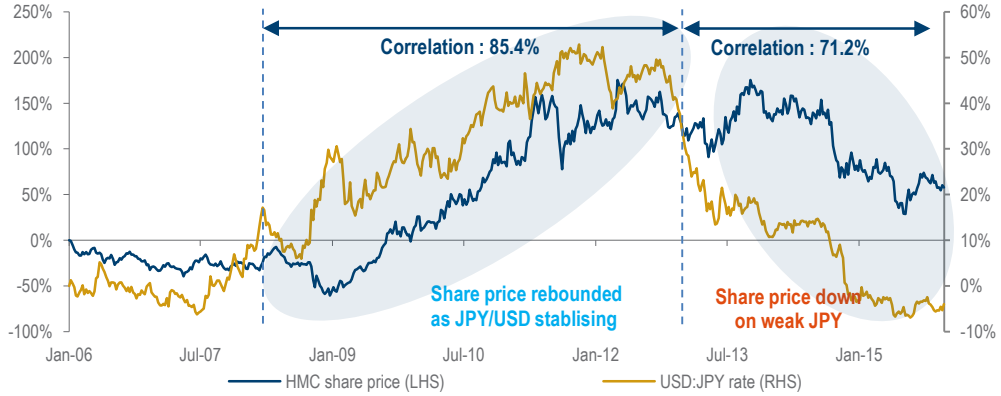
Source: Bloomberg, Daiwa

Key risks

Rapid appreciation of KRW vs. other currencies is the main risk to our call

The main risk to our rating, target price and forecasts for HMC is a rapid appreciation of the KRW against the USD, JPY, Euro, Russian Rouble and Real, which would hit HMC's operating profit. Given that HMC has factories in the US, Czech Republic, Russia, and Brazil, the KRW's rapid appreciation against these currencies could be expected to weigh on the company's earnings.

HMC: JPY:USD rate vs. HMC's share price



Source: Bloomberg, Daiwa

HMC: forex sensitivity on 2016E operating profit

		USD/JPY						
		90	95	100	105	110	115	120
USD/KRW	1,190	8.7%	7.4%	6.2%	4.9%	3.6%	2.4%	1.1%
	1,185	7.4%	6.2%	4.9%	3.7%	2.4%	1.2%	-0.1%
	1,180	6.1%	4.9%	3.7%	2.5%	1.2%	0.0%	-1.2%
	1,175	4.9%	3.7%	2.4%	1.2%	0.0%	-1.2%	-2.4%
	1,170	3.6%	2.4%	1.2%	0.0%	-1.2%	-2.4%	-3.6%
	1,165	2.3%	1.1%	0.0%	-1.2%	-2.4%	-3.6%	-4.8%
	1,160	1.1%	-0.1%	-1.3%	-2.5%	-3.6%	-4.8%	-6.0%
	1,155	-0.2%	-1.4%	-2.5%	-3.7%	-4.8%	-6.0%	-7.2%
	1,150	-1.5%	-2.6%	-3.8%	-4.9%	-6.1%	-7.2%	-8.3%

Source: Daiwa estimates

HMC: impact of USD: KRW exchange-rate movements on 2016E operating profit

(KRWbn)	KRW/USD	% change	Sales	% change	Operating profit	% change	Operating margin
	1,217	4.00%	94,154	1.2%	7,247	7.9%	7.7%
	1,205	3.00%	93,874	0.9%	7,113	6.0%	7.6%
	1,193	2.00%	93,594	0.6%	6,980	4.0%	7.5%
	1,182	1.00%	93,314	0.3%	6,847	2.0%	7.3%
Base case	1,170	0.00%	93,034	0.0%	6,714	0.0%	7.2%
	1,158	-1.00%	92,754	-0.3%	6,580	-2.0%	7.1%
	1,147	-2.00%	92,474	-0.6%	6,447	-4.0%	7.0%
	1,135	-3.00%	92,194	-0.9%	6,314	-6.0%	6.8%
	1,123	-4.00%	91,914	-1.2%	6,180	-7.9%	6.7%
Key assumptions							
% EUR-denominated revenue					30.10%		
Naked exposure_USD					47.60%		

Source: Daiwa estimates and forecasts
Note: For 2016E, USD-dominated revenue is 30.1%

HMC: impact of Euro: KRW exchange-rate movements on 2016E operating profit

(KRWbn)	KRW/EUR	%change	Sales	% change	Operating profit	% change	Operating margin
	1,352	4.0%	93,447	0.4%	6,797	1.2%	7.3%
	1,339	3.0%	93,344	0.3%	6,776	0.9%	7.3%
	1,326	2.0%	93,241	0.2%	6,756	0.6%	7.2%
	1,313	1.0%	93,137	0.1%	6,735	0.3%	7.2%
Base case	1,300	0.0%	93,034	0.0%	6,714	0.0%	7.2%
	1,287	-1.0%	92,931	-0.1%	6,693	-0.3%	7.2%
	1,274	-2.0%	92,828	-0.2%	6,672	-0.6%	7.2%
	1,261	-3.0%	92,724	-0.3%	6,651	-0.9%	7.2%
	1,248	-4.0%	92,621	-0.4%	6,630	-1.2%	7.2%
Key assumptions							
% EUR-denominated revenue					11.10%		
Naked exposure_EUR					20.30%		

Source: Daiwa estimates and forecasts
Note: For 2016E, EUR-dominated revenue is 11.1%

HMC: impact of Russian Rouble: KRW exchange-rate movements on 2016E operating profit

(KRWbn)	KRW/RUB	% change	Sales	% change	Operating profit	% change	Operating margin
	16.7	4.00%	93,224	0.20%	6,903	2.50%	7.40%
	16.6	3.00%	93,176	0.20%	6,856	1.80%	7.40%
	16.4	2.00%	93,129	0.10%	6,808	1.10%	7.30%
	16.3	1.00%	93,081	0.10%	6,761	0.40%	7.30%
Base case	16.1	0.00%	93,034	0.00%	6,714	0.00%	7.20%
	15.9	-1.00%	92,987	-0.10%	6,666	-0.40%	7.20%
	15.8	-2.00%	92,939	-0.10%	6,619	-1.10%	7.10%
	15.6	-3.00%	92,892	-0.20%	6,571	-1.80%	7.10%
	15.5	-4.00%	92,844	-0.20%	6,524	-2.50%	7.00%
Key assumption							
% RUB-denominated revenue					5.10%		
Naked exposure_RUB					100.0%		

Source: Daiwa estimates and forecasts
Note: For 2016E, Rouble-dominated revenue is 5.1%

HMC: impact of Brazilian Real: KRW exchange-rate movements on 2016E operating profit

(KRWbn)	KRW/BRL	% change	Sales	% change	Operating profit	% change	Operating margin
	320.5	4.00%	93,224	0.20%	6,903	2.50%	7.40%
	317.4	3.00%	93,176	0.20%	6,856	1.80%	7.40%
	314.3	2.00%	93,129	0.10%	6,808	1.10%	7.30%
	311.3	1.00%	93,081	0.10%	6,761	0.40%	7.30%
Base case	308.2	0.00%	93,034	0.00%	6,714	0.00%	7.20%
	305.1	-1.00%	92,987	-0.10%	6,666	-0.40%	7.20%
	302	-2.00%	92,939	-0.10%	6,619	-1.10%	7.10%
	298.9	-3.00%	92,892	-0.20%	6,571	-1.80%	7.10%
	295.8	-4.00%	92,844	-0.20%	6,524	-2.50%	7.00%
Key assumption							
% RUB-denominated revenue					2.50%		
Naked exposure_BRL					100.0%		

Source: Daiwa estimates
Note: For 2016E, Real-dominated revenue is 2.5%

A secondary risk to our call would be a prolonged labour strike in Korea or if HMC were to accept the labour union's proposal of including bonuses in ordinary wages. However, we note that HMC's employee rules state that workers must work 15 days per month to be eligible for a bonus, which suggests to us that the probability of the union's demands being accepted (ie, regular bonuses being included in ordinary wages) is low.

If bonuses were to be included in ordinary wages, we estimate that the overall negative impact on HMC's 2016E and 2017E EPS would be only 7.9% and 7.5%, respectively.

HMC: change in compensation scheme (KRWm)

	HMC	Assumption
Current compensation scheme (KRWm, per worker)		
(1) Average ordinary wage	34.2	
(2) Overtime wages [(1) x 62.5%]	21.4	(A) Monthly Ordinary wage x 750%
(3) Bonus payments and other works	23.3	
Miscellaneous wages	21.0	
Total annual wages	99.9	(B) 2015 company annual report
New compensation scheme (KRWm, per worker)		
Average ordinary wage (1) +(3)	59.5	
(4) Overtime wage [{(1)+(3)} x 62.5%]	37.2	
Additional wage per worker (4)-(2)	15.8	
Total annual wage	115.7	

Source: Daiwa estimates

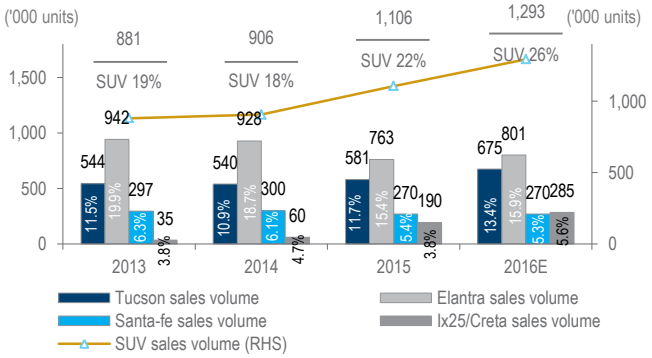
HMC: potential impact on earnings

	HMC	Assumption
Additional wage per worker (1) (KRWm)	15.8	
No. of factory workers eligible (2)	34,000	
Scenario 1. Without a retroactive application		
Total additional wage (KRWbn) (1) x (2)	537	
2016E net profit (KRWbn)	6,811	Daiwa forecast
% of 2016E net profit	**7.9**	
2016E net profit (KRWbn)	7,166	Daiwa forecast
% of 2017E net profit	**7.5**	
Scenario 2. With a retroactive application		
Total amount to reclaim for 3-year total (KRWbn)	1,612	3-year CAGR of 6%
2016E net profit (KRWbn)	6,811	
% of 2016E net profit	**23.7**	
2017E net profit (KRWbn)	7,166	
% of 2017E net profit	**22.5**	

Source: Daiwa estimates and forecasts

Appendix 1

HMC: refresh rate and SUV proportion



Source: Company, Daiwa forecasts

HMC: new model cycle

HMC	*1H16*	*2H16*	*2017*
Korea	Accent	Sonata PHEV	new PHEV
	Avante	G80	Grandeur
	IONIQ	Sonata F/L	Santafe
US	EQ900	Accent	G80
	New i30	Elantra	new PHEV
		IONIQ	
China	Verna	EQ900	G80
		Elantra	new PHEV
		Sonata Hybrid	
EU	Avante	IONIQ	G80
	EQ 900		new PHEV

Source: Company, Daiwa

Daiwa Capital Markets

Hyundai Mobis (012330 KS)

Target price: **KRW290,000** (from KRW290,000)

Share price (22 Jun): **KRW264,000** | Up/downside: **+9.8%**

5 4 3 **2** 1

Outperform (unchanged)

Potential long-term beneficiary of green cars and ADAS

- 2Q16E earnings tracking stronger
- Poised to benefit from HMG's rising presence in smart/green cars
- Reiterating Outperform (2) and 12-month TP of KRW290,000

Sung Yop Chung
(82) 2 787 9157
sychung@kr.daiwacm.com

What's new: Hyundai Mobis (Mobis) is scheduled to report its 2Q16 results on 27 July 2016, which we expect to beat the market's forecasts. We remain upbeat on the long-term growth trajectory for both Mobis' green and smart-car businesses, backed by the rising prominence of these segments within parent company HMG.

What's the impact: Mobis's key business is its module and core (M&C) parts division, for which we forecast the 2Q16 operating margin to expand by 1.1pp YoY to 5.8%, on an improved product mix and stronger YoY shipments for HMG, its captive customer, in China. For 1Q16, China accounted for 21.6% of Mobis's operating profit, and we expect this proportion to rise by 3.4pp to 25% in 2Q16E. Meanwhile, we expect the 2Q16 operating profit of the after-service parts business (its other main earnings driver) to benefit from the stronger USD and Euro YoY, vs. the KRW).

The stronger product mix and China business in particular prompt us to forecast 2Q16E revenue and operating profit of KRW9,603tn and KRW843bn, which are respectively 2.7% and 10.5% higher than the consensus forecasts.

We reiterate our positive stance on the long-term earnings growth potential of the company's ADAS products, as Mobis is still ahead in terms of the number of ADAS patent applications it has filed vs. the major Pan-Asia auto-parts players. For 2015, its ADAS contribution was 3%, but we expect this to grow to 10% of total revenue by 2020. Mobis also manufactures various products for eco-friendly vehicles, and given that we expect both HMC's and Kia's green-car shipment growth to outpace that of the industry until 2020, we expect its revenue from eco-friendly products to rise to 5% of its overall revenue by 2020, from 1.5% for 2016E.

What we recommend: We reiterate our Outperform (2) rating on the stock, especially as the PER gap between HMC and Mobis has widened to 40% from 38% over the past month (vs. a past-6-month average premium of 30.6%). We maintain our equally-weighted SOTP/DCF/PER-based 12-month target price of KRW290,000. We fine-tune down our 2016-17E earnings to factor the 1Q16 numbers into our model. The key risks to our call: a rapid appreciation of the KRW vs. the USD and EUR, and stronger-than-expected pricing pressure from HMG's OEMs.

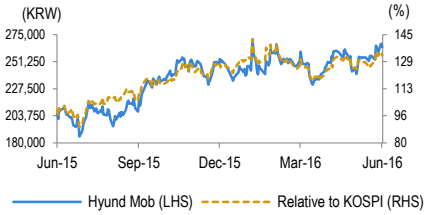
How we differ: Our 2016-18E EPS are 4-6% higher than the Bloomberg consensus as we believe the street has yet to incorporate a recovery in Mobis's China business and the product-mix improvements .

Forecast revisions (%)

Year to 31 Dec	16E	17E	18E
Revenue change	-	-	-
Net profit change	(0.8)	(0.4)	-
Core EPS (FD) change	(0.8)	(0.4)	-

Source: Daiwa forecasts

Share price performance



12-month range	185,500-271,000
Market cap (USDbn)	22.21
3m avg daily turnover (USDm)	32.54
Shares outstanding (m)	97
Major shareholder	Kia Motors (16.9%)

Financial summary (KRW)

Year to 31 Dec	16E	17E	18E
Revenue (bn)	38,380	41,007	43,566
Operating profit (bn)	3,284	3,554	3,779
Net profit (bn)	3,564	3,747	3,893
Core EPS (fully-diluted)	36,617	38,490	39,996
EPS change (%)	15.1	5.1	3.9
Daiwa vs Cons. EPS (%)	5.6	5.2	4.2
PER (x)	7.2	6.9	6.6
Dividend yield (%)	1.5	1.8	1.9
DPS	4,000	4,700	5,000
PBR (x)	0.9	0.8	0.7
EV/EBITDA (x)	4.6	4.2	3.8
ROE (%)	13.0	12.1	11.4

Source: FactSet, Daiwa forecasts

See important disclosures, including any required research certifications, beginning on page 134

Financial summary

Key assumptions

Year to 31 Dec	2011	2012	2013	2014	2015	2016E	2017E	2018E
A/S parts' revenue growth (YoY %)	13.2	9.2	5.6	0.7	0.7	5.8	5.3	3.7
Module's revenue growth (YoY %)	20.3	15.1	12.3	6.8	3.0	6.7	7.2	6.8
A/S parts' operating profit margin (%)	22.7	22.6	21.1	21.0	22.0	22.9	22.8	22.7
Module's operating profit margin (%)	6.9	6.8	6.3	6.3	5.4	5.5	5.7	5.9

Profit and loss (KRWbn)

Year to 31 Dec	2011	2012	2013	2014	2015	2016E	2017E	2018E
Module and Core-parts Revenues	20,903	24,060	27,022	28,864	29,716	31,707	33,984	36,280
A/S Parts Revenues	5,391	5,889	6,220	6,263	6,304	6,673	7,023	7,286
Other Revenue	(0)	840	956	(0)	0	(0)	(0)	(0)
Total Revenue	**26,295**	**30,789**	**34,199**	**35,127**	**36,020**	**38,380**	**41,007**	**43,566**
Other income	882	1,018	1,139	1,170	1,218	1,279	1,353	1,438
COGS	(22,257)	(26,245)	(29,386)	(30,003)	(30,872)	(32,884)	(35,020)	(37,205)
SG&A	(1,400)	(1,638)	(1,889)	(1,982)	(2,213)	(2,211)	(2,433)	(2,581)
Other op.expenses	(882)	(1,018)	(1,139)	(1,170)	(1,218)	(1,279)	(1,353)	(1,438)
Operating profit	**2,637**	**2,906**	**2,924**	**3,141**	**2,935**	**3,284**	**3,554**	**3,779**
Net-interest inc./(exp.)	23	69	119	163	100	94	103	112
Assoc/forex/extraord./others	1,402	1,632	1,491	1,355	1,178	1,408	1,332	1,287
Pre-tax profit	**4,063**	**4,607**	**4,535**	**4,659**	**4,213**	**4,786**	**4,989**	**5,178**
Tax	(1,036)	(1,065)	(1,138)	(1,181)	(1,131)	(1,227)	(1,247)	(1,294)
Min. int./pref. div./others	0	0	0	0	0	0	0	0
Net profit (reported)	**3,027**	**3,542**	**3,396**	**3,478**	**3,082**	**3,559**	**3,742**	**3,883**
Net profit (adjusted)	**3,023**	**3,559**	**3,422**	**3,508**	**3,097**	**3,564**	**3,747**	**3,893**
EPS (reported)(KRW)	**31,094**	**36,387**	**34,891**	**35,732**	**31,656**	**36,565**	**38,439**	**39,893**
EPS (adjusted)(KRW)	**31,054**	**36,556**	**35,149**	**36,039**	**31,814**	**36,617**	**38,490**	**39,996**
EPS (adjusted fully-diluted)(KRW)	**31,054**	**36,556**	**35,149**	**36,039**	**31,814**	**36,617**	**38,490**	**39,996**
DPS (KRW)	**1,750**	**1,900**	**1,950**	**3,000**	**3,500**	**4,000**	**4,700**	**5,000**
EBIT	**2,637**	**2,906**	**2,924**	**3,141**	**2,935**	**3,284**	**3,554**	**3,779**
EBITDA	**3,519**	**3,924**	**4,064**	**4,311**	**4,152**	**4,563**	**4,907**	**5,217**

Cash flow (KRWbn)

Year to 31 Dec	2011	2012	2013	2014	2015	2016E	2017E	2018E
Profit before tax	4,063	4,607	4,535	4,659	4,213	4,786	4,989	5,178
Depreciation and amortisation	882	1,018	1,139	1,170	1,218	1,279	1,353	1,438
Tax paid	(1,036)	(1,065)	(1,138)	(1,181)	(1,131)	(1,227)	(1,247)	(1,294)
Change in working capital	(388)	(3,712)	(1,490)	(1,425)	2,029	(386)	(443)	(194)
Other operational CF items	(1,361)	2,233	(1,118)	(410)	(2,634)	(388)	(388)	(387)
Cash flow from operations	**2,159**	**3,081**	**1,928**	**2,812**	**3,695**	**4,064**	**4,264**	**4,740**
Capex	(716)	(858)	(652)	(1,070)	(4,080)	(1,654)	(1,820)	(2,002)
Net (acquisitions)/disposals	(2,135)	(1,339)	(1,800)	(1,082)	(192)	(448)	(494)	(544)
Other investing CF items	(1)	215	(1)	(0)	(19)	(10)	(10)	(10)
Cash flow from investing	**(2,852)**	**(1,982)**	**(2,453)**	**(2,152)**	**(4,291)**	**(2,112)**	**(2,324)**	**(2,556)**
Change in debt	423	(160)	392	(69)	484	(52)	(48)	(43)
Net share issues/(repurchases)	0	0	0	0	0	0	0	0
Dividends paid	(145)	(170)	(185)	(190)	(292)	(389)	(458)	(487)
Other financing CF items	0	35	0	36	(22)	(1,337)	(576)	(731)
Cash flow from financing	**279**	**(295)**	**208**	**(222)**	**170**	**(1,779)**	**(1,081)**	**(1,261)**
Forex effect/others	0	0	0	0	0	0	0	0
Change in cash	**(414)**	**804**	**(317)**	**438**	**(427)**	**173**	**860**	**923**
Free cash flow	1,443	2,223	1,276	1,743	(385)	2,410	2,445	2,738

Source: FactSet, Daiwa forecasts

Financial summary continued …

Balance sheet (KRWbn)

As at 31 Dec	2011	2012	2013	2014	2015	2016E	2017E	2018E
Cash & short-term investment	3,328	6,597	7,385	8,964	6,816	7,412	8,069	8,769
Inventory	1,837	1,968	2,314	2,391	2,562	2,639	2,718	2,800
Accounts receivable	4,749	5,195	5,628	6,117	6,343	6,597	6,729	6,796
Other current assets	149	183	245	250	203	243	292	350
Total current assets	**10,064**	**13,943**	**15,572**	**17,722**	**15,925**	**16,892**	**17,809**	**18,716**
Fixed assets	3,319	3,714	3,887	4,435	7,947	9,282	10,783	12,452
Goodwill & intangibles	861	1,047	979	967	931	978	1,026	1,078
Other non-current assets	8,332	11,343	13,992	15,988	12,972	13,362	14,030	14,732
Total assets	**22,576**	**30,047**	**34,430**	**39,112**	**37,775**	**40,513**	**43,648**	**46,978**
Short-term debt	2,336	1,759	1,565	1,401	1,565	1,486	1,412	1,341
Accounts payable	3,952	4,440	4,738	5,262	5,379	5,971	6,449	7,158
Other current liabilities	739	996	1,031	1,395	1,347	1,414	1,485	1,559
Total current liabilities	**7,027**	**7,195**	**7,334**	**8,058**	**8,291**	**8,871**	**9,346**	**10,059**
Long-term debt	328	726	1,200	1,126	1,305	1,332	1,358	1,385
Other non-current liabilities	1,427	5,087	5,703	6,642	2,502	1,048	389	(428)
Total liabilities	**8,781**	**13,007**	**14,237**	**15,826**	**12,099**	**11,251**	**11,092**	**11,015**
Share capital	491	491	491	491	491	491	491	491
Reserves/R.E./others	13,303	16,549	19,702	22,795	25,185	28,771	32,065	35,471
Shareholders' equity	**13,795**	**17,040**	**20,193**	**23,286**	**25,676**	**29,262**	**32,556**	**35,962**
Minority interests	0	0	0	0	0	0	0	0
Total equity & liabilities	**22,576**	**30,047**	**34,430**	**39,112**	**37,775**	**40,513**	**43,648**	**46,978**
EV	25,034	21,586	21,079	19,262	21,752	21,105	20,400	19,656
Net debt/(cash)	**(665)**	**(4,112)**	**(4,620)**	**(6,437)**	**(3,946)**	**(4,594)**	**(5,299)**	**(6,042)**
BVPS (KRW)	**141,710**	**175,047**	**207,442**	**239,215**	**263,768**	**303,721**	**337,914**	**373,270**

