

The content of this article is provided by the Department of Investment Services, MOEA.

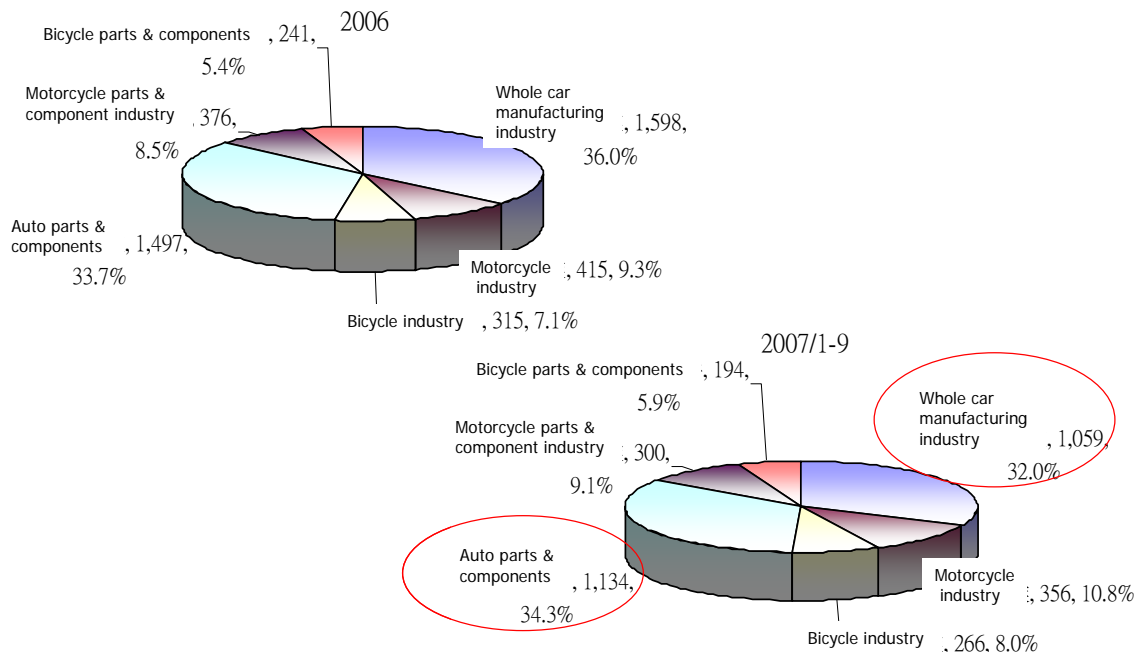
## **The Status of the Intelligent Vehicle Industry in Taiwan**

### **(I) Supply & Demand**

In Taiwan, automobile industry represents a key industry; particularly, auto parts & components are relatively competitive. In 2006, Taiwan's automobile industry yielded a total value of NT\$444.1 billion, accounts for 3.8% of the gross output value of manufacturing sector; and the value of auto parts & components alone came to NT\$149.7 billion.

Statistics on the Taiwan Transportation Vehicle Manufacturers Association indicated that during January~September, 2007, the total yield of auto parts & components manufactured in Taiwan was NT\$113.4 billion, outperforming Taiwan's whole vehicle output of NT\$105.9 billion. With the limited market scale and the capricious market status, Taiwan's auto industry is subject to changeable output volume and value. Up to 75% of the auto parts & components manufactured in Taiwan are for export; there is quite a room for further growth.

