



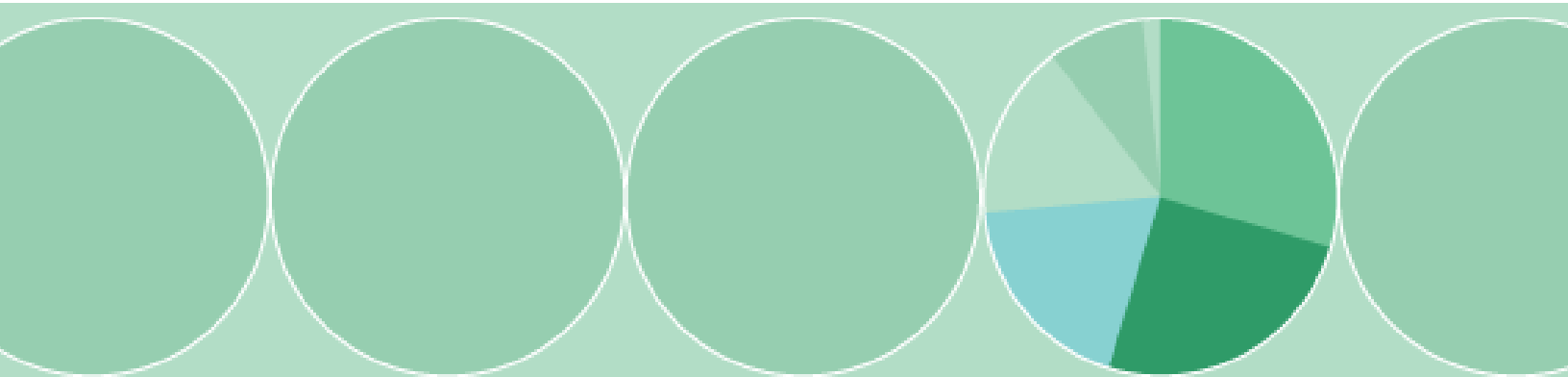
**WHERE KNOWLEDGE IS POWER**



## IBISWorld and ACMR China Industry Report

07 September 2010

# Medical Diagnosis, Monitoring and Treatment Equipment Manufacturing in China: **3681**

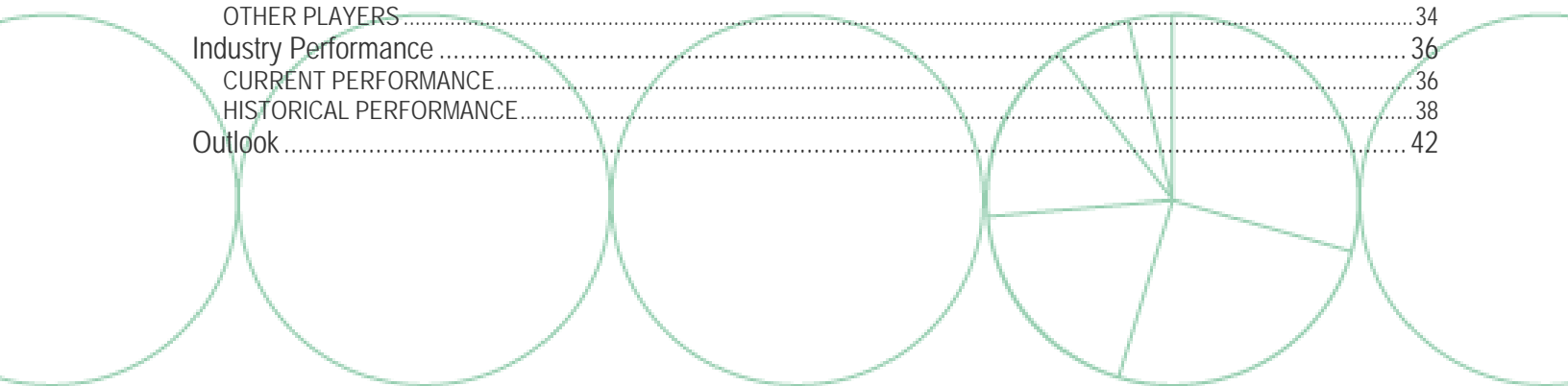


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## Industry Definition

Firms in the Medical Diagnosis, Monitoring and Treatment Equipment Manufacturing Industry in China (China Industry Code - 3681) mainly manufacture medical diagnosis equipment, medical monitoring equipment and medical treatment equipment. Firms in this industry purchase materials (such as metals, plastics, parts and components) and manufacture these inputs to produce items such as Computerized Tomography (CT), Magnetic Resonance Imaging (MRI), ultrasound and other medical equipment.

### ACTIVITIES (PRODUCTS AND SERVICES)

The primary activities of this industry are:

- Analytical instrument of clinical inspection and diagnosis reagents mfg
- Laser equipment mfg
- Medical cryotherapy apparatus mfg
- Medical electronic equipment mfg
- Medical extracorporeal circulation apparatus and blood purification equipment mfg
- Medical high energy radiation equipments mfg
- MRI and radionuclide equipment mfg
- Traditional Chinese medical equipment mfg
- Ultrasound equipment mfg

The major products and services in this industry are:

- Computerized Tomography equipment (CT)
- X-ray equipment
- Ultrasound equipment
- Magnetic Resonance Imaging equipment (MRI)
- Endoscopes and Medical nuclear equipment
- Laser medical equipment and Electronic medical equipment
- Other medical equipment
- Gamma-ray medical equipment

### SIMILAR INDUSTRIES

Industry:  3682 - Dental Equipment and Supplies Manufacturing in China

Description: Establishments producing dental equipment which can be provided to dentists and hospitals.