Key ratios (%)

Year to 31 Dec	2011	2012	2013	2014	2015	2016E	2017E	2018E
Sales (YoY)	18.7	17.1	11.1	2.7	2.5	6.6	6.8	6.2
EBITDA (YoY)	8.8	11.5	3.6	6.1	(3.7)	9.9	7.5	6.3
Operating profit (YoY)	13.1	10.2	0.6	7.4	(6.6)	11.9	8.2	6.3
Net profit (YoY)	20.7	17.7	(3.9)	2.5	(11.7)	15.1	5.1	3.9
Core EPS (fully-diluted) (YoY)	20.7	17.7	(3.9)	2.5	(11.7)	15.1	5.1	3.9
Gross-profit margin	15.4	14.8	14.1	14.6	14.3	14.3	14.6	14.6
EBITDA margin	13.4	12.7	11.9	12.3	11.5	11.9	12.0	12.0
Operating-profit margin	10.0	9.4	8.6	8.9	8.1	8.6	8.7	8.7
Net profit margin	11.5	11.6	10.0	10.0	8.6	9.3	9.1	8.9
ROAE	25.2	23.1	18.4	16.1	12.7	13.0	12.1	11.4
ROAA	15.2	13.5	10.6	9.5	8.1	9.1	8.9	8.6
ROCE	18.3	16.2	13.8	12.9	10.8	10.8	10.5	10.2
ROIC	17.3	17.1	15.4	14.5	11.1	10.5	10.3	9.9
Net debt to equity	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Effective tax rate	25.5	23.1	25.1	25.3	26.9	25.6	25.0	25.0
Accounts receivable (days)	60.4	58.9	57.8	61.0	63.1	61.5	59.3	56.7
Current ratio (x)	1.4	1.9	2.1	2.2	1.9	1.9	1.9	1.9
Net interest cover (x)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Net dividend payout	5.6	5.2	5.6	8.4	11.1	10.9	12.2	12.5
Free cash flow yield	5.6	8.6	5.0	6.8	n.a.	9.4	9.5	10.7

Source: FactSet, Daiwa forecasts

Company profile

Mobis is the sole distributor of Hyundai/Kia's after-sales parts globally and the largest auto-parts company in Korea. It has two major business divisions: 1) module-assembly and key auto-components manufacturing (ABS, airbags, etc.), which accounts for 60% of revenue, and 2) after-sales parts, which accounts for 40%.

Long-term beneficiary of green cars and ADAS

2Q16E earnings tracking stronger

Mobis' 2Q16E earnings should stage a strong rebound YoY on the recovery of HMG's China shipments

Mobis is scheduled to report its 2Q16E earnings at the end of July 2016. We still look for the 2Q16 operating margin for its M&C parts division to rise by 1.1pp YoY to 5.8%, on a better product mix from an increase in shipments of SUVs and large- and premium-sedan shipments, and because of HMG's stronger YoY shipments in China, to 397,500 units (+6.5% YoY).

China contributed 21.6% of Mobis' 1Q16 operating profit, and we expect its contribution to rise to by 3.4pp to 25% in 2Q16E. Also, we expect a stronger USD and Euro YoY against the Won to have a positive impact on the company's after-service parts gross profit.

Accordingly, we expect Mobis' 2Q16E revenue and operating profit to reach KRW9,603bn and KRW843bn, respectively, 2.7% and 10.5% higher than the Bloomberg consensus forecasts, and representing growth of 9.1% YoY and 26.1% YoY. For 2015, the company reported revenue of KRW36,020bn and net profit of KRW3,082bn; for 2016E, we expect revenue to expand to KRW38,380bn and net profit to KRW3,559bn, respectively (up 6.5% and 15.5% YoY, respectively).

Mobis: 2Q16E earnings preview

(KRWbn)	2Q16E-Daiwa	2Q16E-Bbg	Diff (%)	2Q15	YoY(%)	1Q16	QoQ (%)
USD/KRW (Avg)	1,162.1	1,162.1	0.0	1,096.9	5.9	1,201.1	(3.2)
Revenue	**9,603**	**9,352**	**2.7**	**8,802**	**9.1**	**9,340**	**2.8**
Module and Core parts	7,937			7,215	10.0	7,677	3.4
A/S Parts	1,667			1,587	5.0	1,663	0.2
Operating profit	**843**	**763**	**10.5**	**669**	**26.1**	**718**	**17.3**
OP margin (%)	8.8	8.2		7.6		7.7	
Module and Core-parts	460			338	35.8	346	32.9
OP margin (%)	5.8			4.7		4.5	
A/S Parts	383			373	2.7	373	2.9
OP margin (%)	23.0			23.5		22.4	
Recurring Profit	1,226			1,137	7.8	1,101	11.4
RP Margin (%)	12.8			12.9		11.8	
Tax	306			268		306	
Tax rate (%)	25.0			23.6		27.8	
Net profit	**919**	**839**	**9.6**	**858**	**7.1**	**795**	**15.6**
NP margin (%)	9.6	9.0		9.7		8.5	

Source: Company, Bloomberg, Daiwa forecasts

Poised to benefit from HMG's rising presence in green cars and smart cars

An increase in the number of ADAS parts by 2020 in HMG's cars would be a positive for earnings accretion, in our view

We continue to highlight ADAS products as an emerging earnings-growth driver for Mobis over the next few years. From 3.6% in 2014, we forecast the contribution of ADAS products to Mobis' revenue to rise to 9.6% by 2020, given that more vehicles will likely incorporate ADAS parts by then.

Our view of ADAS as an earnings-growth driver is predicated on the following assumptions: 1) we expect HMC and Kia's combined global shipments (including China) to rise by 24.8% to 10.0m units for 2020, from 8.0m for 2014, 2) HMG's adoption rate of ADAS products should rise to 5.0% for 2020, from 2.5% for 2015, as ADAS products find their way into high-volume products, and 3) the content-per-vehicle of ADAS products should increase to KRW 1,028,993/car for 2020, from KRW 484,934/car for 2015.

Mobis: 2Q16E earnings preview

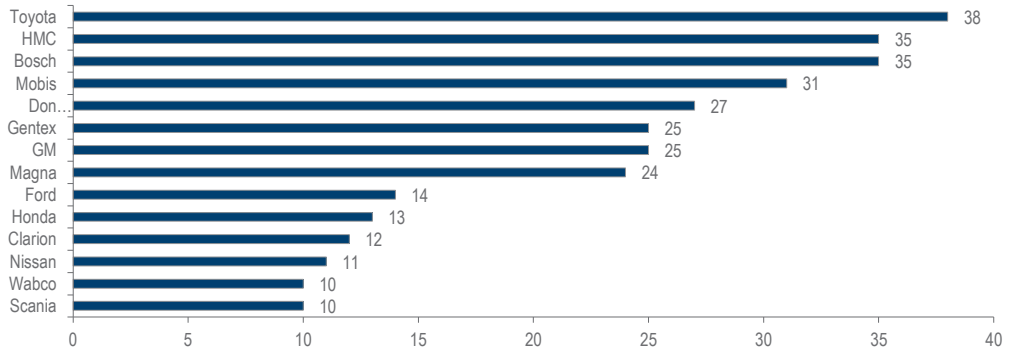
	2015	2016E	2020E
1) Auto revenue derived from HMG (KRWbn)	122,201	121,634	158,124
2) HMG's combined shipments (Ex-China) ('000)	6,300	6,247	7,683
3) ASP ('000 KRW) ([1]/[2])	19,397	19,472	20,580
4) Adoption rate of ADAS products (%)	2.5	3.5	5.0
5) CPV (KRW) ([3]x[4])	484,934	681,510	1,028,993
6) HMG's combined shipments (Inc. China) ('000)	7,993	7,996	9,835
7) Mobis M/S for HMG (%)	70	70	70
8) ADAS revenue for Mobis (KRWbn) ([5]x[6]x[7])	2,713	3,815	7,084
9) Total revenue (KRWbn)	36,020	41,007	48,032
10) Revenue proportion of ADAS (%) ([8]/[9])	7.5%	9.3%	14.7%

Source: Company, Daiwa forecasts
Note: M/S = Market Share, ASP = Average Selling Price, CPV = Content per Vehicle

Mobis has filed the third highest number of ADAS patent applications in Asia

Furthermore, as shown in the following chart, Mobis has filed a large number of patents for ADAS products among the Pan-Asia auto-parts makers (#3 behind Toyota and HMC). This further strengthens our positive view that its ADAS products will become more earnings accretive until 2020.

ADAS: patent applications by the major players



Source: KATS, KSA, Daiwa
Note: based on cumulative figures over 1980-2014

It should also benefit from an increase in HMG's green-car shipments

Mobis also develops and makes industry-leading battery management systems (BMS), driving motors, power controllers, invertors, and convertors for eco-friendly vehicles. BMS is a key component in HEVs, plug-in electric vehicles (PHEVs) and EVs, and is used to check the voltage, current and temperature of all batteries in a car in real time. A BMS prevents a battery from overcharging or accidentally discharging of cells, greatly enhancing the thermal stability of the vehicle and its reliability. Better thermal stability and precise monitoring are becoming more important as the range of green cars becomes greater.

Following the development of a new BMS for HMG's cars in 2014, our market research suggests that Mobis could announce its entry to the climate control/thermal energy management business (possibly including EV compressors for HMG's eco-friendly cars) as early as 4Q16E. As we still expect HMC's and Kia's green-car shipment growth to outpace that of the industry until 2020, we continue to expect Mobis' revenue for eco-friendly products to rise to 5% of its overall revenue by 2020, from 1.5% currently.

Mobis: current product offering for eco-friendly vehicles: BMS

Source: Company

Mobis: current product offering for eco-friendly vehicles: traction motor

Source: Company

Mobis: current product offering for eco-friendly vehicles: inverter

Source: Company

Mobis: current product offering for eco-friendly vehicles: converter

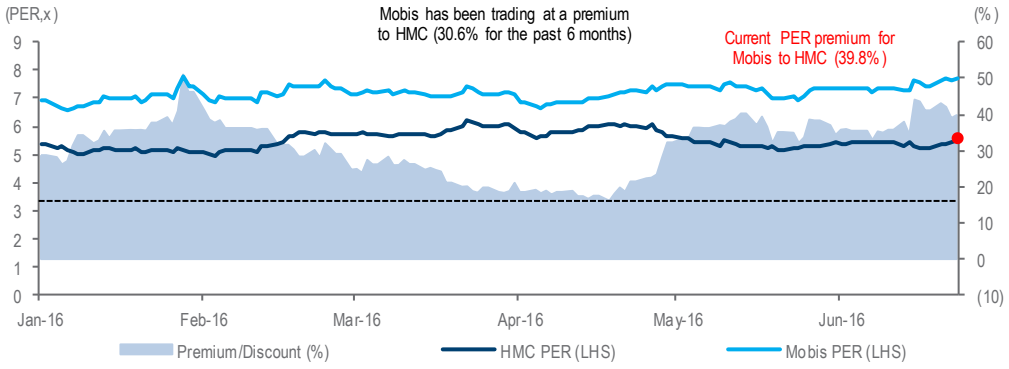
Source: Company

Valuation and recommendation

Reiterate Outperform (2) rating and 12-month TP of KRW290,000

We reiterate our Outperform (2) rating on the stock, as the PER gap between HMC and Mobis has widened to 40% from 38.0% for the past month (vs. the past-6-month average of 30.6%). We maintain our equally-weighted SOTP/DCF/PER-based 12-month target price of KRW290,000.

HMC and Mobis: PER gap



Source: Bloomberg, Daiwa

Mobis: DCF calculation

Target gearing (debt/capital) (%)	**42.0**
Market risk premium (%)	**11.5**
Risk-free rate (%)	**2.1**
Cost of debt (%)	**3.4**
Cost of equity (%)	**15.0**
WACC (%)	9.8%
Terminal Value	
Terminal Growth Rate	2.0%
Terminal WACC	9.8%
Estimated Terminal Free Cash Flow (KRWbn)	2,029
NPV of Terminal Value (KRWbn, as at 2026)	26,504
NPV of Terminal Value (KRWbn, as at 22 June 2016)	9,740
DCF Valuation	
NPV of Forecasts (KRWbn)	13,989
NPV of Terminal Value (KRWbn)	9,740
Enterprise Value (KRWbn)	23,729
Less: Net Debt (KRWbn, end-2016E)	4,594
Equity Value (KRWbn)	28,323
No. Shares (m)	97
Per Share Equity Value (KRW)	**290,962**

Source: Daiwa estimates and forecasts

Mobis: DCF sensitivity

Discount Rate	NPV of Terminal FCF	Enterprise Value	Equity Value	Equity value Per share
8.40%	13,640	28,558	33,152	340,563
8.90%	12,044	26,621	31,215	320,665
9.40%	10,693	24,941	29,535	303,410
9.90%	9,539	23,470	28,064	288,300
9.81%	**9,740**	**23,729**	**28,323**	**290,962**
10.90%	7,685	21,014	25,608	263,071
11.40%	6,934	19,978	24,572	252,424
11.90%	6,276	19,044	23,638	242,827
12.40%	5,696	18,197	22,791	234,127

Source: Daiwa estimates and forecasts

Mobis: SOTP and PER-based valuations

SOTP valuation	A/S parts	Module & Core parts	Total
2016E revenue (KRWbn)	6,673	31,707	38,380
2016E EBITDA (KRWbn)	2,282	2,282	4,563
Target EV/EBITDA multiple	**4.5x**	**2.3x**	
Divisional EV (KRWbn)	10,267	5,289	15,556
Value of affiliate holdings (KRWbn)			7,522
Total EV (KRWbn)			23,078
Net debt (KRWbn, end-2016E)			(4,594)
Net equity value (KRWbn)			27,672
No. of shares (m)			97
Per Share Equity Value (KRW)			**284,275**
PER-based valuation			
2016E EPS (KRW)			36,617
Target PER multiple (x)			8.1x
Per Share Equity Value (KRW)			**294,763**

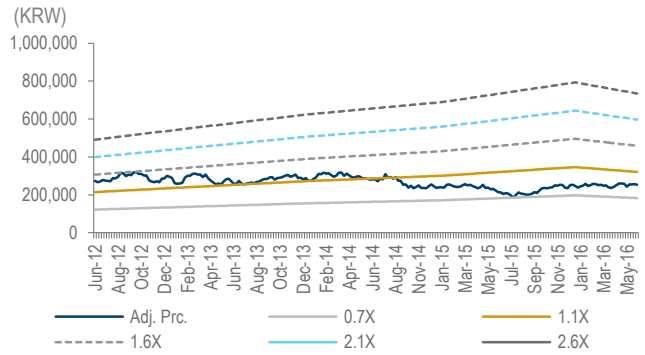
Source: Daiwa forecasts

Auto-parts makers globally: valuations

Company	Ticker	Curr.	Share Price	Daiwa Rating	Mcap (USDm)	Absolute Performance (%)			Relative Performance (%)			PER (x)		PBR (x)		EV/ EBITDA (x)		ROE (%)		Div. Yield (%)		EPS growth (%)	
						YTD	1M	3M	12M	1M	3M	16E	17E	16E	17E	16E	17E	16E	17E	16E	17E	16E	17E
US																							
DELPHI AUTOMOTIVE	DLPH US	USD	69.2	Outperform	18,844	(19.5)	3.4	(5.8)	(20.5)	1.8	(7.5)	11.7	9.9	5.9	4.6	8.0	7.3	60.1	49.6	1.7	1.8	16.4	15.0
Autoliv	ALV US	USD	122.8	Hold	10,804	(1.8)	1.0	7.4	2.6	(0.7)	5.6	17.6	15.8	2.9	2.6	8.7	8.1	16.9	17.1	1.9	2.1	10.1	10.2
JOHNSON CONTROLS	JCI US	USD	44.2	Not rated	28,781	12.4	3.4	15.4	(12.5)	1.8	13.6	11.3	10.3	2.6	2.2	8.5	7.8	21.0	22.1	2.6	2.7	14.9	9.9
BORGWARNER	BWA US	USD	33.4	Not rated	7,214	(23.3)	0.9	(11.7)	(43.7)	(0.7)	(13.5)	12.7	9.2	1.9	1.6	6.3	6.0	19.1	19.2	1.6	1.6	9.2	11.1
VISTEON	VC US	USD	72.8	Not rated	2,470	(36.6)	1.5	(8.1)	(31.3)	(0.2)	(9.9)	19.6	16.3	4.1	3.3	6.8	6.1	16.2	19.5	0.0	0.0	48.3	19.8
Japan																							
DENSO	6902 JP	JPY	3,680	Outperform	31,082	(36.7)	(11.5)	(17.7)	(18.9)	(7.1)	(11.4)	11.5	11.7	0.9	0.9	4.8	4.8	7.6	7.4	3.2	3.3	(3.4)	(1.9)
AISIN SEIKI	7259 JP	JPY	4,190	Outperform	11,796	(20.0)	(0.1)	(3.6)	(0.9)	4.3	2.7	12.7	12.2	1.0	1.0	4.5	4.3	8.0	8.2	2.4	2.5	11.6	4.2
NSK	6471 JP	JPY	816	Hold	4,298	(38.5)	(14.2)	(21.9)	(36.1)	(9.8)	(15.7)	6.8	9.6	0.9	0.9	4.3	5.1	13.7	10.0	4.2	4.6	6.8	(2.9)
Korea																							
HYUNDAI MOBIS*	012330 KS	KRW	264,000	Outperform	22,309	7.1	8.4	1.5	31.5	6.1	1.8	7.2	6.9	0.9	0.8	4.6	4.2	13.0	12.1	1.5	1.8	15.1	5.1
MANDO*	204320 KS	KRW	223,000	Buy	1,818	34.7	13.2	36.8	82.2	10.9	37.0	10.7	8.9	1.2	1.0	6.7	5.9	13.3	13.9	2.3	2.9	56.2	19.2
HYUNDAI WIA*	011210 KS	KRW	92,500	Outperform	2,184	(17.4)	3.2	(19.2)	(10.1)	0.9	(19.0)	7.5	5.8	0.7	0.7	4.4	3.4	10.2	11.9	1.5	1.9	3.0	29.2
Hanon Systems*	018880 KS	KRW	11,300	Buy	5,236	8.9	(1.3)	20.0	55.5	(3.6)	20.2	16.1	13.7	3.0	2.8	9.1	7.9	19.5	21.0	2.2	2.7	62.4	17.7
Others																							
Nexteer	1316 HK	HKD	7.5	Buy	2,412	(13.1)	(4.6)	(8.0)	9.4	(9.3)	(8.6)	10.0	8.9	2.4	1.9	4.9	4.0	26.0	23.8	2.0	2.3	17.2	12.3
Continental AG	CON GR	EUR	191	Not rated	(15.1)	3.2	(2.7)	(0.3)	1.7	(3.5)	12.5	11.6	2.5	2.2	6.5	6.2	21.6	19.9	2.2	2.4	6.2	7.7	(15.1)
BASF SE	BAS GR	EUR	70	Not rated	(0.6)	4.7	5.0	(4.5)	3.2	4.2	15.5	14.1	2.0	2.0	7.9	7.3	13.5	14.2	4.2	4.3	(6.0)	9.8	(0.6)
MAGNA INTL	MG CN	CAD	51	Not rated	(10.9)	(3.7)	(9.5)	(23.9)	(4.3)	(13.3)	9.7	8.7	1.6	1.4	5.0	4.6	21.3	20.9	2.1	2.3	16.5	12.1	(10.9)
VALEO	FR FP	EUR	45.8	Not rated	(3.4)	4.4	2.1	7.9	3.8	3.2	12.8	11.4	2.6	2.3	5.5	5.0	22.1	21.4	2.4	2.8	18.7	12.8	(3.4)
Taiwan																							
Sunny Optical	2382 HK	HKD	27.5	Outperform	3,903	54.9	12.9	21.6	74.4	8.1	21.0	27.9	21.9	6.4	5.2	16.6	13.2	25.4	26.6	1.0	1.2	43.3	27.2
Largan Precision	3008 TT	TWD	3,050.0	Buy	12,732	34.4	15.3	17.3	(4.9)	8.1	18.1	17.8	13.7	5.3	4.2	12.3	9.6	32.9	33.7	2.1	2.4	(4.9)	30.3
Industry average					**16,321**	**(4.5)**	**2.1**	**1.0**	**2.9**	**0.8**	**1.3**	**13.2**	**11.6**	**2.6**	**2.2**	**7.1**	**6.4**	**20.1**	**19.6**	**2.2**	**2.4**	**18.0**	**13.1**

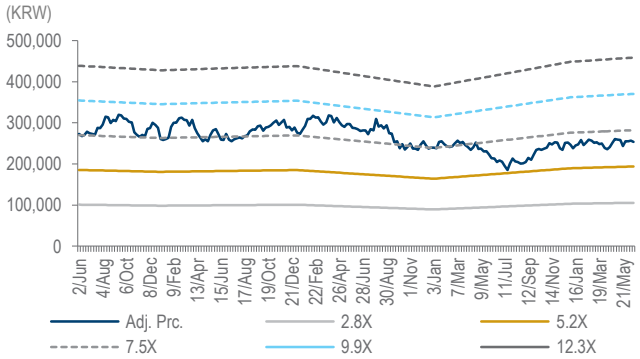
*Source: Bloomberg, *Daiwa forecasts. Note: 1) share prices are as of 22 June 2016; 2) **Relative to each country index*

Mobis: 12-month-forward PBR bands



Source: Bloomberg, Daiwa forecasts

Mobis: 12-month-forward PER bands



Source: Bloomberg, Daiwa forecasts

Key catalysts: ES Chung's potential acquisition of Mobis' shares and the potential entry for climate control business

We still expect a change in HMG's shareholding structure over the next 12 months, via a possible swap involving Kia's or Hyundai Steel's (HS; 004020KS, KRW48,050, Outperform [2]) stake in Mobis and HMC's vice-chairman Mr ES Chung's stakes in Hyundai Glovis and its affiliates. As Mobis owns 21% of HMC, we believe if Mr Chung were to get ownership of Mobis, this could send a positive message to the market. Meanwhile, as mentioned earlier, as part of the company's efforts to ramp up its capabilities in eco-friendly cars, we believe there is a strong possibility of Mobis announcing as early as 4Q16E that it is getting into the climate control/thermal energy management business (possibly including EV compressors for HMG's eco-friendly cars).