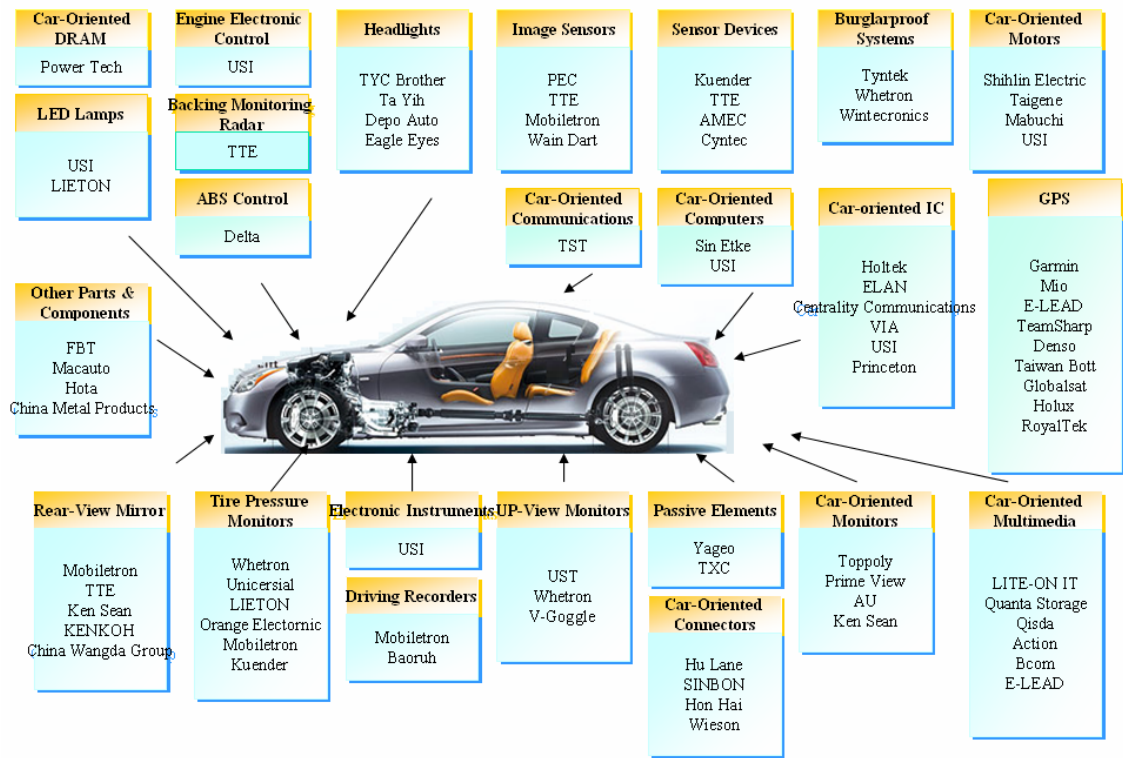
## Taiwan's automobile industry, the output value and ratio



Source: Taiwan Transportation Vehicle Manufacturers Association, 2008/1

## (II) Analysis of a Gap in the Industry Supply Chain, Investment Niche and Prospective Foreign Investor

The auto parts & components manufactured in Taiwan have a complete supply chain. The manufacturers were distributed evenly in different fields such as auto electronics, sheet metal parts, safety belt, sunshade, transmission components, exhaust pipe, lamp, etc. and all have experiences of exporting to international markets in the long term.



Source: Organized for the present study, 2008/1

World trend is going toward to energy saving, environmental protection and safety and comfort, thus intelligent vehicles will be very popular in the future. The ratio of using traditional machinery is descending gradually, so more and more proactive vehicles are being made using innovative electronics, materials, sensor device, biotechnological fuel, hybrid technology and fuel cell. Furthermore, intelligent vehicles will combine features such as device of adaptive cruise control, driver drowsiness warning systems, night vision system, head up display, energy saving environmental protection, intelligent active and passive safety systems and telematics system and so on.

The development of whole automobile of intelligent vehicles with green energy, fuel cell, intelligent control, car collision avoidance system, advanced safety, the vehicle position and navigation system, is what Taiwan manufacturers are lacking at present. Additionally, in the area of components of intelligent vehicles, one carriage has 20 to 30 thousand parts while 60% to 70% of them are provided by foreign manufacturers under cooperation. So the intelligent vehicles industry in Taiwan still has technological gaps of some relevant components; for example, strengthened engine, sensor for Supplement Restraint System and Anti-Lock Braking Systems, therefore, for potential foreign manufacturers these are great business opportunities for investment.