Mr. ES Chung's stakes in affiliates vs. Kia's and HS' stakes in Mobis

(KRWbn)	Market Cap	ES Chung's stake	Value
HMC	30,508	2.3%	696
Kia	18,140	1.7%	316
Glovis	6,788	23.3%	1,581
Wia	2,472	2.0%	48
Engineering	7,330	11.7%	859
Innocean*	1,610	2.0%	32
ES Chung - total			3,531
Tax levied at 20%			706
ES Chung - total (after tax)			2,825
	Market Cap	**Kia's stake**	**Value**
Mobis	24,628	16.9%	4,157
(ES Chung's stake in affiliates) - (Kia's stake in Mobis)			(1,332)
	Market Cap	**HS' stake**	**Value**
Mobis	24,628	5.7%	1,394
(ES Chung's stake in affiliates) - (HS's stake in Mobis)			1,431

Source: Bloomberg, Daiwa calculations

Long-term product mix improvement from high-margin key components

We still look for further product-mix improvements as a result of an increase in the proportion of its high-margin core parts, which should drive up Mobis' earnings growth over our forecast horizon, from 36.5% of its M&C revenue in 2015. We expect the revenue proportion of its key components to rise as a percentage of its total M&C revenue, to 37.5%, 38.2% and 39.8% for 2016E, 2017E and 2018E, respectively. However, further potential upside could come from: 1) Mobis' share of HMG for braking, steering, lamps and ADAS products combined, rising to 65% for 2018E, from 50% for 2014, 2) the content per vehicle increasing for mid-sized sedans and SUVs made by HMC and Kia (Mobis' captive customers), and 3) the May 2016 start-up of Mobis' plant in Mexico, and the scheduled start-up of its plant in the Czech Republic in 2017E for both key components.

Key risks

Main risks: non-contractual pricing pressure, delays in shareholder restructuring for HMG and strong depreciation of EM currencies

The key risk to our call would be increased pricing pressure from HMG. Both HMC and Kia usually ask for a 2% price cut on existing auto parts supplied by Mobis once a year. This is in line with the practices of the major global OEMs suppliers. However, both HMC and Kia also ask for irregular pricing cuts from their vendors in tougher business environments (eg, headwinds from forex fluctuations). Although we do not expect this to be the case in the next few months, it is still possible.

A secondary risk would be delays in HMG's shareholder restructuring to include ES Chung. While we expect this restructuring to take place before the end of 2H16, given that the lock-up of ES Chung's stake in Glovis expired in February 2016 (and there has been no movement since), we do not rule out the possibility of delays.

Finally, another risk would be a stronger-than-expected magnitude of emerging-market currency depreciation vs. the Won. Although Mobis's factories in emerging countries have a local content ratio of 65-70%, if the currencies of these emerging markets were weaker against the KRW, this could translate into lower earnings on a consolidated basis.

Daiwa Capital Markets

Kia Motors (000270 KS)

Target price: **KRW51,000** (from KRW58,000)

Share price (22 Jun): **KRW44,700** | Up/downside: **+14.0%**

5 4 3 **2** 1

Outperform (from Buy)

Downgrading: risk/reward profile now less appealing

- 2Q16E earnings likely to miss consensus forecasts
- Still see positives from domestic shipments and forex tailwinds
- Downgrading to Outperform (2); cutting TP by 12% to KRW51,000

Sung Yop Chung
(82) 2 787 9157
sychung@kr.daiwacm.com

What's new: As we move into 2H16E, we now expect Kia's 2016E earnings to come under pressure due to export inventory cuts and higher marketing expenses, among others. We are thus cutting our earnings forecasts. Moreover, we expect its current valuation premium to Hyundai Motor (HMC) (005380 KS, KRW140,000, Buy [1]) to narrow on account of its weaker earnings visibility. Accordingly, we are downgrading our rating on the stock by one notch to Outperform (2), but do still see some positives for the company including domestic shipment growth, forex tailwinds, and the full impact of the company's new Sportage model (recently launched).

What's the impact: Kia is due to report its 2Q16 earnings on 27 June 2016. We forecast revenue of KRW13.2tn and operating profit of KRW668.6bn for the quarter, some 1.5% and 8.4% below the Bloomberg-consensus forecasts of KRW13.4tn and KRW730bn, respectively. Also, we look for the 2Q16E operating margin to decline by 0.1pp YoY to 5.1% (primarily from an expected YoY decline in global shipments [ex-China]), despite the positives from: 1) currency tailwinds as a result of a stronger USD, 2) a potential YoY rise in domestic shipments in the quarter thanks to the popularity of its K7, Carnival and Mohave, and 3) the positive impact of the recent launch of its mainstay model, the Sportage.

Other reasons to explain, why we now look for Kia's earnings to come in lower for 2H16 than we previously forecast are: 1) we see less potential for its proportion of SUV shipments to rise further in 2H16 (from 39% in 2015), on our expectation of lower shipments of the Sorento and Carnival, and 2) we have been seeing a YoY decline in shipments to its 2 most profitable markets, Korea and the US. Moreover, the company now guides for higher R&D costs of KRW3tn (vs. our forecast of KRW2.8tn), up from 2015 R&D of KRW2.6tn, due to a rise in eco-friendly and smart-car investments. Accordingly, we cut our 2016-18E EPS by 8-10%.

What we recommend: In turn, we lower our 12-month DCF/PER-based target price to KRW51,000 (from KRW58,000). As we are less positive on Kia's earnings outlook for 2H16E, and in view of its current PER premium to HMC of 12.2%, similar to its past-1-year average PER premium of 13.8%, we are downgrading our rating to Outperform (2) from Buy (1). The key downside risk to our positive call on the stock would be a rapid appreciation of the KRW against the USD.

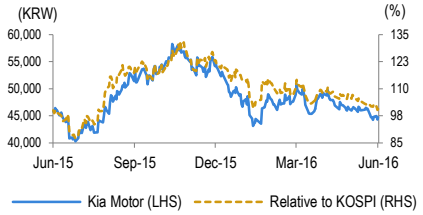
How we differ: Our 2016-18E EPS are 3-7% lower than the Bloomberg-consensus forecasts, which we attribute to the street not yet incorporating the less appealing potential from product-mix improvements from SUVs and its strong profit contribution in both Korea and the US market.

Forecast revisions (%)

Year to 31 Dec	16E	17E	18E
Revenue change	0.1	(1.7)	(1.9)
Net profit change	(7.8)	(8.3)	(10.2)
Core EPS (FD) change	(7.8)	(8.3)	(10.2)

Source: Daiwa forecasts

Share price performance



12-month range	40,300-58,300
Market cap (USDbn)	15.66
3m avg daily turnover (USDm)	34.51
Shares outstanding (m)	405
Major shareholder	Hyundai Motor (33.9%)

Financial summary (KRW)

Year to 31 Dec	16E	17E	18E
Revenue (bn)	50,660	52,361	55,889
Operating profit (bn)	2,453	2,615	2,816
Net profit (bn)	2,858	3,036	3,100
Core EPS (fully-diluted)	7,050	7,489	7,647
EPS change (%)	8.6	6.2	2.1
Daiwa vs Cons. EPS (%)	(5.9)	(2.9)	(7.4)
PER (x)	6.3	6.0	5.8
Dividend yield (%)	2.7	2.9	2.9
DPS	1,200	1,300	1,300
PBR (x)	0.7	0.6	0.6
EV/EBITDA (x)	3.6	3.3	2.9
ROE (%)	11.2	10.7	10.1

Source: FactSet, Daiwa forecasts

See important disclosures, including any required research certifications, beginning on page 134

Financial summary

Key assumptions

Year to 31 Dec	2011	2012	2013	2014	2015	2016E	2017E	2018E
Total shipments ('000 Unit, Ex-China)	2,106	2,239	2,280	2,395	2,434	2,392	2,465	2,461
Total shipments ('000 Unit, Inc.China)	2,538	2,720	2,827	3,041	3,050	3,052	3,162	3,148
Average Selling Price ex. China (KRW'000)	20,513	21,101	20,873	19,665	20,347	21,182	21,244	22,709

Profit and loss (KRWbn)

Year to 31 Dec	2011	2012	2013	2014	2015	2016E	2017E	2018E
Korea Plant Revenues	27,742	27,537	27,695	29,356	31,245	30,664	31,318	33,292
N.America Plant Revenues	5,749	7,525	7,886	7,524	8,205	8,604	9,100	9,778
Other Revenue	9,699	12,182	12,016	10,217	10,071	11,391	11,944	12,820
Total Revenue	**43,191**	**47,243**	**47,598**	**47,097**	**49,521**	**50,660**	**52,361**	**55,889**
Other income	971	1,069	1,090	1,082	1,137	1,161	1,198	1,276
COGS	(33,139)	(36,536)	(37,512)	(37,754)	(39,654)	(40,441)	(41,842)	(44,633)
SG&A	(6,553)	(7,185)	(6,909)	(6,770)	(7,513)	(7,767)	(7,905)	(8,440)
Other op.expenses	(971)	(1,069)	(1,090)	(1,082)	(1,137)	(1,161)	(1,198)	(1,276)
Operating profit	**3,499**	**3,522**	**3,177**	**2,573**	**2,354**	**2,453**	**2,615**	**2,816**
Net-interest inc./(exp.)	(79)	12	83	149	85	12	20	32
Assoc/forex/extraord./others	1,301	1,630	1,569	1,094	661	1,194	1,308	1,178
Pre-tax profit	**4,722**	**5,164**	**4,829**	**3,816**	**3,100**	**3,658**	**3,943**	**4,026**
Tax	(1,202)	(1,299)	(1,012)	(823)	(470)	(800)	(907)	(926)
Min. int./pref. div./others	0	0	0	0	0	0	0	0
Net profit (reported)	**3,519**	**3,865**	**3,817**	**2,994**	**2,631**	**2,858**	**3,036**	**3,100**
Net profit (adjusted)	**3,416**	**3,865**	**3,817**	**2,994**	**2,631**	**2,858**	**3,036**	**3,100**
EPS (reported)(KRW)	**8,778**	**9,550**	**9,416**	**7,385**	**6,489**	**7,050**	**7,489**	**7,647**
EPS (adjusted)(KRW)	**8,519**	**9,550**	**9,416**	**7,385**	**6,489**	**7,050**	**7,489**	**7,647**
EPS (adjusted fully-diluted)(KRW)	**8,519**	**9,550**	**9,416**	**7,385**	**6,489**	**7,050**	**7,489**	**7,647**
DPS (KRW)	**600**	**650**	**700**	**1,000**	**1,100**	**1,200**	**1,300**	**1,300**
EBIT	**3,499**	**3,522**	**3,177**	**2,573**	**2,354**	**2,453**	**2,615**	**2,816**
EBITDA	**5,364**	**5,569**	**5,252**	**4,629**	**4,516**	**4,662**	**4,896**	**5,249**

Cash flow (KRWbn)

Year to 31 Dec	2011	2012	2013	2014	2015	2016E	2017E	2018E
Profit before tax	4,722	5,164	4,829	3,816	3,100	3,658	3,943	4,026
Depreciation and amortisation	971	1,069	1,090	1,082	1,137	1,161	1,198	1,276
Tax paid	(1,202)	(1,299)	(1,012)	(823)	(470)	(800)	(907)	(926)
Change in working capital	922	1,486	1,527	2,015	(870)	484	(28)	(164)
Other operational CF items	(666)	(2,074)	(1,657)	(3,726)	477	(362)	1,013	1,593
Cash flow from operations	**4,745**	**4,345**	**4,777**	**2,364**	**3,375**	**4,141**	**5,219**	**5,805**
Capex	(1,434)	(1,575)	(1,192)	(1,430)	(3,915)	(2,563)	(2,691)	(2,771)
Net (acquisitions)/disposals	(2,601)	(2,849)	(3,571)	(2,785)	(5,615)	(711)	(1,046)	(1,201)
Other investing CF items	1,404	1,581	1,250	1,231	3,916	20	356	248
Cash flow from investing	**(2,631)**	**(2,843)**	**(3,514)**	**(2,983)**	**(5,614)**	**(3,253)**	**(3,381)**	**(3,724)**
Change in debt	(894)	(1,579)	(527)	1,338	1,456	775	331	238
Net share issues/(repurchases)	0	0	0	0	0	0	0	0
Dividends paid	(199)	(242)	(263)	(283)	(404)	(486)	(527)	(527)
Other financing CF items	(348)	11	(1)	(68)	(146)	290	(94)	(102)
Cash flow from financing	**(1,441)**	**(1,810)**	**(791)**	**986**	**906**	**578**	**(290)**	**(391)**
Forex effect/others	0	0	0	0	0	0	0	0
Change in cash	**674**	**(307)**	**471**	**367**	**(1,332)**	**1,466**	**1,548**	**1,689**
Free cash flow	3,311	2,771	3,584	934	(539)	1,579	2,528	3,033

Source: FactSet, Daiwa forecasts

Financial summary continued …

Balance sheet (KRWbn)

As at 31 Dec	2011	2012	2013	2014	2015	2016E	2017E	2018E
Cash & short-term investment	3,939	4,316	6,355	7,315	7,055	7,850	8,990	10,297
Inventory	4,303	4,223	4,331	6,081	7,695	7,414	7,903	8,431
Accounts receivable	2,611	2,364	2,541	2,934	3,086	3,940	3,782	3,260
Other current assets	222	236	245	326	555	666	799	959
Total current assets	**11,075**	**11,139**	**13,472**	**16,655**	**18,391**	**19,870**	**21,474**	**22,947**
Fixed assets	9,184	9,721	9,777	10,114	13,042	14,908	16,880	18,886
Goodwill & intangibles	1,517	1,524	1,716	1,889	2,134	2,240	2,352	2,470
Other non-current assets	8,478	10,014	11,217	12,386	12,413	12,755	12,533	12,550
Total assets	**30,255**	**32,398**	**36,182**	**41,044**	**45,980**	**49,773**	**53,240**	**56,853**
Short-term debt	2,663	1,210	1,303	1,690	2,274	2,387	2,507	2,632
Accounts payable	6,601	6,712	6,956	7,848	8,539	9,308	10,704	12,095
Other current liabilities	2,157	2,078	2,547	2,437	3,767	3,880	3,996	4,116
Total current liabilities	**11,422**	**10,000**	**10,806**	**11,974**	**14,579**	**15,575**	**17,207**	**18,843**
Long-term debt	2,480	2,455	1,687	2,882	3,532	4,193	4,404	4,517
Other non-current liabilities	2,843	3,095	3,434	3,704	3,665	2,979	2,169	1,502
Total liabilities	**16,745**	**15,550**	**15,927**	**18,560**	**21,776**	**22,747**	**23,780**	**24,862**
Share capital	2,132	2,139	2,139	2,139	2,139	2,139	2,139	2,139
Reserves/R.E./others	11,377	14,709	18,115	20,345	22,065	24,888	27,321	29,853
Shareholders' equity	**13,510**	**16,848**	**20,255**	**22,484**	**24,204**	**27,028**	**29,461**	**31,993**
Minority interests	0	0	0	0	0	0	0	0
Total equity & liabilities	**30,255**	**32,398**	**36,182**	**41,044**	**45,980**	**49,774**	**53,241**	**56,854**
EV	19,324	17,469	14,755	15,376	16,870	16,850	16,041	14,971
Net debt/(cash)	**1,205**	**(651)**	**(3,365)**	**(2,743)**	**(1,249)**	**(1,270)**	**(2,079)**	**(3,149)**
BVPS (KRW)	**33,441**	**41,563**	**49,967**	**55,466**	**59,709**	**66,675**	**72,677**	**78,923**

Key ratios (%)

Year to 31 Dec	2011	2012	2013	2014	2015	2016E	2017E	2018E
Sales (YoY)	2.1	9.4	0.8	(1.1)	5.1	2.3	3.4	6.7
EBITDA (YoY)	10.2	3.8	(5.7)	(11.9)	(2.4)	3.2	5.0	7.2
Operating profit (YoY)	23.4	0.7	(9.8)	(19.0)	(8.5)	4.2	6.6	7.7
Net profit (YoY)	29.3	13.1	(1.2)	(21.6)	(12.1)	8.6	6.2	2.1
Core EPS (fully-diluted) (YoY)	26.8	12.1	(1.4)	(21.6)	(12.1)	8.6	6.2	2.1
Gross-profit margin	23.3	22.7	21.2	19.8	19.9	20.2	20.1	20.1
EBITDA margin	12.4	11.8	11.0	9.8	9.1	9.2	9.4	9.4
Operating-profit margin	8.1	7.5	6.7	5.5	4.8	4.8	5.0	5.0
Net profit margin	7.9	8.2	8.0	6.4	5.3	5.6	5.8	5.5
ROAE	28.8	25.5	20.6	14.0	11.3	11.2	10.7	10.1
ROAA	11.8	12.3	11.1	7.8	6.0	6.0	5.9	5.6
ROCE	20.2	18.0	14.5	10.2	8.3	7.7	7.5	7.5
ROIC	18.9	17.1	15.2	11.0	9.4	7.9	7.6	7.7
Net debt to equity	8.9	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Effective tax rate	25.5	25.2	20.9	21.6	15.1	21.9	23.0	23.0
Accounts receivable (days)	26.2	19.2	18.8	21.2	22.2	25.3	26.9	23.0
Current ratio (x)	1.0	1.1	1.2	1.4	1.3	1.3	1.2	1.2
Net interest cover (x)	44.4	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Net dividend payout	6.8	6.8	7.4	13.5	17.0	17.0	17.4	17.0
Free cash flow yield	18.3	15.3	19.8	5.2	n.a.	8.7	14.0	16.7

Source: FactSet, Daiwa forecasts

Company profile

Kia Motors (Kia) is the second-largest automaker in Korea, with a global production capacity of 3.3m units for 2014. The company is a 33.88%-owned subsidiary of HMC. Kia has overseas factories in China, Slovakia and the US.

Risk/reward profile now less appealing

2Q16E earnings tracking weaker than expected

2Q16E earnings could come in lower than the Bloomberg-consensus forecasts

Kia is due to report its 2Q16 earnings on 27 June 2016. Given its continued export inventory cuts, higher marketing expenses with the launch of the Sportage in 2Q16E, and lower capacity utilisation rate for its Korea plant YoY, we now expect its earnings growth to come under pressure for the rest of 2016E. As such, we forecast revenue of KRW13.1tn and an operating profit of KRW668.6bn for 2Q16, around 2.8% and 8.5% below the Bloomberg forecasts of KRW13.4tn and KRW730bn, respectively.

For 2015, the company reported revenue of KRW49,521bn and a net profit of KRW2,631bn. For 2016E, we now expect revenue to expand to KRW50,660bn and the net profit to KRW2,858bn (previous forecast were: revenue of KRW50,589bn and net profit of KRW3,098bn).

Kia: 2Q16E earnings preview

(KRWbn)	2Q16E	2Q16E-Bbg	Diff (%)	2Q15	YoY (%)	1Q16	QoQ (%)
USD:KRW (Quarter Avg)	1,162	1,162		1,097	5.9	1,201	(3.2)
Total factory shipments ('000 Unit, Inc. China)	**780**			**777**	**0.4**	**704**	**10.8**
Total factory shipments ('000 Unit, Ex-China)	629			635	(0.8)	564	11.6
Korea	438			454	(3.4)	384	14.0
DYKIA (China)	151			143	6.0	140	7.7
KMS (Slovakia)	89			85	4.0	85	4.6
KMMA (US Georgia)	98			95	3.0	95	3.6
Factory ASP ('000 KRW, Inc. China)	**19,296**			**18,732**	**3.0**	**20,914**	**(7.7)**
Factory ASP ('000 KRW, Ex-China)	20,372			19,605	3.9	22,422	(9.1)
Korea	16,973			16,106	5.4	16,904	0.4
DYKIA (China)	14,852			14,848	0.0	14,851	0.0
KMS (Slovakia)	18,736			17,076	9.7	19,125	(2.0)
KMMA (US Georgia)	23,193			21,201	9.4	21,343	8.7
Revenue	**13,109**	**13,483**	(2.8)	**12,441**	5.4	**12,649**	3.6
Gross profit	**2,661**			**2,538**	4.8	**2,573**	3.4
GP margin(%)	20.3			20.4		20.3	
SG&A expenses	1,993			1,888	5.6	1,940	2.7
Operating profit	**669**	**730**	(8.5)	**651**	2.7	**634**	5.5
OP margin(%)	5.1	5.4		5.2		5.0	
Recurring Profit	**1,030**			**988**	4.2	**1,047**	(1.6)
RP margin(%)	7.9			7.9		8.3	
Net profit	**782**	**782**	0.1	**747**	4.8	**945**	(17.2)
NP margin(%)	6.0	5.8		6.0		7.5	

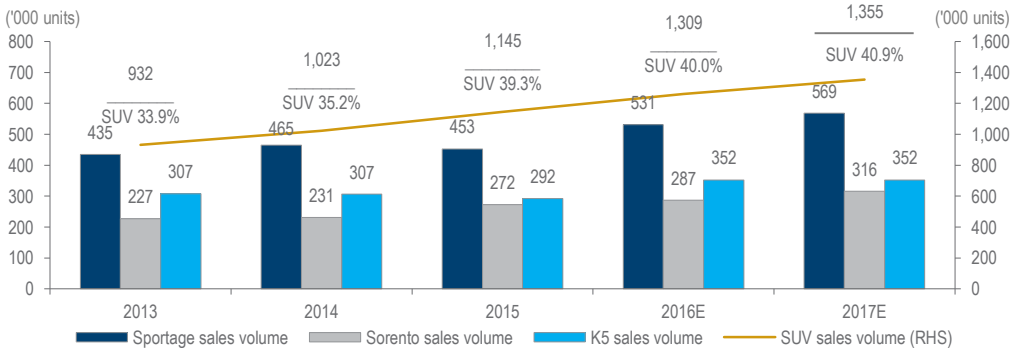
Source: Company, Bloomberg, Daiwa forecasts

Downward earnings-forecast revisions

We are revising down our 2016-18E EPS by 7.8-10.2%

In our view, the main reasons for our downward earnings revision in 2H16E are: 1) the lower likelihood of the company's proportion of SUV shipments rising further in 2H16E (from 39% in 2015), on our expectation of lower shipments for the Sorento and Carnival due to their aging profiles, and 2) a likely YoY decline in shipments to its 2 most profitable markets, Korea and the US, on a combination of the expiry of the special consumption tax in Korea and continued destocking in the US.

Kia: refresh rate and SUV proportion



Source: Company, Daiwa forecasts

Moreover these headwinds, coupled with the company's higher R&D forecasts of KRW3tn (vs. our previous forecasts of KRW2.8tn for 2016E) and from 2015 R&D expenses of KRW2.6tn due to a rise in eco-friendly and smart-car investments, lead us to revise down our 2016-18E earnings by 7.8-10.2%.

Kia: major assumption changes

	2016E			2017E			2018E		
	Old	New	Diff. (%)	Old	New	Diff. (%)	Old	New	Diff. (%)
Total factory shipments ('000 Unit, Inc. China)	**3,046**	**3,052**	**0.2**	**3,187**	**3,162**	**(0.8)**	**3,216**	**3,148**	**(2.1)**
Total factory shipments ('000 Unit, Ex-China)	2,403	2,392	(0.5)	2,480	2,465	(0.6)	2,518	2,461	(2.2)
Korea	1,650	1,645	(0.3)	1,681	1,641	(2.4)	1,687	1,645	(2.4)
DYKIA (China)	643	660	2.7	687	676	(1.6)	691	679	(1.7)
KMS (Slovakia)	351	351	0.0	363	362	(0.3)	365	364	(0.3)
KMMA (US Georgia)	381	376	(1.5)	395	383	(2.8)	396	384	(2.8)
Factory ASP ('000 KRW, Inc. China)	**19,994**	**19,812**	**(0.9)**	**19,921**	**19,739**	**(0.9)**	**20,942**	**20,996**	**0.3**
Factory ASP ('000 KRW, Ex-China)	21,369	21,182	(0.9)	21,484	21,244	(1.1)	22,629	22,709	0.4
Korea	18,667	18,645	(0.1)	19,007	19,079	0.4	20,198	20,236	0.2
DYKIA (China)	14,853	14,853	0.0	14,857	14,857	0.0	15,032	15,045	0.1
KMS (Slovakia)	18,975	18,975	0.0	20,087	20,088	0.0	21,823	21,825	0.0
KMMA (US Georgia)	22,909	22,898	(0.0)	23,727	23,735	0.0	25,433	25,438	0.0
Revenue (KRWbn)	**50,589**	**50,660**	0.1	**53,276**	**52,361**	(1.7)	**56,965**	**55,889**	(1.9)
Gross profit (KRWbn)	**10,111**	**10,219**	1.1	**10,699**	**10,520**	(1.7)	**11,515**	**11,256**	(2.2)
Gross profit margin (%)	20.0	20.2		20.1	20.1		20.2	20.1	
SG&A	7,911	7,767	(1.8)	7,911	7,905	(0.1)	8,401	8,440	0.5
Operating profit (KRWbn)	**2,597**	**2,453**	(5.6)	**2,788**	**2,615**	(6.2)	**3,114**	**2,816**	(9.6)
Operating-profit margin (%)	5.1	4.8		5.2	5.0		5.5	5.0	
Recurring profit (KRWbn)	**3,922**	**3,658**	(6.7)	**4,192**	**3,943**	(5.9)	**4,369**	**4,026**	(7.9)
Recurring profit margin (%)	7.8	7.2		7.9	7.5		7.7	7.2	
Net profit (KRWbn)	**3,098**	**2,858**	(7.8)	**3,312**	**3,036**	(8.3)	**3,451**	**3,100**	(10.2)
Net profit Margin (%)	6.1	5.6		6.2	5.8		6.1	5.5	

Source: Daiwa forecasts

Still positive on its green-car strategy

A good start with its hybrid SUV, the Niro

Since the launch of its first hybrid SUV, the Niro, in late March 2016, Kia had already sold 5,120 units up to end-May 2016. We believe such solid shipments of the Niro in the domestic market have been driven primarily by this vehicle's best-in-class fuel economy of 19.5km/litre and more spacious passenger and boot room vs. similar models from peers.

Kia: Niro

Source: Company

Specifications of the Niro vs. the Toyota Prius

	Kia Niro	Toyota Prius
		
Price (USD)	25,000	25,995
Fuel efficiency	50 MPG	50 MPG
Type	1.6L	1.8L
Battery pack	1.6 kWh	1.0 kWh
Torque	146 lb-ft	120 lb-ft
Horse power	103 hp	95 hp

Source: Autoblog, Companies, Daiwa

We remain positive on its green-car strategy

In January 2016, HMC and Kia unveiled their green-car roadmap, which outlined their aim to expand their green car line-up to 26 models by 2020, from the 22 planned as of November 2014. They also planned to step up the development of new green-car technology to meet the growing demand for green cars. HMC and Kia are currently ranked 4th in terms of shipments in the green-car market with 8 models, but aim to be the No.2 maker by 2020. By 2020, Kia plans to have 16 green-car models under its own brand and is scheduled to launch the Sorento (mid-sized SUV) in 2017. Meanwhile, we estimate Kia's 2016 green-car shipments to rise to 60,000 units (2% of global shipments) in 2016, from 27,000 units (1% of global shipments) in 2015.

HMC and Kia: expansion plan for green-car line-ups

Vehicle type	Models	2020 target
HEV	Sonata, Grandeur, Ioniq, K5, K7, Niro	10 models
PHEV	Sonata, Ioniq, K5, and Niro	8 models
EV	Ioniq, Soul, and Ray	6 models
FCEV	Tucson	2 models

Source: HMC Green-car Roadmap 2020
Note: HEV = hybrid electric vehicle; PHEV = plug-in hybrid electric vehicle; EV = electric vehicle; FCEV = fuel-cell electric vehicle

Kia: new model cycle

Kia	*1H16*	*2H16*	*2017*
Korea	K5 PHEV	K7 HEV	Pride
	K7	Morning	Niro PHEV
	Niro HEV	Carens F/L	CK
	Mohave, Soul F/L	Bongo F/L	(high-performance C-seg)
			K3, K9
US	Sportage	K7	Pride(Mex)
	K5 HEV	K5 PHEV	CK
	K3(Mex)	Niro HEV	Niro PHEV
			Sorento F/L
China	Sportage	Niro HEV	QM (mid-SUV)
	K5 HEV	K2	AB (small sedan)
	K3 F/L	KX5	K5 PHEV, K7
EU	Sportage	K5-wagon	Morning
	Niro HEV	Pride	K5-wagon PHEV
	K5 PHEV	Crens, Soul F/L	CK, Niro PHEV

Source: Company, Daiwa

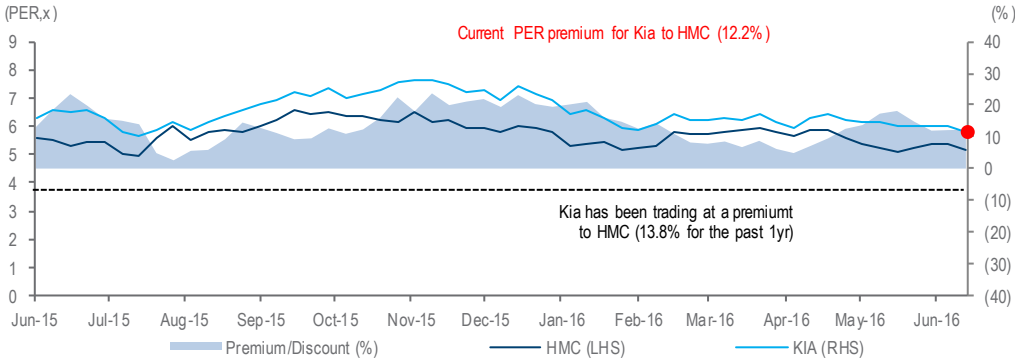
Valuation and recommendation

Downgrading to Outperform (2) and cutting TP to KRW51,000

Factoring in our downward earnings revisions, we lower our 12-month DCF/PER-based target-price to KRW51,000 (from KRW58,000). Our new equally weighted DCF/PER-based 12-month target price of KRW52,000 implies a PER of 7.2x, based on our 2016E EPS, which is near the mid-point of the stock's past-3-year PER range of 5.9-9.0x.

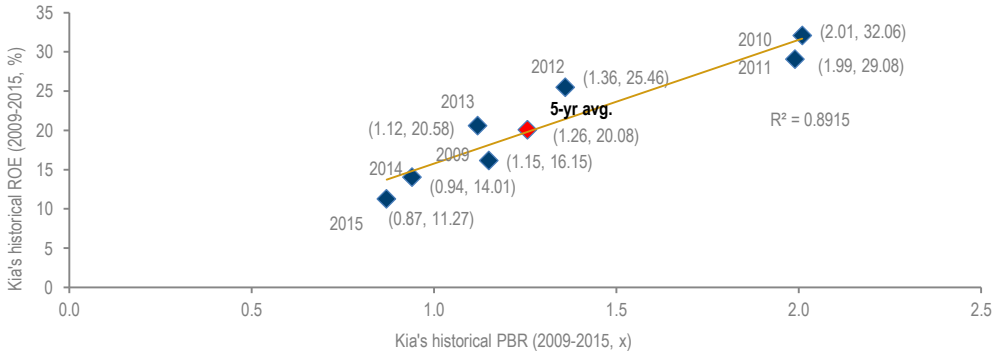
As we are less positive on Kia's earnings outlook for 2H16E, and in view of the stock's current 12.2% PER premium to HMC, near its average PER premium to HMC over the past year of 13.8%, we are downgrading our rating to Outperform (2) from Buy (1).

Kia and HMC: PER gap



Source: Bloomberg, Daiwa forecasts

Kia: PBR vs. ROE



Source: Bloomberg, Daiwa

Kia: DCF calculation

Target gearing (debt/capital) (%)	**40.0**
Market risk premium (%)	**11.5**
Risk-free rate (%)	**2.1**
Cost of debt (%)	**3.4**
Cost of equity (%)	**15.7**
WACC (%)	10.5%
Terminal Value	
Terminal Growth Rate	3.0%
Terminal WACC	10.5%
Estimated Terminal Free Cash Flow (KRWbn)	2,615
NPV of Terminal Value (KRWbn, as at 2026E)	36,147
NPV of Terminal Value (as at 22 June 2016)	12,418
DCF Valuation	
NPV of Forecasts (KRWbn)	7,083
NPV of Terminal Value (KRWbn)	12,418
Enterprise Value (KRWbn)	19,501
Less: Net Debt (KRWbn, end-2016E)	1,270
Equity Value (KRWbn)	20,771
No. Shares (m)	405
Per Share Equity Value (KRW)	**51,239**

Source: Daiwa estimates and forecasts

Kia: DCF sensitivity

Discount Rate	NPV of Terminal FCF	Enterprise Value	Equity Value	Equity value per share
6.45%	39,865	49,144	50,414	124,367
7.45%	27,951	36,610	37,880	93,447
8.45%	20,659	28,749	30,019	74,054
9.45%	15,816	23,382	24,652	60,814
10.45%	**12,418**	**19,501**	**20,771**	**51,239**
11.45%	9,937	16,575	17,845	44,022
12.45%	8,072	14,299	15,569	38,407
13.45%	6,637	12,484	13,754	33,930
14.45%	5,512	11,008	12,277	30,287

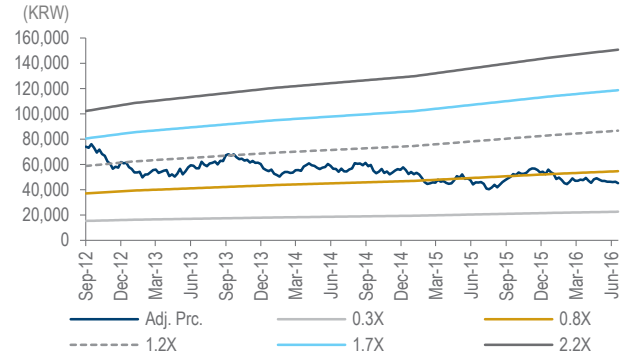
Source: Daiwa estimates and forecasts

Kia: PER-based valuation

PER Valuation	
Target PER (x)	**7.2x**
2016E EPS (KRW)	**7,050**
Per share equity value (KRW)	**51,000**

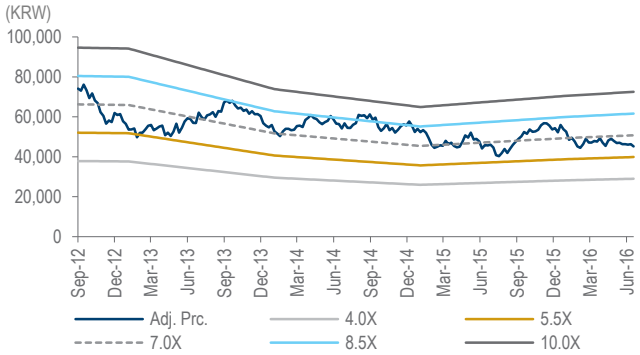
Source: Daiwa forecasts

Kia: PBR bands



Source: Bloomberg, Daiwa forecasts

Kia: PER bands



Source: Bloomberg, Daiwa forecasts

Automakers globally: valuation data

Company	Ticker	Curr.	Share Price	Daiwa Rating	Mcap (USDm)	Absolute Performance (%)			Relative Performance (%)			PER (x)		PBR (x)		EV/ EBITDA (x)		ROE (%)		Div. Yield (%)		EPS Growth (%)	
						YTD	1M	3M	12M	1M	3M	16E	17E	16E	17E	16E	17E	16E	17E	16E	17E	16E	17E
US																							
FORD	F US	USD	13.2	Hold	52,362	(6.5)	(0.1)	(3.0)	(8.5)	(1.7)	(4.8)	6.3	6.2	1.5	1.3	2.9	2.8	29.7	23.2	5.2	4.8	11.8	1.2
GM	GM US	USD	29.3	Outperform	45,148	(13.8)	(4.1)	(8.1)	(15.8)	(5.7)	(9.8)	5.2	5.0	1.0	0.9	2.4	2.3	22.3	18.9	5.2	5.3	17.7	3.2
Europe																							
DAIMLER	DAI GR	EUR	58.8	Not rated	71,254	(24.2)	1.9	(12.2)	(18.0)	0.4	(13.0)	7.3	6.9	1.1	1.0	2.3	2.2	15.5	15.2	5.7	5.9	(3.5)	6.0
BMW	BMW GR	EUR	72.2	Not rated	53,129	(26.0)	0.9	(11.1)	(19.8)	(0.6)	(11.9)	7.4	7.3	1.0	0.9	6.2	6.0	14.2	13.5	4.6	4.8	2.6	2.4
VW	VOW GR	EUR	130.2	Not rated	72,241	(8.5)	(3.7)	(1.9)	(2.3)	(5.3)	(2.7)	7.0	6.1	0.7	0.7	1.5	1.3	9.9	10.3	1.6	2.5	3.6	15.8
Japan																							
HONDA	7267 JP	JPY	2,698	Hold	46,710	(31.0)	(8.5)	(12.9)	(14.0)	(4.1)	(6.6)	8.9	9.4	0.7	0.7	6.2	6.3	7.7	7.5	3.3	3.4	(2.9)	(5.4)
NISSAN	7201 JP	JPY	1,007	Hold	43,267	(21.3)	(3.7)	(6.9)	(4.3)	0.7	(0.7)	7.6	7.4	0.8	0.8	2.6	2.6	11.2	10.9	4.2	4.7	23.9	2.8
TOYOTA	7203 JP	JPY	5,607	Outperform	178,914	(25.1)	0.8	(8.1)	(8.1)	5.2	(1.8)	7.5	9.5	1.0	0.9	8.2	9.8	13.4	10.7	3.9	3.8	7.4	(20.7)
China																							
GWC	2333 HK	HKD	6.5	Hold	10,581	(27.7)	16.0	0.0	(22.6)	11.2	(0.6)	7.0	6.9	1.2	1.1	4.7	4.5	17.6	16.1	4.4	4.5	(11.0)	2.5
BAIC	1958 HK	HKD	5.5	Sell	5,346	(29.6)	(0.5)	(10.3)	(24.5)	(5.3)	(11.0)	9.2	8.4	0.9	0.9	4.1	3.3	10.4	10.5	3.7	4.1	15.1	9.1
Geely	175 HK	HKD	4.2	Buy	4,777	1.9	9.9	23.8	7.0	5.2	23.2	9.3	8.0	1.4	1.2	3.6	2.7	16.0	16.2	1.3	1.6	49.2	16.9
Korea																							
HYUNDAI*	005380 KS	KRW	140,000	Buy	26,804	(6.0)	6.1	(11.9)	(7.6)	3.8	(11.7)	5.9	5.6	0.4	0.4	4.4	4.0	9.7	9.4	3.3	3.7	12.4	5.2
KIA*	000270 KS	KRW	44,700	Outperform	15,749	(15.0)	(3.5)	(12.0)	(16.6)	(5.8)	(11.8)	6.3	6.0	0.7	0.6	3.6	3.3	11.2	10.7	2.7	2.9	8.6	6.2
Industry average					**48,175**	**(17.9)**	**0.9**	**(5.7)**	**(11.9)**	**(0.2)**	**(4.9)**	**7.3**	**7.1**	**1.0**	**0.9**	**4.1**	**3.9**	**14.5**	**13.3**	**3.8**	**4.0**	**10.4**	**3.5**

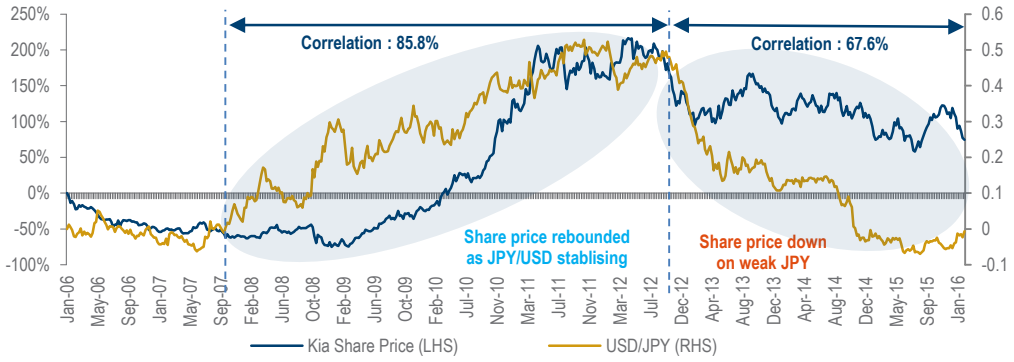
*Source: Bloomberg, *Daiwa forecasts.*
*Note: 1) share prices are as of 22 June 2016; 2) **Relative to each country index*

Key risks

Rapid appreciation of KRW vs. other currencies is the main risk to our call

The main risk to our rating, target price and forecasts for Kia would be a rapid appreciation of the KRW against the USD, which would create a negative operating environment for Kia, as we see it as the main beneficiary in the Korea Autos Sector of KRW vs. USD depreciation (it has the largest exposure to the USD).

Kia: JPY:USD rate vs. HMC's share price



Source: Bloomberg, Daiwa

Kia: forex sensitivity on 2016E operating profit

		USD/JPY						
		90	95	100	105	110	115	120
KRW/USD	1,190	-3.4%	2.7%	8.8%	14.9%	21.0%	27.1%	33.2%
	1,185	-6.6%	-0.7%	5.2%	11.1%	17.0%	22.9%	28.8%
	1,180	-9.5%	-3.8%	1.9%	7.6%	13.3%	19.0%	24.8%
	1,175	-12.7%	-7.2%	-1.7%	3.8%	9.3%	14.8%	20.3%
	1,170	-15.9%	-10.6%	-5.3%	0.0%	5.3%	10.6%	15.9%
	1,165	-19.1%	-14.0%	-8.9%	-3.8%	1.3%	6.4%	11.5%
	1,160	-22.3%	-17.4%	-12.5%	-7.6%	-2.7%	2.2%	7.1%
	1,155	-25.3%	-20.5%	-15.8%	-11.1%	-6.4%	-1.7%	3.1%
	1,150	-28.5%	-23.9%	-19.4%	-14.9%	-10.4%	-5.9%	-1.4%

Source: Daiwa estimates
Note: base-case USD:KRW rate is based on average YTD

Kia: impact of Euro:KRW exchange-rate movements on 2016E operating profit

(in KRWbn)	KRW/EUR	% change	Sales	% change	Operating Profit	% change	Operating margin
	1,352	4.0%	51,128	0.9%	2,505	2.1%	4.9%
	1,339	3.0%	51,011	0.7%	2,492	1.6%	4.9%
	1,326	2.0%	50,894	0.5%	2,479	1.1%	4.9%
	1,313	1.0%	50,777	0.2%	2,466	0.5%	4.9%
Base case	1,300	0.0%	50,660	0.0%	2,453	0.0%	4.8%
	1,287	-1.0%	50,543	-0.2%	2,439	-0.5%	4.8%
	1,274	-2.0%	50,426	-0.5%	2,426	-1.1%	4.8%
	1,261	-3.0%	50,309	-0.7%	2,413	-1.6%	4.8%
	1,248	-4.0%	50,192	-0.9%	2,400	-2.1%	4.8%
Key assumption							
% EUR-dominated revenue					23.1%		
Naked exposure EUR					11.2%		

Source: Bloomberg, Daiwa estimates

Kia: impact of Russian Rouble:KRW exchange-rate movements on 2016E operating profit

(in KRWbn)	KRW/RUB	% change	Sales	% change	Operating Profit	% change	Operating margin
	18.0	12.0%	52,064	2.8%	2,471	0.7%	4.7%
	17.5	9.0%	51,713	2.1%	2,466	0.6%	4.8%
	17.1	6.0%	51,362	1.4%	2,462	0.4%	4.8%
	16.6	3.0%	50,741	0.2%	2,457	0.2%	4.8%
Base case	16.1	0.0%	50,660	0.0%	2,453	0.0%	4.8%
	15.6	-3.0%	50,309	-0.7%	2,448	-0.2%	4.9%
	15.1	-6.0%	49,958	-1.4%	2,443	-0.4%	4.9%
	14.7	-9.0%	49,607	-2.1%	2,439	-0.6%	4.9%
	14.2	-12.0%	49,256	-2.8%	2,434	-0.7%	4.9%
Key assumption							
% RUB-dominated revenue					5.3%		
Naked exposure RUB					5.7%		

Source: Bloomberg, Daiwa estimates

A secondary risk would be an unfavourable court ruling from the first trial on ordinary wages (3Q16E), which could lead to Kia having to make a provision of KRW1.2tn for retroactive application.