It is difficult for the sales of domestic auto market in Taiwan to expand. The manufacturers went to China and Southeast Asia to set up plants in order to break the bottleneck of development. The whole cars exported in 2006 were 8,420 units, much more than 2005's 1081. Mainly because Ford Lio Ho has a plan to start producing whole cars. The recreational and leisure vehicle, ZINGER launched by China-Motor also sold to the Philippines.

With the technological development, Taiwan auto parts & components industry are supported by the mature ICT industry in Taiwan. With the complete product exploration experiences, self-R&D abilities and experiences on whole car system integration, and further support from official authorities, the intelligent vehicles has a great potential to be developed. However, the industry in Taiwan still has to work on the development of auto parts & components, such as engine, SRS, ABS. But it is not necessary to develop these products in Taiwan.

Now the government is actively providing guidances to the auto parts & components manufacturers, expecting them to become the main suppliers of global autotronics after-sale market.. The government also would like them to

join the supply system of those heavyweights auto companies. In the future, the government will fully support the advancement of the industry, leading the innovation and transforming auto industry in Taiwan from OEM to ODM. And the final goal is to make Taiwan the R&D center of the Asia-Pacific region.

### **(III) Major Suppliers in Taiwan**

In Taiwan, whole automobile manufacturers include Kuozui Motors Ltd., CMC, Ford Lio Ho Motor Company Ltd., YULON, Honda Taiwan Co., Ltd., Suzuki, SYM Taiwan and ISUZU. The whole automobiles' annual yield totaled to NT\$230.6 billion in 2005, which was the highest output value in recent yerars. Due to the downside of the market, the output value dropped to NT\$159.8 billion in 2006. Comparatively, the output value for 2006 is still higher than 2001's NT\$130 billion. The output value attained during January~September 2007 came to NT\$105.9 billion. The annual output value in 2007 was almost equivalent to that in 2006. The car manufacturers anticipate that in line with the rise of the whole car export, the output value will gradually pick up in 2008.

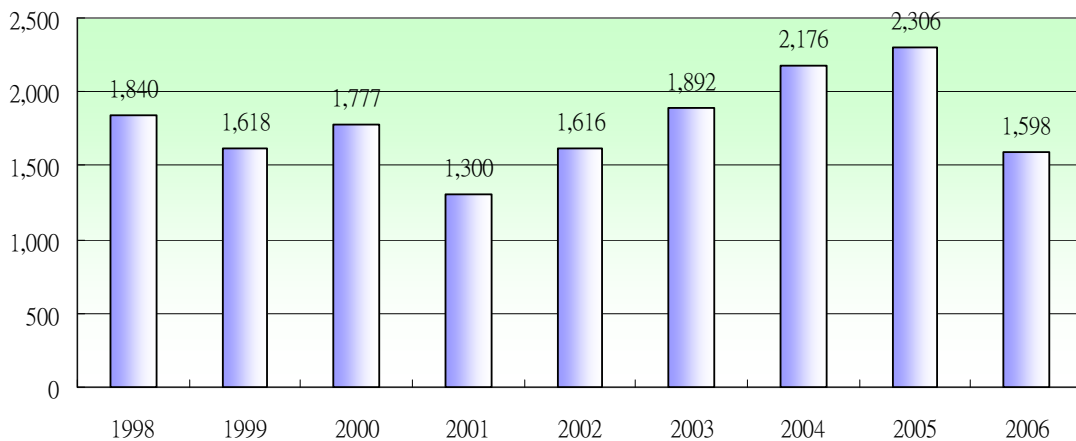
Thanks to the concerted efforts by manufacturers, the quality level of the whole automobiles manufactured in Taiwan has already achieved the advanced countries' standard. With enormous efforts devoted to R&D and design, the local car manufacturers have launched diverse products to meet respective needs of car buyers and tried very hard to enhance the customer approval rate. In recent years, the ratio of locally-manufactured cars has risen year-by-year in the domestic market, up to 83.6% in 2006 and 83.2% in 2007. The total export value had grown from US\$37.5 million fifteen years ago to US\$1.25 billion in 2006. For instance, the value of auto parts & components