Kia: change in compensation scheme (KRWm)

	Kia	Assumption
Current compensation scheme (KRWm, per worker)		
(1) Average ordinary wage	34.2	
(2) Overtime wages [(1) x 62.5%]	21.4	(A) Monthly Ordinary wage x 750%
(3) Bonus payments and other works	23.3	
Miscellaneous wages	21.0	
Total annual wages	99.9	(B) 2015 company annual report
New compensation scheme (KRWm, per worker)		
Average ordinary wage (1) +(3)	59.5	
(4) Overtime wage [{(1)+(3)} x 62.5%]	37.2	
Additional wage per worker (4)-(2)	**15.8**	
Total annual wage	115.7	

Source: Daiwa estimates

Kia: potential impact on earnings

	Kia	Assumption
Additional wage per worker (1) (KRWm)	15.8	
No. of factory workers eligible (2)	25,292	
Scenario 1. Without a retroactive application		
Total additional wage (KRWbn) (1) x (2)	400	
2016E net profit (KRWbn)	2,858	Daiwa forecast
% of 2016E net profit	**14.0**	
2017E net profit (KRWbn)	3,036	Daiwa forecast
% of 2017E net profit	**13.2**	
Scenario 2. With a retroactive application		
Total amount to reclaim for 3-year total (KRWbn)	1,199	3-year CAGR of 6%
2016E net profit (KRWbn)	2,858	
% of 2016E net profit	**41.9**	
2017E net profit (KRWbn)	3,036	
% of 2017E net profit	**39.5**	

Source: Daiwa estimates and forecasts

Daiwa Capital Markets

Hyundai Wia Corp (011210 KS)

Target price: **KRW100,000** (from KRW140,000)

Share price (22 Jun): **KRW92,500** | Up/downside: **+8.1%**

5 4 3 **2** 1

Outperform (from Buy)

Downgrading: less momentum appeal

- 2Q16E tracking in line; counter to peers its earnings could fall YoY
- 2017E earnings revival on strong diesel, turbo, petrol engine forecasts
- Revising down rating to Outperform (2), 12-month TP to KRW100,000

Sung Yop Chung
(82) 2 787 9157
sychung@kr.daiwacm.com

What's new: We continue to believe Wia's valuation is at trough levels, though we are now less upbeat on both its earnings revision cycle and multiple expansion prospects over the next 12 months. Still, we look for its 2017E earnings to stage a strong rebound on a slew of production capacity increases for diesel, turbo and petrol engines, and to a lesser extent on the faster-than-expected rise of EVs.

What's the impact: Wia is scheduled to report its 2Q16E earnings on 27 July. We now forecast 2Q16E revenue and operating profit of KRW2,064bn (up by 3% YoY) and KRW119bn (down 10.1% YoY). Despite our forecast of 4.2% YoY rise in HMG's China shipments for 2016 to 1,749,500 units, we look for Wia's operating-profit contribution to fall further YoY as it only produces engines of 2.0L or more (vs. purchase tax cuts in China for engines of 1.6 litres or below until end-2016E). As such, we look for Wia's 2Q16E operating margin to narrow by 0.8pp YoY to 5.8%, which sets a negative tone for its earnings outlook for the rest of this year, considering a lack of production capacity increases across the board.

We cut 2016E-18E EPS by 17-20% to reflect: 1) weaker shipments for its high-margin complete knock down (CKD) shipments to China vs. our previous forecasts, 2) a slower-than-expected production capacity ramp-up for its diesel-engines with 200,000 units (ASP of KRW3-3.5m/car), and 3) a slower-than-expected recovery of its machinery division, vs. our prior forecasts.

What we recommend: In turn, we lower our 12-month DCF/PER-based TP to KRW100,000 (from KRW140,000). Wia is trading at a 2016E PER of 7.5x, or a 27% premium over HMC's 2016E PER. Given our view that Wia now appeals less for its earnings revision cycle and multiple expansion factors due to its lack of green-car exposure, we downgrade our rating to Outperform (2). However, we believe the share price reflects most of the negatives and would continue to focus on the slew of production capacity increases slated for 2017 onwards for its high-margin products including: 1) the start-up of its diesel-engine production (ASP: KRW3-3.5m/car) with 200,000 units from 2H17 onward, 2) the full-fledged impact of its high-margin engine and CVJ (constant velocity joints) production (200,000 units pa) from Mexico in 2017 (ASP: KRW2m/car), and 3) our revenue forecast for turbo engines to reach KRW200bn in 2017E. The main risk to our call: a rapid appreciation of the KRW vs. the USD (15% of Wia's net exposure) and JPY.

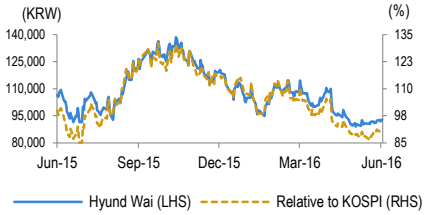
How we differ: Our revised 2016-18 EPS forecasts are moderately lower than the Bloomberg consensus, as we believe the street has yet to factor in weaker earnings for its high-margin CKD shipments to China.

Forecast revisions (%)

Year to 31 Dec	16E	17E	18E
Revenue change	(3.4)	(3.2)	(5.3)
Net profit change	(20.1)	(16.9)	(18.8)
Core EPS (FD) change	(20.1)	(16.9)	(18.8)

Source: Daiwa forecasts

Share price performance



12-month range	89,000-138,500
Market cap (USDbn)	2.17
3m avg daily turnover (USDm)	12.11
Shares outstanding (m)	27
Major shareholder	Hyundai Motor (26.8%)

Financial summary (KRW)

Year to 31 Dec	16E	17E	18E
Revenue (bn)	7,908	9,249	9,506
Operating profit (bn)	442	542	581
Net profit (bn)	337	435	449
Core EPS (fully-diluted)	12,375	15,983	16,513
EPS change (%)	3.0	29.2	3.3
Daiwa vs Cons. EPS (%)	(4.1)	(3.2)	(5.9)
PER (x)	7.5	5.8	5.6
Dividend yield (%)	1.5	1.9	2.1
DPS	1,400	1,800	1,900
PBR (x)	0.7	0.7	0.6
EV/EBITDA (x)	4.4	3.4	2.9
ROE (%)	10.2	11.9	11.1

Source: FactSet, Daiwa forecasts

See important disclosures, including any required research certifications, beginning on page 134

Financial summary

Key assumptions

Year to 31 Dec	2011	2012	2013	2014	2015	2016E	2017E	2018E
Automotive-parts revenue (Wbn)	4,803.4	5,272.8	5,745.0	6,221.0	6,695.0	6,717.9	8,020.6	8,206.7
Machinery revenue (Wbn)	1,589.3	1,747.8	1,347.0	1,374.8	1,189.0	1,189.6	1,228.7	1,299.1
OPM for automotive-parts (%)	5.1	7.7	7.9	7.2	6.6	5.8	6.0	6.2
OPM for machinery (%)	5.6	7.6	5.8	5.7	5.1	4.4	5.1	5.3

Profit and loss (KRWbn)

Year to 31 Dec	2011	2012	2013	2014	2015	2016E	2017E	2018E
Automotive-parts Revenues	4,803	5,273	5,745	6,221	6,695	6,718	8,021	8,207
Machinery Revenues	1,589	1,748	1,347	1,375	1,189	1,190	1,229	1,299
Other Revenue	0	0	0	(0)	0	0	0	0
Total Revenue	**6,393**	**7,021**	**7,092**	**7,596**	**7,884**	**7,908**	**9,249**	**9,506**
Other income	0	0	0	0	0	0	0	0
COGS	(5,810)	(6,197)	(6,272)	(6,765)	(7,043)	(7,132)	(8,313)	(8,520)
SG&A	(260)	(278)	(282)	(292)	(328)	(322)	(380)	(391)
Other op.expenses	(5)	(6)	(10)	(13)	(12)	(12)	(14)	(14)
Operating profit	**318**	**540**	**528**	**526**	**501**	**442**	**542**	**581**
Net-interest inc./(exp.)	(42)	(30)	(17)	(13)	(19)	(8)	(2)	7
Assoc/forex/extraord./others	36	47	44	73	(39)	22	49	20
Pre-tax profit	**312**	**556**	**556**	**586**	**443**	**456**	**589**	**608**
Tax	(71)	(132)	(131)	(147)	(116)	(119)	(154)	(159)
Min. int./pref. div./others	0	0	0	0	0	0	0	0
Net profit (reported)	**241**	**425**	**425**	**439**	**327**	**337**	**435**	**449**
Net profit (adjusted)	**238**	**418**	**417**	**434**	**327**	**337**	**435**	**449**
EPS (reported)(KRW)	**10,151**	**16,501**	**16,518**	**16,150**	**12,020**	**12,375**	**15,983**	**16,513**
EPS (adjusted)(KRW)	**10,019**	**16,262**	**16,224**	**15,975**	**12,020**	**12,375**	**15,983**	**16,513**
EPS (adjusted fully-diluted)(KRW)	**10,019**	**16,262**	**16,224**	**15,975**	**12,020**	**12,375**	**15,983**	**16,513**
DPS (KRW)	**500**	**500**	**500**	**800**	**1,100**	**1,400**	**1,800**	**1,900**
EBIT	**318**	**540**	**528**	**526**	**501**	**442**	**542**	**582**
EBITDA	**455**	**691**	**685**	**696**	**676**	**618**	**750**	**795**

Cash flow (KRWbn)

Year to 31 Dec	2011	2012	2013	2014	2015	2016E	2017E	2018E
Profit before tax	312	556	556	586	443	456	589	608
Depreciation and amortisation	139	153	153	168	178	179	211	216
Tax paid	(71)	(132)	(131)	(147)	(116)	(119)	(154)	(159)
Change in working capital	393	464	235	388	158	(12)	290	335
Other operational CF items	(624)	(448)	(345)	(550)	(34)	311	(153)	(160)
Cash flow from operations	**148**	**593**	**468**	**445**	**629**	**814**	**782**	**841**
Capex	(256)	(355)	(372)	(360)	(644)	(580)	(522)	(537)
Net (acquisitions)/disposals	(270)	(518)	(504)	(514)	(861)	(134)	(92)	(108)
Other investing CF items	271	355	372	361	629	(210)	(50)	(60)
Cash flow from investing	**(255)**	**(518)**	**(504)**	**(514)**	**(876)**	**(924)**	**(663)**	**(705)**
Change in debt	438	(23)	(44)	263	344	124	84	88
Net share issues/(repurchases)	0	0	0	0	0	0	0	0
Dividends paid	0	(13)	(13)	(13)	(21)	(38)	(49)	(52)
Other financing CF items	(191)	(20)	75	(60)	21	109	13	36
Cash flow from financing	**247**	**(56)**	**19**	**190**	**344**	**195**	**48**	**73**
Forex effect/others	0	0	0	0	0	0	0	0
Change in cash	**140**	**19**	**(17)**	**122**	**97**	**85**	**166**	**208**
Free cash flow	(108)	238	96	85	(15)	234	260	303

Source: FactSet, Daiwa forecasts

Financial summary continued …

Balance sheet (KRWbn)

As at 31 Dec	2011	2012	2013	2014	2015	2016E	2017E	2018E
Cash & short-term investment	352	575	691	993	1,236	1,455	1,716	2,032
Inventory	789	661	681	673	780	733	854	876
Accounts receivable	1,519	1,531	1,371	1,733	1,569	1,538	1,798	1,848
Other current assets	35	22	26	54	38	70	71	71
Total current assets	**2,695**	**2,789**	**2,769**	**3,453**	**3,623**	**3,795**	**4,440**	**4,827**
Fixed assets	1,223	1,398	1,588	1,928	2,323	2,723	3,035	3,356
Goodwill & intangibles	118	130	171	226	243	246	238	231
Other non-current assets	216	257	332	331	494	593	374	400
Total assets	**4,253**	**4,573**	**4,860**	**5,937**	**6,683**	**7,358**	**8,087**	**8,813**
Short-term debt	512	229	101	166	130	183	192	202
Accounts payable	1,447	1,407	1,294	1,500	1,485	1,684	2,078	2,154
Other current liabilities	201	153	141	165	228	160	112	78
Total current liabilities	**2,160**	**1,790**	**1,535**	**1,831**	**1,843**	**2,027**	**2,383**	**2,434**
Long-term debt	500	760	844	1,042	1,422	1,493	1,568	1,646
Other non-current liabilities	97	142	169	215	255	376	289	488
Total liabilities	**2,757**	**2,691**	**2,549**	**3,088**	**3,520**	**3,896**	**4,240**	**4,569**
Share capital	129	129	129	136	136	136	136	136
Reserves/R.E./others	1,367	1,753	2,183	2,713	3,027	3,326	3,711	4,109
Shareholders' equity	**1,495**	**1,882**	**2,311**	**2,849**	**3,163**	**3,462**	**3,847**	**4,245**
Minority interests	0	0	0	0	0	0	0	0
Total equity & liabilities	**4,253**	**4,573**	**4,860**	**5,937**	**6,683**	**7,358**	**8,087**	**8,813**
EV	3,175	2,930	2,770	2,732	2,831	2,738	2,559	2,332
Net debt/(cash)	**660**	**414**	**254**	**216**	**316**	**222**	**44**	**(183)**
BVPS (KRW)	**58,120**	**73,148**	**89,827**	**104,757**	**116,315**	**127,290**	**141,473**	**156,086**

Key ratios (%)

Year to 31 Dec	2011	2012	2013	2014	2015	2016E	2017E	2018E
Sales (YoY)	44.1	9.8	1.0	7.1	3.8	0.3	17.0	2.8
EBITDA (YoY)	446.4	51.8	(0.8)	1.5	(2.8)	(8.5)	21.3	5.9
Operating profit (YoY)	n.a.	69.8	(2.1)	(0.5)	(4.7)	(11.8)	22.8	7.4
Net profit (YoY)	74.0	76.0	(0.2)	4.1	(24.8)	3.0	29.2	3.3
Core EPS (fully-diluted) (YoY)	59.3	62.3	(0.2)	(1.5)	(24.8)	3.0	29.2	3.3
Gross-profit margin	9.1	11.7	11.6	10.9	10.7	9.8	10.1	10.4
EBITDA margin	7.1	9.8	9.7	9.2	8.6	7.8	8.1	8.4
Operating-profit margin	5.0	7.7	7.4	6.9	6.4	5.6	5.9	6.1
Net profit margin	3.7	6.0	5.9	5.7	4.1	4.3	4.7	4.7
ROAE	19.5	24.8	19.9	16.8	10.9	10.2	11.9	11.1
ROAA	6.7	9.5	8.9	8.0	5.2	4.8	5.6	5.3
ROCE	15.8	20.1	17.2	14.4	11.4	9.0	10.1	10.0
ROIC	13.9	18.5	16.6	14.0	11.3	9.1	10.6	10.8
Net debt to equity	44.1	22.0	11.0	7.6	10.0	6.4	1.1	n.a.
Effective tax rate	22.8	23.7	23.6	25.0	26.3	26.2	26.2	26.2
Accounts receivable (days)	69.5	79.3	74.7	74.6	76.4	71.7	65.8	70.0
Current ratio (x)	1.2	1.6	1.8	1.9	2.0	1.9	1.9	2.0
Net interest cover (x)	7.5	17.9	32.0	41.7	26.9	53.5	226.4	n.a.
Net dividend payout	4.9	3.0	3.0	5.0	9.2	11.3	11.3	11.5
Free cash flow yield	n.a.	9.5	3.8	3.4	n.a.	9.3	10.3	12.0

Source: FactSet, Daiwa forecasts

Company profile

Hyundai Wia was established in 1976 as a machine-tool maker and in 1999 it was incorporated into Hyundai Motor Group, for which it became a key auto-parts maker. The company was listed on the KOSPI on 21 February 2011. For 2013, it derived 81% of revenue from auto parts and 19% from machinery and others.

Auto-parts makers globally: valuation data

Company	Ticker	Curr.	Share Price	Daiwa Rating	Mcap (USDm)	Absolute Performance (%) YTD	1M	3M	**Relative Performance (%) 12M	1M	3M	PER (x) 16E	17E	PBR (x) 16E	17E	EV/ EBITDA (x) 16E	17E	ROE (%) 16E	17E	Div. Yield (%) 16E	17E	EPS growth (%) 16E	17E
US																							
DELPHI AUTOMOTIVE	DLPH US	USD	69.2	Outperform	18,844	(19.5)	3.4	(5.8)	(20.5)	1.8	(7.5)	11.7	9.9	5.9	4.6	8.0	7.3	60.1	49.6	1.7	1.8	16.4	15.0
Autoliv	ALV US	USD	122.8	Hold	10,804	(1.8)	1.0	7.4	2.6	(0.7)	5.6	17.6	15.8	2.9	2.6	8.7	8.1	16.9	17.1	1.9	2.1	10.1	10.2
JOHNSON CONTROLS	JCI US	USD	44.2	Not rated	28,781	12.4	3.4	15.4	(12.5)	1.8	13.6	11.3	10.3	2.6	2.2	8.5	7.8	21.0	22.1	2.6	2.7	14.9	9.9
BORGWARNER	BWA US	USD	33.4	Not rated	7,214	(23.3)	0.9	(11.7)	(43.7)	(0.7)	(13.5)	12.7	9.2	1.9	1.6	6.3	6.0	19.1	19.2	1.6	1.6	9.2	11.1
VISTEON	VC US	USD	72.8	Not rated	2,470	(36.6)	1.5	(8.1)	(31.3)	(0.2)	(9.9)	19.6	16.3	4.1	3.3	6.8	6.1	16.2	19.5	0.0	0.0	48.3	19.8
Japan																							
DENSO	6902 JP	JPY	3,680	Outperform	31,082	(36.7)	(11.5)	(17.7)	(18.9)	(7.1)	(11.4)	11.5	11.7	0.9	0.9	4.8	4.8	7.6	7.4	3.2	3.3	(3.4)	(1.9)
AISIN SEIKI	7259 JP	JPY	4,190	Outperform	11,796	(20.0)	(0.1)	(3.6)	(0.9)	4.3	2.7	12.7	12.2	1.0	1.0	4.5	4.3	8.0	8.2	2.4	2.5	11.6	4.2
NSK	6471 JP	JPY	816	Holdl	4,298	(38.5)	(14.2)	(21.9)	(36.1)	(9.8)	(15.7)	6.8	9.6	0.9	0.9	4.3	5.1	13.7	10.0	4.2	4.6	6.8	(2.9)
Korea																							
HYUNDAI MOBIS*	012330 KS	KRW	264,000	Outperform	22,309	7.1	8.4	1.5	31.5	6.1	1.8	7.2	6.9	0.9	0.8	4.6	4.2	13.0	12.1	1.5	1.8	15.1	5.1
MANDO*	204320 KS	KRW	223,000	Buy	1,818	34.7	13.2	36.8	82.2	10.9	37.0	10.7	8.9	1.2	1.0	6.7	5.9	13.3	13.9	2.3	2.9	56.2	19.2
HYUNDAI WIA*	011210 KS	KRW	92,500	Outperform	2,184	(17.4)	3.2	(19.2)	(10.1)	0.9	(19.0)	7.5	5.8	0.7	0.7	4.4	3.4	10.2	11.9	1.5	1.9	3.0	29.2
Hanon Systems*	018880 KS	KRW	11,300	Buy	5,236	8.9	(1.3)	20.0	55.5	(3.6)	20.2	16.1	13.7	3.0	2.8	9.1	7.9	19.5	21.0	2.2	2.7	62.4	17.7
Others																							
Nexteer	1316 HK	HKD	7.5	Buy	2,412	(13.1)	(4.6)	(8.0)	9.4	(9.3)	(8.6)	10.0	8.9	2.4	1.9	4.9	4.0	26.0	23.8	2.0	2.3	17.2	12.3
Continental AG	CON GR	EUR	191	Not rated	43,206	(15.1)	3.2	(2.7)	(0.3)	1.7	(3.5)	12.5	11.6	2.5	2.2	6.5	6.2	21.6	19.9	2.2	2.4	6.2	7.7
BASF SE	BAS GR	EUR	70	Not rated	73,144	(0.6)	4.7	5.0	(4.5)	3.2	4.2	15.5	14.1	2.0	2.0	7.9	7.3	13.5	14.2	4.2	4.3	(6.0)	9.8
MAGNA INTL	MG CN	CAD	51	Not rated	15,477	(10.9)	(3.7)	(9.5)	(23.9)	(4.3)	(13.3)	9.7	8.7	1.6	1.4	5.0	4.6	21.3	20.9	2.1	2.3	16.5	12.1
VALEO	FR FP	EUR	45.8	Not rated	12,390	(3.4)	4.4	2.1	7.9	3.8	3.2	12.8	11.4	2.6	2.3	5.5	5.0	22.1	21.4	2.4	2.8	18.7	12.8
Taiwan																							
Sunny optical	2382 HK	HKD	27.5	Outperform	3,903	54.9	12.9	21.6	74.4	8.1	21.0	27.9	21.9	6.4	5.2	16.6	13.2	25.4	26.6	1.0	1.2	43.3	27.2
Largan precision	3008 TT	TWD	3,050.0	Buy	12,732	34.4	15.3	17.3	(4.9)	8.1	18.1	17.8	13.7	5.3	4.2	12.3	9.6	32.9	33.7	2.1	2.4	(4.9)	30.3
Industry average					**16,321**	**(4.5)**	**2.1**	**1.0**	**2.9**	**0.8**	**1.3**	**13.2**	**11.6**	**2.6**	**2.2**	**7.1**	**6.4**	**20.1**	**19.6**	**2.2**	**2.4**	**18.0**	**13.1**

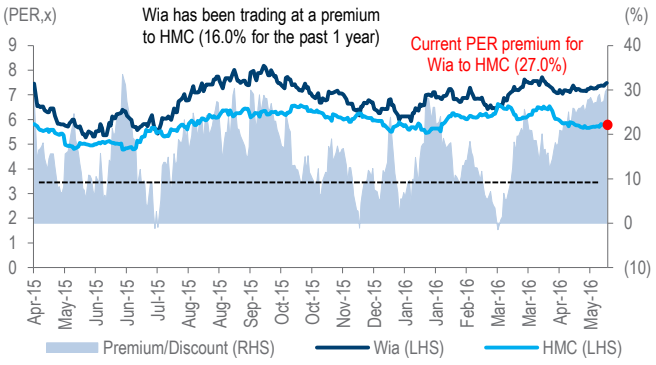
*Source: Bloomberg, *Daiwa forecasts. Note: 1) share prices are as at 22 Jun 2016; 2) **Relative to each country index*

Wia: 2Q16 results preview

(in KRWbn)	2Q16E-Daiwa	2Q16E-Bbg	Diff (%)	2Q15	YoY (%)	1Q16	QoQ (%)
USD/KRW (Avg)	**1162.1**	**1162.1**		**1096.7**	6.0	**1201.1**	(3.2)
Revenue	**2,064**	**2,195**	**(6.0)**	**2,004**	**3.0**	**1,839**	**12.2**
Module and Core parts	1,760			1,696	3.7	1,524	15.4
A/S Parts	304			308	(1.1)	314	(3.2)
Operating profit	**119**	**145**	**(17.7)**	**133**	**(10.1)**	**80**	**49.0**
OP margin(%)	*5.8*	*6.6*		*6.6*		*4.4*	
Module and Core-parts	106			116	(8.7)	66	59.5
OP margin(%)	*6.0*			*6.8*		*4.3*	
A/S Parts	14			17	(20.3)	14	(1.0)
OP margin(%)	*4.5*			*5.6*		*4.4*	
Recurring Profit	**129**			**157**	**(17.7)**	**67**	**93.5**
RP Margin (%)	*6.3*			*7.8*		*3.6*	
Tax	34			38		18	
Tax rate(%)	*26.0*			*24.0*		*27.2*	
Net profit	**96**	**151**	**(36.6)**	**119**	**(19.8)**	**49**	**96.7**
NP margin(%)	*4.6*	*6.9*		*6.0*		*2.6*	

Source: Bloomberg, Daiwa forecasts

HMG and Wia: PER gap



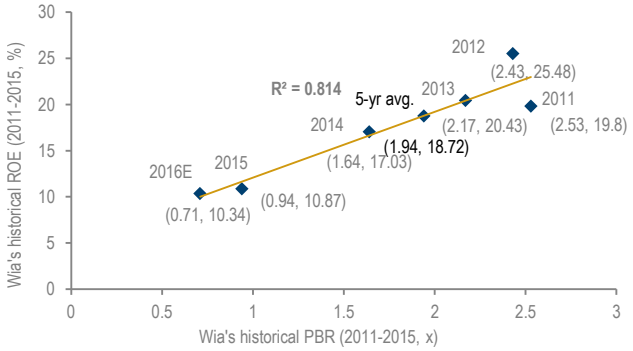
Source: Bloomberg, Daiwa

Wia: major assumption changes

	2016E Old	2016E New	2016E Diff. (%)	2017E Old	2017E New	2017E Diff. (%)	2018E Old	2018E New	2018E Diff. (%)
Revenue	**8,189**	**7,908**	**(3.4)**	**9,554**	**9,249**	**(3.2)**	**10,035**	**9,506**	**(5.3)**
Automotive parts	6,935	6,718	(3.1)	8,261	8,021	(2.9)	8,668	8,207	(5.3)
Machinery	1,253	1,190	(5.1)	1,293	1,229	(5.0)	1,367	1,299	(5.0)
COGS	7,321	7,132	(2.6)	8,493	8,313	(2.1)	8,921	8,520	(4.5)
Gross Profit	868	758	(12.7)	1,060	877	(17.3)	1,114	915	(17.8)
Gross Profit Margin (%)	*10.6*	*9.6*		*11.1*	*9.5*		*11.1*	*9.6*	
Operating profit	**521**	**442**	**(15.2)**	**629**	**542**	**(13.8)**	**673**	**581**	**(13.6)**
OPM (%)	*6.4*	*5.6*		*6.6*	*5.9*		*6.7*	*6.1*	
Automotive parts	456	389	(14.7)	558	479	(14.2)	601	513	(14.6)
OPM (%)	*6.6*	*5.8*		*6.8*	*6*		*6.9*	*6.2*	
Machinery	65	53	(18.8)	70	63	(10.2)	72	69	(5.0)
OPM (%)	*5.2*	*4.4*		*5.4*	*5.1*		*5.3*	*5.3*	
Equity method income	26	19	(25.6)	26	24	(9.8)	32	21	(34.1)
Recurring Profit	**547**	**456**	**(16.7)**	**679**	**589**	**(13.3)**	**717**	**609**	**(15.1)**
Recurring Profit Margin (%)	*6.7*	*5.8*		*7.1*	*6.4*		*7.1*	*6.4*	
Net Income	**421**	**337**	**(20.1)**	**523**	**435**	**(16.9)**	**552**	**449**	**(18.6)**
Net Profit Margin (%)	*5.1*	*4.3*		*5.5*	*4.7*		*5.5*	*4.7*	

Source: Daiwa forecasts

Wia: historical PBR vs. ROE analysis



Source: Bloomberg, Daiwa

Wia: capacity expansion plan

(000 units)	*2014*	*2015*	*2016E*	*2017E*
Engines in total	**1,300**	**1,500**	**1,800**	**2,300**
Engines	1,300	1,500	1,800	2,100
Korea	500	500	600	600
China	800	1,000	1,100	1,300
Mexico	0	0	100	200
Diesel engines				200
Korea				200
CVJs	800	1,100	1,100	1,100
Korea/China	800	1,100	1,100	1,100
Transfers	500	650	650	650
Korea	500	650	650	650
TurboChargers		350	450	500
Korea		250	250	300
China		100	200	200
Grand total	**2,600**	**3,600**	**4,000**	**4,350**
14-17E CAGR				**20.5%**

Source: Company, Daiwa

Wia: DCF calculation

Target gearing (debt/capital) (%)		**40.0**
Market risk premium (%)		**11.5**
Risk-free rate (%)		**2.1**
Cost of debt (%)		**3.9**
Cost of equity (%)		**13.3**
WACC (%)		9.18%
Terminal Value		
	Terminal Growth Rate	2.00%
	Terminal WACC	9.18%
	Estimated Terminal Free Cash Flow	400
	NPV of Terminal Value (as at 2026)	5,690
	NPV of Terminal Value (Jun 2016)	2,263
DCF Valuation		
	NPV of Forecasts (KRW)	699
	NPV of Terminal Value (KRW)	2,263
	Enterprise Value (KRW bn)	2,962
	Less: Net Debt (as at 31Mar 2016)	222
	Equity Value (KRW)	2,740
	No. Shares (m)	27
	Per Share Equity Value	**100,753**

Source: Daiwa estimates

Wia: DCF sensitivity

Discount Rate	NPV of Terminal FCF	Enterprise Value	Equity Value	Equity Value Per Share (KRW)
5.20%	1,018	7,561	8,356	307,272
6.20%	927	5,208	5,913	217,414
7.20%	844	3,808	4,430	162,915
8.20%	769	2,895	3,442	126,567
9.20%	**699**	**2,263**	**2,740**	**100,753**
10.20%	636	1,805	2,219	81,583
11.20%	578	1,463	1,818	66,865
12.20%	525	1,200	1,503	55,270
13.20%	476	996	1,249	45,946

Source: Daiwa estimates

Daiwa Capital Markets

S&T Motiv (064960 KS)

Target price: **n.a.**

Share price (22 Jun): **KRW69,100** | Up/downside: **-**

5 4 3 2 1

No Rating

Rising demand for its electric motors

- S&T Motiv is Korea's leading maker of motors and motor parts
- Has seen growing HMG orders on rising demand for EVs
- Is now focusing more on producing higher-margin components

Sung Yop Chung
(82) 2 787 9157
sychung@kr.daiwacm.com

Background: S&T Motiv (S&T) is Korea's top manufacturer of motors and motor parts, as well as other parts such as chassis and electronics. It also manufactures arms. The company supplies its motors and auto-parts to GM (GM US, USD29.32, Outperform [2]), HMC (005380 KS, KRW 140,000, Buy [1]), Hyundai Mobis (012330 KS, KRW 264,000, Outperform [2]), and Kia (000270 KS, KRW 44,700, Outperform [2]).

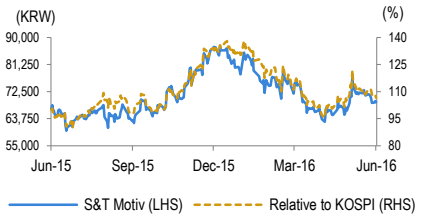
Highlights: Leading manufacturer of motors and other components. S&T's motor parts accounted for 25.6% of its revenue for 1Q16 vs. 19.3% in 2011. Its motor business, meanwhile, accounted for 34% of its total auto-parts revenue for 2015. The company recorded an overall 10.2% operating margin for 2015, higher than the average for the Korean auto-parts suppliers, at 6.8%. Given that Korea now has stricter regulations to reduce CO2 emissions, and has announced a target of having green cars account for 20% of new cars sold by 2020E (vs. 2% in 2015), management said it expects to receive more orders in general on the back of a slew of green-car models being launched by 2020 (it guided that its auto-parts production for HMG's green car will reach 300,000 units by 2018 vs. 80,000 units in 2015).

Benefiting from growing HMG orders. As demand for green cars increases, we expect more models to be fitted with electric braking and steering features, replacing existing components. S&T said it is the sole supplier of hybrid starter generators (HSG) and traction motors for Hyundai Motor Group's green-car line-up. Also, HMG switched its cluster orders to S&T from end-2014, from Denso and Continental. HMG picked S&T as a second-cluster vendor and S&T has received new orders worth KRW1tn for the Veloster and HMG's other compact-size SUVs.

Product-mix upgrade and client diversification. S&T said its current order backlog is mostly derived from GM and HMG, but it expects to get orders from OEMs that are new to the EV segment, given the strong global demand for these vehicles. For its motor business, the company focuses on making: 1) dual-clutch transmissions (29% of 2015 motor revenue), 2) electric-power steering (32%), and 3) motors for green cars (15%), as these components have higher margins (7-8% operating margin in 2015 vs. 3-4% for "conventional" products, such as internal-combustion-engine motors).

Valuation: The stock is trading at a 2016 PER of 10.9x vs. the peer average of 19.4x, based on the Bloomberg and FnGuide consensus forecasts for the EV-related small-caps in Korea.

Share price performance



12-month range	59,800.00-87,000.00
Market cap (USDbn)	0.86
3m avg daily turnover (USDm)	4.05

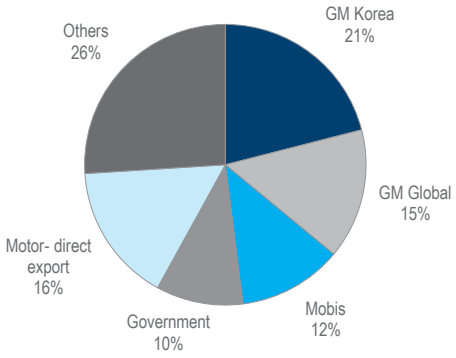
Source: FactSet, Daiwa forecasts

Korea: EV-parts small-caps: peer valuation

Company	Ticker	Curr.	Share Price	Daiwa Rating	Mkt cap (USDm)	Absolute Performance (%)			Relative Performance (%)			PER (x)		PBR (x)		EV/ EBITDA (x)		ROE (%)		Div. Yield (%)		EPS Growth (%)	
						YTD	1M	3M	12M	1M	3M	16E	17E	16E	17E	16E	17E	16E	17E	16E	17E	16E	17E
Korea																							
Woory Ind.	215360 KQ	KRW	33,400	NR	256	19.3	2.9	29.5	17.9	0.9	29.9	17.2	14.1	4.3	3.3	13.2	10.7	28.1	26.4	0.2	0.3	38.1	22.3
PNE Solution	131390 KQ	KRW	6,930	NR	84	(31.4)	(12.7)	(13.8)	(32.7)	(14.8)	(13.4)	26.8	20.3	2.3	2.0	28.9	12.1	9.0	15.5	n.a.	n.a.	n.a.	37.3
Samhwa Cap	001820 KS	KRW	12,200	NR	109	3.8	(12.9)	1.2	2.5	(14.9)	1.7	14.4	11.1	2.3	1.9	7.1	6.5	17.3	19.2	0.4	0.4	149.1	30.7
Kopla	126600 KQ	KRW	16,800	NR	141	(4.5)	16.7	15.9	(13.2)	14.6	16.3	23.1	15.6	1.5	1.3	6.8	4.5	14.3	13.1	n.a.	n.a.	38.1	18.0
Kodaco	046070 KQ	KRW	3,960	NR	122	(15.3)	0.1	6.7	(5.9)	(1.9)	7.2	22.5	13.9	1.1	1.0	5.0	4.6	9.7	11.3	n.a.	n.a.	35.9	28.4
S&T Motiv	**064960 KS**	**KRW**	**69,100**	**NR**	**875**	**(19.5)**	**4.1**	**(8.1)**	**(20.8)**	**2.0**	**(7.7)**	**10.9**	**10.1**	**1.4**	**1.2**	**6.1**	**5.7**	**13.5**	**13.0**	**1.6**	**1.8**	**5.0**	**7.9**
Ecopro	086520 KQ	KRW	13,000	NR	191	3.6	(4.4)	(6.1)	13.0	0.0	37.3	27.6	18.3	n.a	n.a	n.a	n.a	7.3	n.a	n.a.	n.a.	n.a.	51.2
NS	217820 KQ	KRW	15,200	NR	64	(26.2)	(13.6)	(11.6)	(5.6)	(18.5)	NA	13.6	8.4	2.4	1.8	10.7	6.5	20.7	24.6	0.7	0.7	149.1	30.7
Industry average					**230**	**(8.8)**	**(2.5)**	**1.7**	**(5.6)**	**(4.1)**	**10.2**	**19.4**	**14.0**	**2.2**	**1.8**	**11.1**	**7.2**	**15.0**	**17.6**	**0.7**	**0.8**	**69.2**	**21.5**

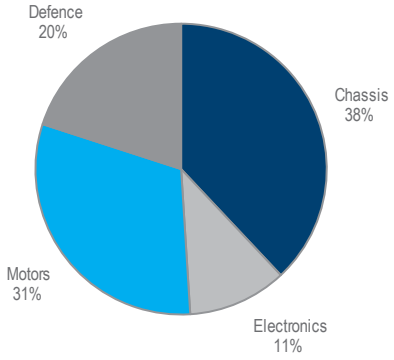
Source: Bloomberg, FnGuide
Note: Share price as at 22 June 2016; NR = not rated

S&T Motiv: customer breakdown (2015)



Source: Company

S&T Motiv: sales breakdown (2015)



Source: Company

S&T Motiv: financial data

(KRWbn)	2014	2015	2016E*	2017E*
Revenue	1,099	1,211	1,334	1,430
Revenue growth (%)		10.2	10.2	7.2
Auto parts	792	847		
Industrial facilities	243	260		
Others	140	198		
Operating profit	69	123	133	141
Operating margin (%)	6.3	10.2	10.0	9.9
Auto parts	34	56		
Industrial facilities	14	34		
Others	21	32		
Net profit	64	97	93	100
Net-profit margin (%)	5.8	8.0	7.0	7.0
EPS (KRW)	4,262	5,928	6,371	6,881
EPS growth (%)		39.1	7.5	8.0
PER (x)	9.9	14.5	11.25	10.42
PBR (x)	1.1	1.9	1.41	1.26
ROE (%)	11.2	13.8	13.48	13.03

Source: Company, Bloomberg
Note: 2016E and 2017E data are from the Bloomberg consensus

S&T Motiv: main products

	DCT actuators	DCT actuators allow engine torque to be transferred in a way that maximises efficiency
	HSG motors	HSG motors are used to replace conventionally separate conventional starters and generators
	EPS motors	Helps drivers steer by augmenting the steering power of the steering wheel
	Traction motors	Traction motors provide rotational torgue, converting it into a linear motion

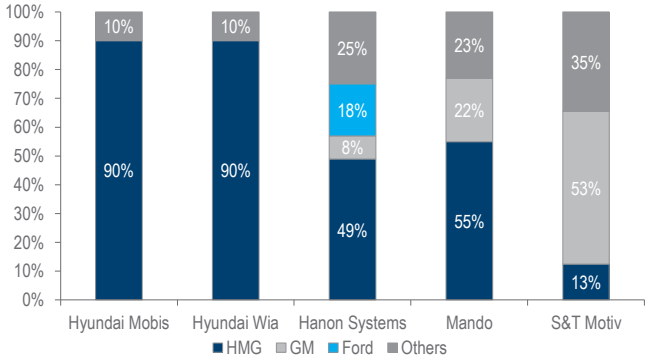
Source: Company, compiled by Daiwa

S&T Motiv: new order wins and sales growth drivers

Division	Key orders and contracts
Motors	Supplied DCT motors worth KRW20bn to Germany's Getrag; orders from HMG for 400k DCT motors, 80k starters, and 7k traction motors (worth KRW117bn)
Oil pump	Five-year contract with GM Korea and GM China worth KRW560bn; has secured orders from GM in Shanghai and North America worth KRW255bn, with delivery starting in from 2018
Defence	K12 machine-gun sales to rise by KRW30bn YoY; has won a K2 rifle sales contract worth KRW50bn for delivery in 2017
Electronics	Orders from HMG worth KRW 30bn, including electronic instrument clusters; company says it has potentially won an order worth KRW 200bn of electric parts

Source: Company, compiled by Daiwa

S&T Motiv: revenue breakdown vs. peers (2015)



Source: Company, Daiwa

Daiwa Capital Markets

Woory Industrial (215360 KS)

Target price: **n.a.**

Share price (22 Jun): **KRW33,400** | Up/downside: **-**

5 4 3 2 1

No Rating

Forging ahead with EV-driven growth

- Global leader in HVAC actuators; leading climate control tier-2 supplier
- Non-conventional products to account for 50% of its 2020E revenue
- Management sees long-term earnings growth for Woory

Sung Yop Chung
(82) 2 787 9157
sychung@kr.daiwacm.com

Background: Woory Industrial (Woory) is a second-tier supplier to global top-tier auto-parts manufacturers such as Mobis (012330KS, KRW264,000, Outperform [2]), Denso (6902 JP, JPY3,680, Outperform [2]), Delphi (DLPH US, USD69.47, Outperform [2]), Valeo (FR FP, EUR45.88, NR) and Hanon Systems (018880KS, KRW11,300, Buy [1]). Given the current strong EV theme within the auto industry, Woory's share price has performed well, up by 19% YTD.

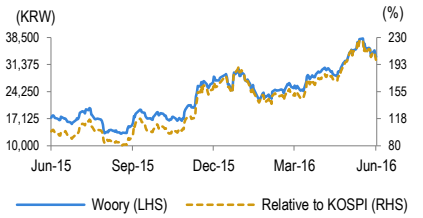
Highlights: **Leading climate control tier-2 supplier globally.** Woory is mainly focused on manufacturing conventional auto parts products: 1) HVAC actuators, 2) Control heads, and 3) Clutch coils along with certain non-conventional products: 1) PTC heaters, 2) Active air flap actuators and 3) coolant heaters. Its main customers include Denso (24% of its global sales volume), Hanon Systems (13%), Valeo (13%), Behr (8%) and Calsonic (5%). Thanks to its strong and diversified client base, Woory has become the largest global supplier of HVAC actuators as at end-2015 with market share of 22% in 2015; surpassing the former industry leader Saia-Burgess, owned by Johnson Controls. Given its market-leader position in HVAC actuators, management has been focusing on developing world-class non-conventional products.

Woory should continue to benefit from non-conventional products due to EV demand expansion. Based on our revised forecast for EVs, we expect EVs to reach 2,600,000 units by 2020E with a 2015-20E CAGR of 24.3%. Management believes the exponential growth of EVs will have impetus on Woory given its 27.3% 2015 revenue exposure to non-conventional products vs. 6% in 2011. Within non-conventional parts, PTC heater revenue surged the most to KRW28.2bn in 2015 with a 2011-15 CAGR of 97%. The management has guided for 50% of its 2020E revenue from non-conventional products (especially PTC heaters). Also, the company has a varied electronic and sensor components line-up including electric monitoring sensors, battery management system, electric parking brake actuators etc. These components are used in various EV modules and ADAS technology for passenger vehicles. According to management, Woory would continue to benefit from growth of its non-conventional products due to their higher margin.

Management sees long-term earnings growth for Woory to be bolstered by: 1) diversifying customer strategy and potential new customers from China, 2) more stringent regulations for reducing emissions and increasing fuel-efficiency, 3) HMG's 24 green-car models by 2020E (HMG accounts for 50% of Woory's order backlog), and 4) R&D investment of 5% of its sales (vs. 3.4% in 2015) going forward.

Valuation: Woory shares are trading at a PER of 17.2x vs. a peer average of 19.4x, based on the Bloomberg consensus forecasts for EV related small-caps in Korea.