exported by CMC hit US\$470 million, YULON at US\$320 million and Kuozui Motors at US\$240 million in 2006.

In 2008, Taiwan has anticipated to reach a new high in automobile export, estimated about 40,000 units. Among car manufacturers, Yulon Nissan will export commercial vehicles to Mexico, Ford Lio Ho will expand the sales to Russia, and CMC will export whole cars to the Philippines and Vietnam. Kuozui Motors will export Hino Bus chassis Y181 to Hong Kong and Australia. Kuozui Motors is expected to increase its export volume as well.

**Output values of whole set cars manufactured in Taiwan**

Unit: NT\$100 million



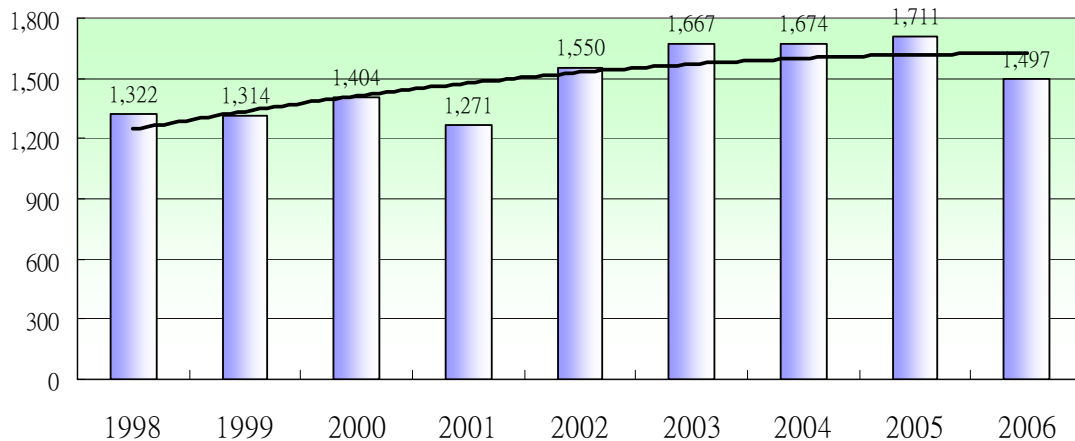
Source: Taiwan Transportation Vehicle Manufacturers Association, 2008/1

The output value of auto parts & components manufactured in Taiwan was up to US\$171.1 billion in 2005, US\$149.7 billion in 2006 and NT\$113.4 billion during January~September 2007. In Taiwan, the major auto parts & components manufacturers have been quite successful developing in auto electromechanical facilities, lamps, tire pressure monitor systems and backing monitoring radars. The key manufacturers are Ken Sean, LIETON, E-LEAD, FBT, Macauto, China Metal Products, TYC Brother and TA YIH. They have won praises from international giants like Ford, GM, Chrysler,

Benz, BMW and Honda. These manufacturers have played pivotal roles in the after-sales service markets around the globe. With the integral upstream, midstream and downstream supply systems that Taiwan has built in electronics, optical and communications industries, Taiwan gains more competitive advantages than any other Asian counterparts.