Share price performance



12-month range	13,150.00-38,250.00
Market cap (USDbn)	0.26
3m avg daily turnover (USDm)	4.77

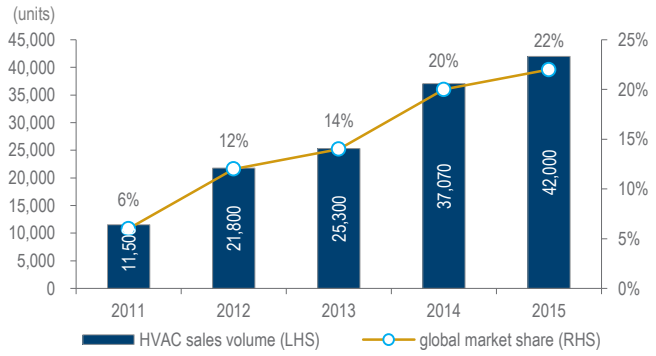
Source: FactSet, Daiwa forecasts

Korea: EV-parts small-caps: peer valuation

Company	Ticker	Curr.	Share Price	Daiwa Rating	Mkt cap (USDm)	Absolute Performance (%) YTD	1M	3M	Relative Performance (%) 12M	1M	3M	PER (x) 16E	17E	PBR (x) 16E	17E	EV/ EBITDA (x) 16E	17E	ROE (%) 16E	17E	Div. Yield (%) 16E	17E	EPS Growth (%) 16E	17E
Korea																							
Woory Ind.	**215360 KQ**	**KRW**	**33,400**	**NR**	**256**	**19.3**	**2.9**	**29.5**	**17.9**	**0.9**	**29.9**	**17.2**	**14.1**	**4.3**	**3.3**	**13.2**	**10.7**	**28.1**	**26.4**	**0.2**	**0.3**	**38.1**	**22.3**
PNE Solution	131390 KQ	KRW	6,930	NR	84	(31.4)	(12.7)	(13.8)	(32.7)	(14.8)	(13.4)	26.8	20.3	2.3	2.0	28.9	12.1	9.0	15.5	n.a.	n.a.	n.a.	37.3
Samhwa Cap	001820 KS	KRW	12,200	NR	109	3.8	(12.9)	1.2	2.5	(14.9)	1.7	14.4	11.1	2.3	1.9	7.1	6.5	17.3	19.2	0.4	0.4	149.1	30.7
Kopla	126600 KQ	KRW	16,800	NR	141	(4.5)	16.7	15.9	(13.2)	14.6	16.3	23.1	15.6	1.5	1.3	6.8	4.5	14.3	13.1	n.a.	n.a.	38.1	18.0
Kodaco	046070 KQ	KRW	3,960	NR	122	(15.3)	0.1	6.7	(5.9)	(1.9)	7.2	22.5	13.9	1.1	1.0	5.0	4.6	9.7	11.3	n.a.	n.a.	35.9	28.4
S&T Motiv	064960 KS	KRW	69,100	NR	875	(19.5)	4.1	(8.1)	(20.8)	2.0	(7.7)	10.9	10.1	1.4	1.2	6.1	5.7	13.5	13.0	1.6	1.8	5.0	7.9
Ecopro	086520 KQ	KRW	13,000	NR	191	3.6	(4.4)	(6.1)	13.0	0.0	37.3	27.6	18.3	n.a	n.a	n.a	n.a	7.3	n.a	n.a.	n.a.	n.a.	51.2
NS	217820 KQ	KRW	15,200	NR	64	(26.2)	(13.6)	(11.6)	(5.6)	(18.5)	NA	13.6	8.4	2.4	1.8	10.7	6.5	20.7	24.6	0.7	0.7	149.1	30.7
Industry average					**230**	**(8.8)**	**(2.5)**	**1.7**	**(5.6)**	**(4.1)**	**10.2**	**19.4**	**14.0**	**2.2**	**1.8**	**11.1**	**7.2**	**15.0**	**17.6**	**0.7**	**0.8**	**69.2**	**21.5**

Source: Bloomberg, FnGuide
Note: Share price as at 22 June 2016; NR = not rated

Woory: HVAC actuator sales volume and global market share



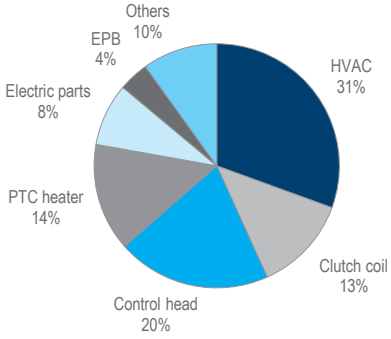
Source: Company

Woory: historical financials

(KRWbn)	2012	2013	2014	2015
Sales	243	290	314	197
Sales growth (%)	21	19.5	8.3	n.m
Operating profit	19	24	31	17
Operating margin (%)	7.8	8.3	9.7	8.6
Net profit	7	13	14	10
Net-profit margin (%)	2.8	4.6	4.5	5.1
EPS (KRW)	433	794	904	1,130
EPS growth (%)		83.3	13.8	25
PER (x)	8.2	13.3	11.2	22.8
PBR (x)	0.9	2.3	1.9	4.8
ROE (%)	11.9	19.3	17.9	n.m

Source: Company

Woory: sales breakdown (2015)

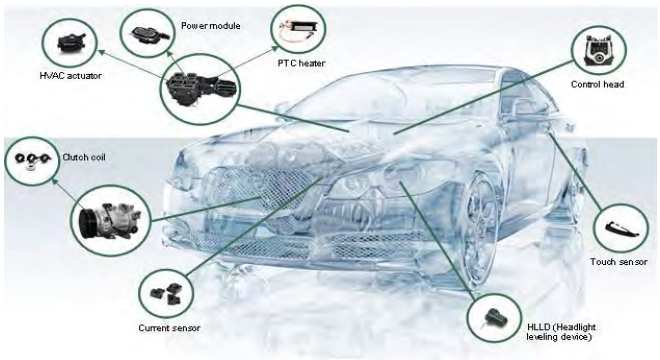


Source: Company

Woory's main products: HVAC actuators

Source: Company
Note: HVAC actuator is a device for moving HVAC door flap to control temperature and fan speed.

Woory: main products



Source: Company

Woory's main products: PTC heaters for electric vehicles

Source: Company
Note: PTC heater is a quick heating system utilizing PTC plates with fast-heating response

Daiwa's Asia Pacific Research Directory

HONG KONG		
Takashi FUJIKURA	(852) 2848 4051	takashi.fujikura@hk.daiwacm.com
Regional Research Head		
John HETHERINGTON	(852) 2773 8787	john.hetherington@hk.daiwacm.com
Regional Deputy Head of Asia Pacific Research		
Rohan DALZIELL	(852) 2848 4938	rohan.dalziell@hk.daiwacm.com
Regional Head of Asia Pacific Product Management		
Kevin LAI	(852) 2848 4926	kevin.lai@hk.daiwacm.com
Chief Economist for Asia ex-Japan; Macro Economics (Regional)		
Jonas KAN	(852) 2848 4439	jonas.kan@hk.daiwacm.com
Head of Hong Kong and China Property		
Cynthia CHAN	(852) 2773 8243	cynthia.chan@hk.daiwacm.com
Property (China)		
Leon QI	(852) 2532 4381	leon.qi@hk.daiwacm.com
Banking (Hong Kong/China); Broker (China); Insurance (China)		
Anson CHAN	(852) 2532 4350	anson.chan@hk.daiwacm.com
Consumer (Hong Kong/China)		
Adrian CHAN	(852) 2848 4427	adrian.chan@hk.daiwacm.com
Consumer (Hong Kong/China)		
Jamie SOO	(852) 2773 8529	jamie.soo@hk.daiwacm.com
Gaming and Leisure (Hong Kong/China)		
Dennis IP	(852) 2848 4068	dennis.ip@hk.daiwacm.com
Power; Utilities; Renewables and Environment (Hong Kong/China)		
John CHOI	(852) 2773 8730	john.choi@hk.daiwacm.com
Head of Hong Kong and China Internet; Regional Head of Small/Mid Cap		
Kelvin LAU	(852) 2848 4467	kelvin.lau@hk.daiwacm.com
Head of Automobiles; Transportation and Industrial (Hong Kong/China)		
Brian LAM	(852) 2532 4341	brian.lam@hk.daiwacm.com
Transportation – Railway; Construction and Engineering (China)		
Thomas HO	(852) 2773 8716	thomas.ho@hk.daiwacm.com
Custom Products Group		

PHILIPPINES		
Patricia Tamase	(63) 2 797 3024	patricia.tamase@dbpdaiwacm.com.ph
Banking		

SOUTH KOREA		
Sung Yop CHUNG	(82) 2 787 9157	sychung@kr.daiwacm.com
Pan-Asia Co-head/Regional Head of Automobiles and Components; Automobiles; Shipbuilding; Steel		
Mike OH	(82) 2 787 9179	mike.oh@kr.daiwacm.com
Banking; Capital Goods (Construction and Machinery)		
Iris PARK	(82) 2 787 9165	iris.park@kr.daiwacm.com
Consumer/Retail		
SK KIM	(82) 2 787 9173	sk.kim@kr.daiwacm.com
IT/Electronics – Semiconductor/Display and Tech Hardware		
Thomas Y KWON	(82) 2 787 9181	yskwon@kr.daiwacm.com
Pan-Asia Head of Internet & Telecommunications; Software – Internet/On-line Game		
Kevin JIN	(82) 2 787 9168	kevin.jin@kr.daiwacm.com
Small/Mid Cap		

TAIWAN		
Rick HSU	(886) 2 8758 6261	rick.hsu@daiwacm-cathay.com.tw
Head of Regional Technology; Head of Taiwan Research; Semiconductor/IC Design (Regional)		
Christie CHIEN	(886) 2 8758 6257	christie.chien@daiwacm-cathay.com.tw
Banking; Insurance (Taiwan); Macro Economics (Regional)		
Steven TSENG	(886) 2 8758 6252	steven.tseng@daiwacm-cathay.com.tw
IT/Technology Hardware (PC Hardware)		
Christine WANG	(886) 2 8758 6249	christine.wang@daiwacm-cathay.com.tw
IT/Technology Hardware (Automation); Pharmaceuticals and Healthcare; Consumer		
Kylie HUANG	(886) 2 8758 6248	kylie.huang@daiwacm-cathay.com.tw
IT/Technology Hardware (Handsets and Components)		
Helen CHIEN	(886) 2 8758 6254	helen.chien@daiwacm-cathay.com.tw
Small/Mid Cap		

INDIA		
Punit SRIVASTAVA	(91) 22 6622 1013	punit.srivastava@in.daiwacm.com
Head of India Research; Strategy; Banking/Finance		
Saurabh MEHTA	(91) 22 6622 1009	saurabh.mehta@in.daiwacm.com
Capital Goods; Utilities		

SINGAPORE		
Ramakrishna MARUVADA	(65) 6499 6543	ramakrishna.maruvada@sg.daiwacm.com
Head of Singapore Research; Telecommunications (China/ASEAN/India)		
Royston TAN	(65) 6321 3086	royston.tan@sg.daiwacm.com
Oil and Gas; Capital Goods		
David LUM	(65) 6329 2102	david.lum@sg.daiwacm.com
Banking; Property and REITs		
Shane GOH	(65) 64996546	shane.goh@sg.daiwacm.com
Small/Mid Cap (Singapore)		
Jame OSMAN	(65) 6321 3092	jame.osman@sg.daiwacm.com
Telecommunications (ASEAN/India); Pharmaceuticals and Healthcare; Consumer (Singapore)		

Daiwa's Offices

Office / Branch / Affiliate	Address	Tel	Fax
DAIWA SECURITIES GROUP INC			
HEAD OFFICE	Gran Tokyo North Tower, 1-9-1, Marunouchi, Chiyoda-ku, Tokyo, 100-6753	(81) 3 5555 3111	(81) 3 5555 0661
Daiwa Securities Trust Company	One Evertrust Plaza, Jersey City, NJ 07302, U.S.A.	(1) 201 333 7300	(1) 201 333 7726
Daiwa Securities Trust and Banking (Europe) PLC (Head Office)	5 King William Street, London EC4N 7JB, United Kingdom	(44) 207 320 8000	(44) 207 410 0129
Daiwa Europe Trustees (Ireland) Ltd	Level 3, Block 5, Harcourt Centre, Harcourt Road, Dublin 2, Ireland	(353) 1 603 9900	(353) 1 478 3469
Daiwa Capital Markets America Inc. New York Head Office	Financial Square, 32 Old Slip, New York, NY10005, U.S.A.	(1) 212 612 7000	(1) 212 612 7100
Daiwa Capital Markets America Inc. San Francisco Branch	555 California Street, Suite 3360, San Francisco, CA 94104, U.S.A.	(1) 415 955 8100	(1) 415 956 1935
Daiwa Capital Markets Europe Limited, London Head Office	5 King William Street, London EC4N 7AX, United Kingdom	(44) 20 7597 8000	(44) 20 7597 8600
Daiwa Capital Markets Europe Limited, Frankfurt Branch	Neue Mainzer Str. 1, 60311 Frankfurt/Main, Germany	(49) 69 717 080	(49) 69 723 340
Daiwa Capital Markets Europe Limited, Paris Representative Office	17, rue de Surène 75008 Paris, France	(33) 1 56 262 200	(33) 1 47 550 808
Daiwa Capital Markets Europe Limited, Geneva Branch	50 rue du Rhône, P.O.Box 3198, 1211 Geneva 3, Switzerland	(41) 22 818 7400	(41) 22 818 7441
Daiwa Capital Markets Europe Limited, Moscow Representative Office	Midland Plaza 7th Floor, 10 Arbat Street, Moscow 119002, Russian Federation	(7) 495 641 3416	(7) 495 775 6238
Daiwa Capital Markets Europe Limited, Bahrain Branch	7th Floor, The Tower, Bahrain Commercial Complex, P.O. Box 30069, Manama, Bahrain	(973) 17 534 452	(973) 17 535 113
Daiwa Capital Markets Hong Kong Limited	Level 28, One Pacific Place, 88 Queensway, Hong Kong	(852) 2525 0121	(852) 2845 1621
Daiwa Capital Markets Singapore Limited	6 Shenton Way #26-08, OUE Downtown 2, Singapore 068809, Republic of Singapore	(65) 6220 3666	(65) 6223 6198
Daiwa Capital Markets Australia Limited	Level 34, Rialto North Tower, 525 Collins Street, Melbourne, Victoria 3000, Australia	(61) 3 9916 1300	(61) 3 9916 1330
DBP-Daiwa Capital Markets Philippines, Inc	18th Floor, Citibank Tower, 8741 Paseo de Roxas, Salcedo Village, Makati City, Republic of the Philippines	(632) 813 7344	(632) 848 0105
Daiwa-Cathay Capital Markets Co Ltd	14/F, 200, Keelung Road, Sec 1, Taipei, Taiwan, R.O.C.	(886) 2 2723 9698	(886) 2 2345 3638
Daiwa Securities Capital Markets Korea Co., Ltd.	20 Fl.& 21Fl. One IFC, 10 Gukjegeumyung-Ro, Yeongdeungpo-gu, Seoul, Korea	(82) 2 787 9100	(82) 2 787 9191
Daiwa Securities Co. Ltd., Beijing Representative Office	Room 301/302，Kerry Center，1 Guanghua Road，Chaoyang District，Beijing 100020, People's Republic of China	(86) 10 6500 6688	(86) 10 6500 3594
Daiwa (Shanghai) Corporate Strategic Advisory Co. Ltd.	44/F, Hang Seng Bank Tower, 1000 Lujiazui Ring Road, Pudong, Shanghai China 200120 , People's Republic of China	(86) 21 3858 2000	(86) 21 3858 2111
Daiwa Securities Co. Ltd., Bangkok Representative Office	18th Floor, M Thai Tower, All Seasons Place, 87 Wireless Road, Lumpini, Pathumwan, Bangkok 10330, Thailand	(66) 2 252 5650	(66) 2 252 5665
Daiwa Capital Markets India Private Ltd	10th Floor, 3 North Avenue, Maker Maxity, Bandra Kurla Complex, Bandra East, Mumbai – 400051, India	(91) 22 6622 1000	(91) 22 6622 1019
Daiwa Securities Co. Ltd., Hanoi Representative Office	Suite 405, Pacific Palace Building, 83B, Ly Thuong Kiet Street, Hoan Kiem Dist. Hanoi, Vietnam	(84) 4 3946 0460	(84) 4 3946 0461
DAIWA INSTITUTE OF RESEARCH LTD			
HEAD OFFICE	15-6, Fuyuki, Koto-ku, Tokyo, 135-8460, Japan	(81) 3 5620 5100	(81) 3 5620 5603
MARUNOUCHI OFFICE	Gran Tokyo North Tower, 1-9-1, Marunouchi, Chiyoda-ku, Tokyo, 100-6756	(81) 3 5555 7011	(81) 3 5202 2021
New York Research Center	11th Floor, Financial Square, 32 Old Slip, NY, NY 10005-3504, U.S.A.	(1) 212 612 6100	(1) 212 612 8417
London Research Centre	3/F, 5 King William Street, London, EC4N 7AX, United Kingdom	(44) 207 597 8000	(44) 207 597 8550

Hyundai Mobis: share price and Daiwa recommendation trend

Date	Target price	Rating	Date	Target price	Rating	Date	Target price	Rating
29/10/13	290,000	Hold	17/03/15	310,000	Buy	13/01/16	280,000	Outperform
19/03/14	280,000	Hold	10/04/15	300,000	Buy	15/04/16	270,000	Outperform
10/06/14	320,000	Outperform	15/06/15	250,000	Buy	27/04/16	290,000	Outperform
24/09/14	280,000	Outperform	14/10/15	270,000	Buy			
11/12/14	320,000	Buy	07/11/15	290,000	Buy			

Source: Daiwa
Note: where appropriate, historical target prices have been adjusted to reflect the current share count

Hyundai Motor: share price and Daiwa recommendation trend

Date	Target price	Rating	Date	Target price	Rating	Date	Target price	Rating
24/10/13	320,000	Buy	06/01/15	210,000	Buy	09/10/15	185,000	Outperform
13/01/14	290,000	Buy	12/03/15	230,000	Buy	07/11/15	190,000	Buy
17/02/14	310,000	Buy	10/06/15	150,000	Outperform	06/01/16	170,000	Buy
17/09/14	300,000	Buy	26/06/15	145,000	Outperform	05/04/16	185,000	Buy
24/09/14	250,000	Buy	05/08/15	165,000	Outperform	30/05/16	170,000	Buy
23/10/14	220,000	Buy	09/09/15	175,000	Outperform			

Source: Daiwa
Note: where appropriate, historical target prices have been adjusted to reflect the current share count

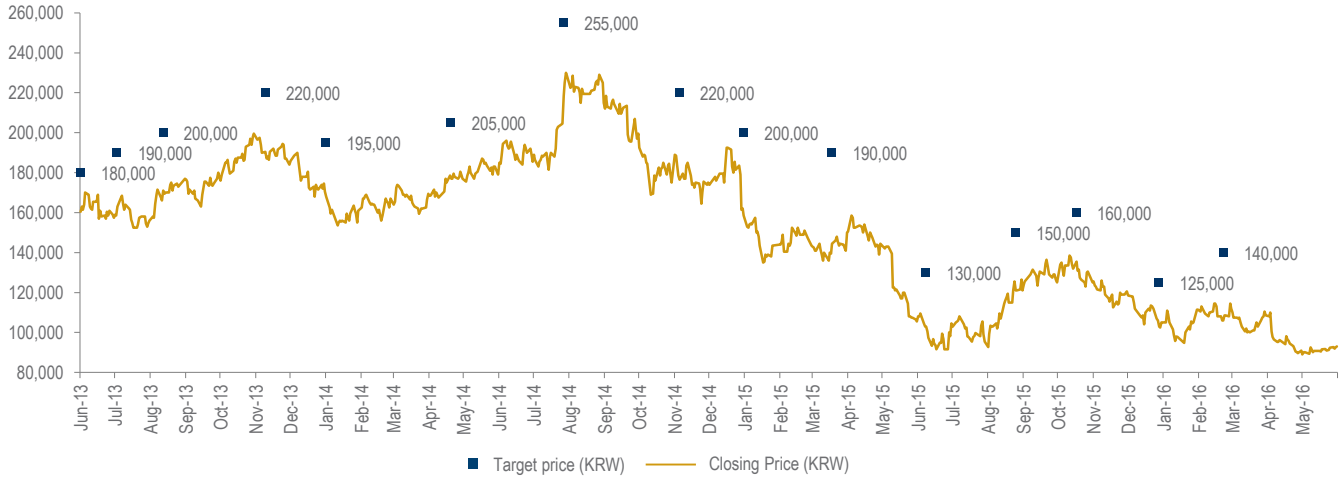
Kia Motors: share price and Daiwa recommendation trend

Date	Target price	Rating	Date	Target price	Rating	Date	Target price	Rating
27/11/13	72,000	Outperform	09/01/15	54,000	Hold	07/11/15	68,000	Buy
14/01/14	60,000	Outperform	08/04/15	47,000	Hold	13/01/16	58,000	Buy
31/03/14	68,000	Outperform	26/06/15	43,000	Hold	02/03/16	55,000	Buy
07/07/14	61,000	Outperform	19/08/15	52,000	Outperform	01/04/16	58,000	Buy
12/08/14	68,000	Outperform	07/09/15	57,000	Outperform			
24/09/14	60,000	Outperform	12/10/15	60,000	Outperform			

Source: Daiwa
Note: where appropriate, historical target prices have been adjusted to reflect the current share count

Hyundai Wia Corp: share price and Daiwa recommendation trend

Date	Target price	Rating	Date	Target price	Rating	Date	Target price	Rating
04/09/13	200,000	Buy	28/11/14	220,000	Buy	07/11/15	160,000	Buy
02/12/13	220,000	Buy	23/01/15	200,000	Buy	20/01/16	125,000	Buy
24/01/14	195,000	Buy	10/04/15	190,000	Buy	16/03/16	140,000	Buy
13/05/14	205,000	Buy	01/07/15	130,000	Buy			
19/08/14	255,000	Buy	17/09/15	150,000	Buy			



Source: Daiwa
Note: where appropriate, historical target prices have been adjusted to reflect the current share count