### Auto parts & components output value in Taiwan

Unit: NT\$100 million



Source: Taiwan Transportation Vehicle Manufacturers Association, 2008/1

At present, the traditional auto parts & components manufacturers like, TA YIH, TYC Brother, DEPO, Mobiletron, GSK Group and Ken Sean have converted to produce the rear-view mirror, Supplement Restraint System and LED lamp. Also Foxconn intends to merge the domestic factory; the subsidiary - Antec Electric System Co., Ltd., which produces vehicle cable tie will go into the autotronic area. Antec Electric System Co., has developed the mobile video system of auto electronics like headrest TV and digital television receiver. ASUS, ACER, Liteon, Quanta, ChiMei, USI, Kimpo Group are developing mobile display panel, telematics system, cruise control systems, tire pressure monitoring systems, CMOS, autronic video entertainment and GPS. These products make it possible for Taiwan to develop intelligent vehicles.

At the moment, the government is rendering wholehearted support to the local manufacturers hoping that Taiwan's auto part & component manufacturers will become the world's key suppliers in electronic and after-sales service markets and will successfully be the key international part & component manufacturers. In order to convert the automobile industry in Taiwan from OEM to ODM, the government plans to improve the innovation and R&D fields for the automobile companies, also expecting them to join the global automobile industry supply chain in the near future. With the continually upgrading from all sectors, Taiwan will become the automobile R&D center in Asia-Pacific Region.

Taiwan's auto part & component manufacturers take advantage of integral supply chains and have production lines located in various regions. The parts & components produced are automobile electronics, punching articles, safety buckles, sunshades, transmission parts & components, tailpipes, lamps among others. Taiwan's auto part & component manufacturers have accumulated hands-on experiences on exporting to the international community. In terms of technological development, Taiwan's auto part & component manufacturers are backed by mature information and communications industries with adequate hands-on experiences accumulated product development, autonomous R&D and automobile system integration. The political support by the government will further enhance the supreme potential in the future.

Taiwan's auto part & component manufacturers are advised to improve and upgrade their R&D in the areas of engines, air bag sensors, ABS brake systems and meanwhile, advised not to develop each and every article in Taiwan.

### Taiwan's key auto part & component manufacturers

Machinery Industry	Companies
Car-oriented DRAM	PowerTech
LED lamps	USI, LIETON
Engine electronic control	USI
Backing monitoring radar	Tung Thih Enterprise Co., Ltd.(TTE)
ABS control	Delta
Headlights	TYC Brother, Ta Yih, Depo Auto, Eagle Eyes Traffic Industrial Co., Ltd.
Image sensors	Photic Electronics Co., Ltd. (PEC), TTE, Mobiletron, Wain Dart
Car-oriented communications	Tai-Saw Technology Co., Ltd (TST)
Sensor devices	Kuender Company, TTE, Advanced Micro Electronics Co., Ltd. (AMEC), Cyntec
Car-oriented computers	Sin Etke, USI
Burglarproof systems	Tyntek, Whetron, Wintecronics
Car-oriented motors	Shihlin Electric, Taigene, Mabuchi, USI
Car-oriented IC	Holtek, ELAN, Centrality Communications, VIA, USI, Princeton
GPS	Garmin, Mio, E-LEAD, TeamSharp SpaceTech Inc., Denso, Taiwan Bott, Globalsat, Holux, RoyalTek
Other parts & components	FBT, Macauto, Hota, China Metal Products
Rear-view mirror	Mobiletron, TTE, Ken Sean, KENKOH, China Wangda Group
Tire pressure monitors	Whetron, Universial, LIETON, Orange Electornic, Mobiletron, Kuender Company
Electronic instruments	USI
Driving recorders	Mobiletron, Baoruh
Up-view monitors	USI, Whetron, V-Goggle
Passive elements	Yageo, TXC
Car-oriented connectors	Hu Lane, SINBON, Hon Hai, Wieson
Car-oriented monitors	Toppoly, Prime View, AU, Ken Sean
Car-oriented multimedia	LITE-ON IT Corp., Quanta Storage, Qisda, Action, Bcom, E-LEAD

Source: Organized for the present study, 2008/1