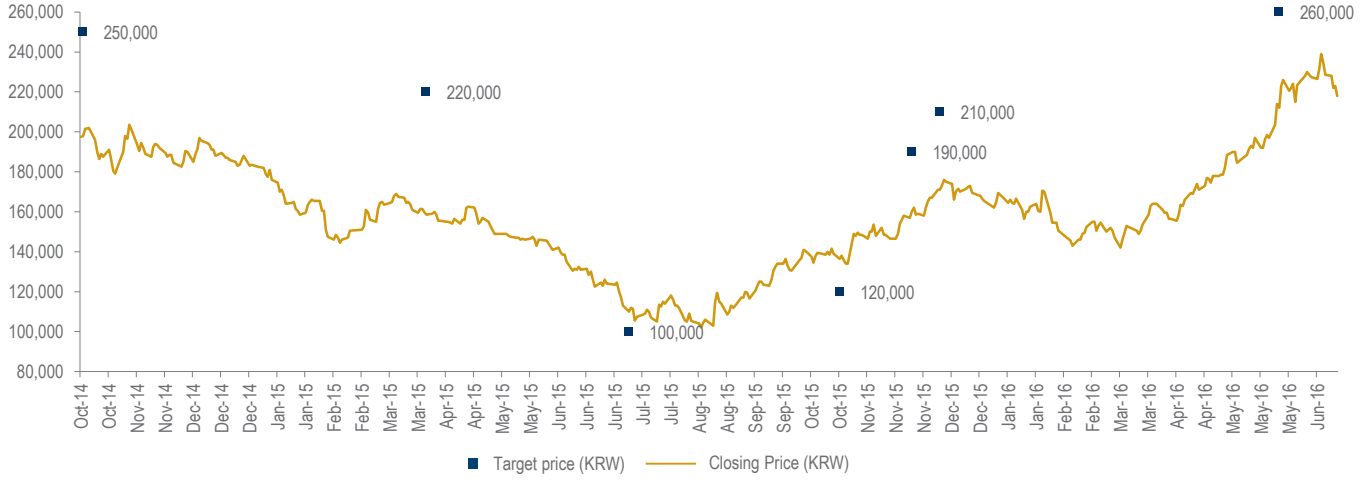
Hanon Systems: share price and Daiwa recommendation trend

Date	Target price	Rating	Date	Target price	Rating	Date	Target price	Rating
30/01/15	10,600	Outperform	07/05/15	9,800	Buy	07/11/15	12,000	Buy
26/02/15	11,000	Buy	10/08/15	9,000	Buy	17/02/16	13,000	Buy

Source: Daiwa
Note: where appropriate, historical target prices have been adjusted to reflect the current share count

Mando Corp: share price and Daiwa recommendation trend

Date	Target price	Rating	Date	Target price	Rating	Date	Target price	Rating
07/10/14	250,000	Buy	19/10/15	120,000	Underperform	25/05/16	260,000	Buy
27/03/15	220,000	Buy	24/11/15	190,000	Buy			
06/07/15	100,000	Underperform	08/12/15	210,000	Buy			



Source: Daiwa
Note: where appropriate, historical target prices have been adjusted to reflect the current share count

Important Disclosures and Disclaimer

This publication is produced by Daiwa Securities Group Inc. and/or its non-U.S. affiliates, and distributed by Daiwa Securities Group Inc. and/or its non-U.S. affiliates, except to the extent expressly provided herein. This publication and the contents hereof are intended for information purposes only, and may be subject to change without further notice. Any use, disclosure, distribution, dissemination, copying, printing or reliance on this publication for any other purpose without our prior consent or approval is strictly prohibited. Neither Daiwa Securities Group Inc. nor any of its respective parent, holding, subsidiaries or affiliates, nor any of its respective directors, officers, servants and employees, represent nor warrant the accuracy or completeness of the information contained herein or as to the existence of other facts which might be significant, and will not accept any responsibility or liability whatsoever for any use of or reliance upon this publication or any of the contents hereof. Neither this publication, nor any content hereof, constitute, or are to be construed as, an offer or solicitation of an offer to buy or sell any of the securities or investments mentioned herein in any country or jurisdiction nor, unless expressly provided, any recommendation or investment opinion or advice. Any view, recommendation, opinion or advice expressed in this publication may not necessarily reflect those of Daiwa Securities Group Inc., and/or its affiliates nor any of its respective directors, officers, servants and employees except where the publication states otherwise. This research report is not to be relied upon by any person in making any investment decision or otherwise advising with respect to, or dealing in, the securities mentioned, as it does not take into account the specific investment objectives, financial situation and particular needs of any person.

Daiwa Securities Group Inc., its subsidiaries or affiliates, or its or their respective directors, officers and employees from time to time have trades as principals, or have positions in, or have other interests in the securities of the company under research including market making activities, derivatives in respect of such securities or may have also performed investment banking and other services for the issuer of such securities. The following are additional disclosures.

Ownership of Securities

For "Ownership of Securities" information, please visit BlueMatrix disclosure link at *https://daiwa3.bluematrix.com/sellside/Disclosures.action*.

Investment Banking Relationship

For "Investment Banking Relationship", please visit BlueMatrix disclosure link at *https://daiwa3.bluematrix.com/sellside/Disclosures.action*.

Japan

Daiwa Securities Co. Ltd. and Daiwa Securities Group Inc.

Daiwa Securities Co. Ltd. is a subsidiary of Daiwa Securities Group Inc.

Investment Banking Relationship

Within the preceding 12 months, the subsidiaries and/or affiliates of Daiwa Securities Group Inc. * has lead-managed public offerings and/or secondary offerings (excluding straight bonds) of the securities of the following companies: econtext Asia Ltd (1390 HK); Mirae Asset Life Insurance Co Ltd (085620 KS); China Reinsurance Group Corporation (1508 HK).

*Subsidiaries of Daiwa Securities Group Inc. for the purposes of this section shall mean any one or more of: Daiwa Capital Markets Hong Kong Limited (大和資本市場香港有限公司), Daiwa Capital Markets Singapore Limited, Daiwa Capital Markets Australia Limited, Daiwa Capital Markets India Private Limited, Daiwa-Cathay Capital Markets Co., Ltd., Daiwa Securities Capital Markets Korea Co., Ltd.

Hong Kong

This research is distributed in Hong Kong by Daiwa Capital Markets Hong Kong Limited (大和資本市場香港有限公司) ("DHK") which is regulated by the Hong Kong Securities and Futures Commission. Recipients of this research in Hong Kong may contact DHK in respect of any matter arising from or in connection with this research.

Relevant Relationship (DHK)

DHK may from time to time have an individual employed by or associated with it serves as an officer of any of the companies under its research coverage.

Korea

The developing analyst of this research and analysis material hereby states and confirms that the contents of this material correctly reflect the analyst's views and opinions and that the analyst has not been placed under inappropriate pressure or interruption by an external party.

Name of Analyst : Sung Yop Chung

Disclosure of Analysts' Interests

If an analyst engaging in or a person who exercises influences on the preparation or publication of a Research Report containing recommendations for general investors to trade financial investment instruments with regard to which the analyst or the influential person has personal interests and if the recommendations contained in the Report may have impacts on the personal interests, Daiwa Securities Capital Markets Korea Co., Ltd.("Daiwa Securities Korea")shall ensure that the Analyst or the influential person notifies that he/she has personal interests with regard to:

1. The equity, the equity-linked bonds and the instruments with the subscription right to the equity issued by the legal entity covered in the Research Report (or the legal entity subject to the investment recommendations);
2. The stock option granted by the legal entity covered in the Research Report (or the legal entity subject to the investment recommendations); or
3. The equity futures, the equity options and the equity-linked warrants backed by the equity prescribed in the preceding Paragraph 1 as the underlying assets.

Legal Entities subject to Research Report Coverage Restrictions

Daiwa Securities Korea hereby states and confirms that Daiwa Securities Korea has no conflicts of interests with the legal entity covered in this Research Report:

1. In that Daiwa Securities Korea does NOT offer direct or indirect payment guarantee for the legal entity by means of, for instance, guarantee, endorsement, provision of collaterals or the acquisition of debts;
2. In that Daiwa Securities Korea does NOT own one-hundredth (or 1/100) or more of the total number of outstanding equities issued by the legal entity;
3. In that The legal entity is NOT an affiliated company of Daiwa Securities Korea pursuant to Sub-paragraph 3, Article 2 of the Monopoly Regulation and Fair Trade Act of Korea;
4. In that, although Daiwa Securities Korea offers advisory services for the legal entity with regard to an M&A deal, the size of the M&A deal does NOT exceed five-hundredths (or 5/100) of the total asset size or the total number of equities issued and outstanding of the legal entity;
5. In that, although Daiwa Securities Korea acted in the capacity of a Lead Underwriter for the initial public offering of the legal entity, more than one-year has passed since the IPO date;
6. In that Daiwa Securities Korea is NOT designated by the legal entity as the 'tender offer agent' pursuant to the Paragraph 2, Article 133 of the Financial Services and Capital Market Act or the legal entity is NOT the issuer of the equity subject to the proposed tender offer; this requirement, however applies until the maturity of the tender offer period; or
7. In that Daiwa Securities Korea does NOT have significant or material interests with regard to the legal entity.

Disclosure of Prior Distribution to Third Party

This report has not been distributed to the third party in advance prior to public release.

The following explains the rating system in the report as compared to KOSPI, based on the beliefs of the author(s) of this report.

"1": the security could outperform the KOSPI by more than 15% over the next 12 months, unless otherwise stated.
"2": the security is expected to outperform the KOSPI by 5-15% over the next 12 months, unless otherwise stated.
"3": the security is expected to perform within 5% of the KOSPI (better or worse) over the next 12 months, unless otherwise stated.
"4": the security is expected to underperform the KOSPI by 5-15% over the next 12 months, unless otherwise stated.
"5": the security could underperform the KOSPI by more than 15% over the next 12 months, unless otherwise stated.

"Positive" means that the analyst expects the sector to outperform the KOSPI over the next 12 months, unless otherwise stated.
"Neutral" means that the analyst expects the sector to be in-line with the KOSPI over the next 12 months, unless otherwise stated.
"Negative" means that the analyst expects the sector to underperform the KOSPI over the next 12 months, unless otherwise stated.

Additional information may be available upon request.

Singapore

This research is distributed in Singapore by Daiwa Capital Markets Singapore Limited and it may only be distributed in Singapore to accredited investors, expert investors and institutional investors as defined in the Financial Advisers Regulations and the Securities and Futures Act (Chapter 289), as amended from time to time. By virtue of distribution to these category of investors, Daiwa Capital Markets Singapore Limited and its representatives are not required to comply with Section 36 of the Financial Advisers Act (Chapter 110) (Section 36 relates to disclosure of Daiwa Capital Markets Singapore Limited's interest and/or its representative's interest in securities). Recipients of this research in Singapore may contact Daiwa Capital Markets Singapore Limited in respect of any matter arising from or in connection with the research.

Australia

This research is distributed in Australia by Daiwa Capital Markets Australia Limited and it may only be distributed in Australia to wholesale investors within the meaning of the Corporations Act. Recipients of this research in Australia may contact Daiwa Capital Markets Stockbroking Limited in respect of any matter arising from or in connection with the research.

India

This research is distributed in India to Institutional Clients only by Daiwa Capital Markets India Private Limited (Daiwa India) which is an intermediary registered with Securities & Exchange Board of India as a Stock Broker, Merchant Bank and Research Analyst. Daiwa India, its Research Analyst and their family members and its associates do not have any financial interest save as disclosed or other undisclosed material conflict of interest in the securities or derivatives of any companies under coverage. Daiwa India and its associates may have received compensation for any products other than Investment Banking (as disclosed) or brokerage services from the subject company in this report during the past 12 months. Unless otherwise stated in BlueMatrix disclosure link at https://daiwa3.bluematrix.com/sellside/Disclosures.action, Daiwa India and its associates do not hold more than 1% of any companies covered in this research report.

There is no material disciplinary action against Daiwa India by any regulatory authority impacting equity research analysis activities as of the date of this report.

Taiwan

This research is distributed in Taiwan by Daiwa-Cathay Capital Markets Co., Ltd and it may only be distributed in Taiwan to institutional investors or specific investors who have signed recommendation contracts with Daiwa-Cathay Capital Markets Co., Ltd in accordance with the Operational Regulations Governing Securities Firms Recommending Trades in Securities to Customers. Recipients of this research in Taiwan may contact Daiwa-Cathay Capital Markets Co., Ltd in respect of any matter arising from or in connection with the research.

Philippines

This research is distributed in the Philippines by DBP-Daiwa Capital Markets Philippines, Inc. which is regulated by the Philippines Securities and Exchange Commission and the Philippines Stock Exchange, Inc. Recipients of this research in the Philippines may contact DBP-Daiwa Capital Markets Philippines, Inc. in respect of any matter arising from or in connection with the research. DBP-Daiwa Capital Markets Philippines, Inc. recommends that investors independently assess, with a professional advisor, the specific financial risks as well as the legal, regulatory, tax, accounting, and other consequences of a proposed transaction. DBP-Daiwa Capital Markets Philippines, Inc. may have positions or may be materially interested in the securities in any of the markets mentioned in the publication or may have performed other services for the issuers of such securities.

For relevant securities and trading rules please visit SEC and PSE links at http://www.sec.gov.ph/irr/AmendedIRRfinalversion.pdf and http://www.pse.com.ph/ respectively.

Thailand

This research is distributed to only institutional investors in Thailand primarily by Thanachart Securities Public Company Limited ("TNS").

This report is prepared by analysts who are employed by Daiwa Securities Group Inc. and/or its non-U.S. affiliates. This report is provided to you for informational purposes only and it is not, and is not to be construed as, an offer or an invitation to make an offer to sell or buy any securities. Neither Thanachart Securities Public Company Limited, Daiwa Securities Group Inc. nor any of their respective parent, holding, subsidiaries or affiliates, nor any of their respective directors, officers, servants and employees accept any liability whatsoever for any direct or consequential loss arising from any use of this research or its contents.

The information and opinions contained herein have been compiled or arrived at from sources believed to be reliable. However, Thanachart Securities Public Company Limited, Daiwa Securities Group Inc. nor any of their respective parent, holding, subsidiaries or affiliates, nor any of their respective directors, officers, servants and employees make no representation or warranty, express or implied, as to their accuracy or completeness. Expressions of opinion herein are subject to change without notice. The use of any information, forecasts and opinions contained in this report shall be at the sole discretion and risk of the user.

Daiwa Securities Group Inc. and/or its non-U.S. affiliates perform and seek to perform business with companies covered in this research. Thanachart Securities Public Company Limited, Daiwa Securities Group Inc., their respective parent, holding, subsidiaries or affiliates, their respective directors, officers, servants and employees may have positions and financial interest in securities mentioned in this research. Thanachart Securities Public Company Limited, Daiwa Securities Group Inc., their respective parent, holding, subsidiaries or affiliates may from time to time perform investment banking or other services for, or solicit investment banking or other business from, any entity mentioned in this research. Therefore, investors should be aware of conflict of interest that may affect the objectivity of this research.

United Kingdom

This research report is produced by Daiwa Securities Co. Ltd. and/or its affiliates and is distributed in the European Union, Iceland, Liechtenstein, Norway and Switzerland. Daiwa Capital Markets Europe Limited is authorised and regulated by The Financial Conduct Authority ("FCA") and is a member of the London Stock Exchange and Eurex. This publication is intended for investors who are not Retail Clients in the United Kingdom within the meaning of the Rules of the FCA and should not therefore be distributed to such Retail Clients in the United Kingdom. Should you enter into investment business with Daiwa Capital Markets Europe's affiliates outside the United Kingdom, we are obliged to advise that the protection afforded by the United Kingdom regulatory system may not apply; in particular, the benefits of the Financial Services Compensation Scheme may not be available.

Daiwa Capital Markets Europe Limited has in place organisational arrangements for the prevention and avoidance of conflicts of interest. Our conflict management policy is available at http://www.uk.daiwacm.com/about-us/corporate-governance-regulatory.

Germany

This document is distributed in Germany by Daiwa Capital Markets Europe Limited, Niederlassung Frankfurt which is regulated by BaFin (Bundesanstalt fuer Finanzdienstleistungsaufsicht) for the conduct of business in Germany.

Bahrain

This research material is distributed in Bahrain by Daiwa Capital Markets Europe Limited, Bahrain Branch, regulated by The Central Bank of Bahrain and holds Investment Business Firm – Category 2 license and having its official place of business at the Bahrain World Trade Centre, South Tower, 7th floor, P.O. Box 30069, Manama, Kingdom of Bahrain. Tel No. +973 17534452 Fax No. +973 535113

United States

This report is distributed in the U.S. by Daiwa Capital Markets America Inc. (DCMA). It may not be accurate or complete and should not be relied upon as such. It reflects the preparer's views at the time of its preparation, but may not reflect events occurring after its preparation; nor does it reflect DCMA's views at any time. Neither DCMA nor the preparer has any obligation to update this report or to continue to prepare research on this subject. This report is not an offer to sell or the solicitation of any offer to buy securities. Unless this report says otherwise, any recommendation it makes is risky and appropriate only for sophisticated speculative investors able to incur significant losses. Readers should consult their financial advisors to determine whether any such recommendation is consistent with their own investment objectives, financial situation and needs. This report does not recommend to U.S. recipients the use of any of DCMA's non-U.S. affiliates to effect trades in any security and is not supplied with any understanding that U.S. recipients of this report will direct commission business to such non-U.S. entities. Unless applicable law permits otherwise, non-U.S. customers wishing to effect a transaction in any securities referenced in this material should contact a Daiwa entity in their local jurisdiction. Most countries throughout the world have their own laws regulating the types of securities and other investment products which may be offered to their residents, as well as a process for doing so. As a result, the securities discussed in this report may not be eligible for sales in some jurisdictions. Customers wishing to obtain further information about this report should contact DCMA: Daiwa Capital Markets America Inc., Financial Square, 32 Old Slip, New York, New York 10005 (Tel no. 212-612-7000).

Ownership of Securities

For "Ownership of Securities" information please visit BlueMatrix disclosure link at https://daiwa3.bluematrix.com/sellside/Disclosures.action.

Investment Banking Relationships

For "Investment Banking Relationships" please visit BlueMatrix disclosure link at https://daiwa3.bluematrix.com/sellside/Disclosures.action.

DCMA Market Making

For "DCMA Market Making" please visit BlueMatrix disclosure link at https://daiwa3.bluematrix.com/sellside/Disclosures.action.

Research Analyst Conflicts

For updates on "Research Analyst Conflicts" please visit BlueMatrix disclosure link at https://daiwa3.bluematrix.com/sellside/Disclosures.action. The principal research analysts who prepared this report have no financial interest in securities of the issuers covered in the report, are not (nor are any members of their household) an officer, director or advisory board member of the issuer(s) covered in the report, and are not aware of any material relevant conflict of interest involving the analyst or DCMA, and did not receive any compensation from the issuer during the past 12 months except as noted: no exceptions.

Research Analyst Certification

For updates on "Research Analyst Certification" and "Rating System" please visit BlueMatrix disclosure link at https://daiwa3.bluematrix.com/sellside/Disclosures.action. The views about any and all of the subject securities and issuers expressed in this Research Report accurately reflect the personal views of the research analyst(s) primarily responsible for this report (or the views of the firm producing the report if no individual analysts[s] is named on the report); and no part of the compensation of such analyst(s) (or no part of the compensation of the firm if no individual analyst[s]) is named on the report) was, is, or will be directly or indirectly related to the specific recommendations or views contained in this Research Report.

The following explains the rating system in the report as compared to relevant local indices, unless otherwise stated, based on the beliefs of the author of the report.

"1": the security could outperform the local index by more than 15% over the next 12 months.
"2": the security is expected to outperform the local index by 5-15% over the next 12 months.
"3": the security is expected to perform within 5% of the local index (better or worse) over the next 12 months.
"4": the security is expected to underperform the local index by 5-15% over the next 12 months.
"5": the security could underperform the local index by more than 15% over the next 12 months.

Disclosure of investment ratings

Rating	Percentage of total
Buy*	66.9%
Hold**	19.7%
Sell***	13.5%

Source: Daiwa

Notes: data is for single-branded Daiwa research in Asia (ex Japan) and correct as of 31 March 2016.
** comprised of Daiwa's Buy and Outperform ratings.*
*** comprised of Daiwa's Hold ratings.*
**** comprised of Daiwa's Underperform and Sell ratings.*

Additional information may be available upon request.

Japan - additional notification items pursuant to Article 37 of the Financial Instruments and Exchange Law
(This Notification is only applicable where report is distributed by Daiwa Securities Co. Ltd.)

If you decide to enter into a business arrangement with us based on the information described in materials presented along with this document, we ask you to pay close attention to the following items.
In addition to the purchase price of a financial instrument, we will collect a trading commission* for each transaction as agreed beforehand with you. Since commissions may be included in the purchase price or may not be charged for certain transactions, we recommend that you confirm the commission for each transaction.
In some cases, we may also charge a maximum of ¥ 2 million (including tax) per year as a standing proxy fee for our deposit of your securities, if you are a non-resident of Japan.
For derivative and margin transactions etc., we may require collateral or margin requirements in accordance with an agreement made beforehand with you. Ordinarily in such cases, the amount of the transaction will be in excess of the required collateral or margin requirements.
There is a risk that you will incur losses on your transactions due to changes in the market price of financial instruments based on fluctuations in interest rates, exchange rates, stock prices, real estate prices, commodity prices, and others. In addition, depending on the content of the transaction, the loss could exceed the amount of the collateral or margin requirements.
There may be a difference between bid price etc. and ask price etc. of OTC derivatives handled by us.
Before engaging in any trading, please thoroughly confirm accounting and tax treatments regarding your trading in financial instruments with such experts as certified public accountants.
*The amount of the trading commission cannot be stated here in advance because it will be determined between our company and you based on current market conditions and the content of each transaction etc.

When making an actual transaction, please be sure to carefully read the materials presented to you prior to the execution of agreement, and to take responsibility for your own decisions regarding the signing of the agreement with us.

Corporate Name: Daiwa Securities Co. Ltd.
Financial instruments firm: chief of Kanto Local Finance Bureau (Kin-sho) No.108
Memberships: Japan Securities Dealers Association, The Financial Futures Association of Japan
Japan Securities Investment Advisers Association
Type II Financial Instruments Firms Association