Industry:  3683 - Laboratory and Disinfectant Equipment and Utensils Manufacturing in China


Description: Establishments producing laboratory and disinfectant equipment which can be provided to hospitals and medical facilities.

Industry:  3684 - Medical, Surgical and Veterinarian Instruments Manufacturing in China

Description: Establishments producing medical instruments for hospital operation rooms, emergency rooms and examination rooms.

Industry:  3685 - Mechanical, Treatment and Nursing Equipment Manufacturing in China

Description: Establishments producing mechanical, treatment and nursing equipment which can be provided to doctors and hospitals.

Industry:  3686 - Artificial Limb, Organ and Implant Equipment Manufacturing in China

Description: Establishments producing artificial limb, organ and implantation equipment which can be provided to hospitals and medical centers.

Industry:  3689 - Other Medical Equipment and Supplies Manufacturing in China

Description: Establishments producing other medical equipment and instruments which can be provided to hospitals and medical facilities.

## DEMAND & SUPPLY INDUSTRIES

-  2665 - Information Chemistry Product Manufacturing in China
-  3152 - Industrial Ceramics Manufacturing in China
-  3411 - Metal Fabrication in China
-  8511 - General Hospitals in China
-  8512 - Traditional Chinese Medicine Hospitals in China
-  8513 - Integrated Traditional Chinese and Western Medicine Hospitals in China
-  8514 - Ethnic Minorities Hospitals in China
-  8515 - Specialized Hospitals in China
-  8550 - Maternity and Child Healthcare Services in China

## Key Statistics

### CONSTANT PRICES

	2006	2007	2008	2009	2010	
Industry Revenue	*2,666.5	*3,402.7	*4,431.0	*4,464.7	*4,583.1	\$Mill
Industry Gross Product	*958.8	*1,055.5	*1,386.9	*1,388.5	*1,430.6	\$Mill
Number of Establishments	*203	*229	*300	*302	*308	Units
Number of Enterprises	*120	*132	*171	*172	*174	Units
Employment	*36,024	*44,289	*49,383	*52,628	*56,575	Units
Exports	*1,265.6	*1,621.1	*2,137.9	*1,323.6	*1,268.0	\$Mill
Imports	*2,472.8	*2,751.0	*3,092.6	*2,412.2	*2,449.0	\$Mill
Total Wages	*191.7	*248.9	*346.4	*361.9	*393.1	\$Mill
Total Assets	*2,769.5	*3,427.5	*4,231.7	*4,843.4	*5,605.5	\$Mill
Domestic Demand	*3,873.7	*4,532.6	*5,385.7	*5,553.3	*5,764.1	\$Mill

### CURRENT PRICES

	2006	2007	2008	2009	2010	
Industry Revenue	*2,089.8	*2,865.4	*4,000.0	*4,231.9	*4,583.1	\$Mill
Industry Gross Product	*751.4	*888.8	*1,252.0	*1,316.1	*1,430.6	\$Mill
Number of Establishments	*203	*229	*300	*302	*308	Units
Number of Enterprises	*120	*132	*171	*172	*174	Units
Employment	*36,024	*44,289	*49,383	*52,628	*56,575	Units
Exports	*991.9	*1,365.1	*1,930.0	*1,254.6	*1,268.0	\$Mill
Imports	*1,938.0	*2,316.6	*2,791.8	*2,286.4	*2,449.0	\$Mill
Total Wages	*150.2	*209.6	*312.7	*343.0	*393.1	\$Mill
Total Assets	*2,170.5	*2,886.3	*3,820.1	*4,590.9	*5,605.5	\$Mill
Domestic Demand	*3,035.9	*3,816.9	*4,861.8	*5,263.7	*5,764.1	\$Mill

## REAL GROWTH

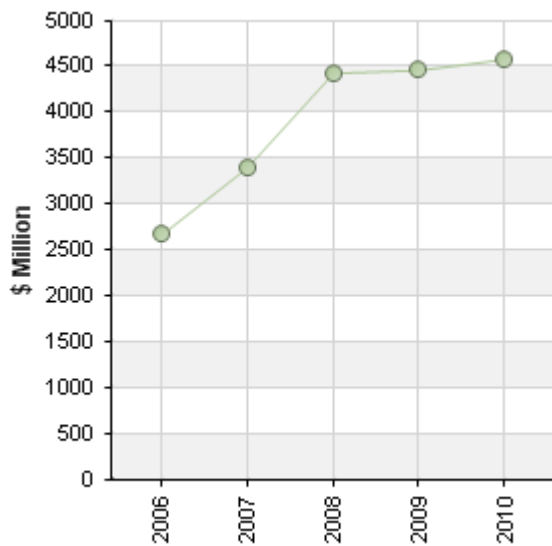
	2006	2007	2008	2009	2010
Industry Revenue	*30.4	*27.6	*30.2	*0.8	*2.7 %
Industry Gross Product	*45.5	*10.1	*31.4	*0.1	*3.0 %
Number of Establishments	*5.2	*12.8	*31.0	*0.7	*2.0 %
Number of Enterprises	*4.3	*10.0	*29.5	*0.6	*1.2 %
Employment	*15.2	*22.9	*11.5	*6.6	*7.5 %
Exports	*38.6	*28.1	*31.9	*-38.1	*-4.2 %
Imports	*-4.1	*11.3	*12.4	*-22.0	*1.5 %
Total Wages	*20.0	*29.8	*39.2	*4.5	*8.6 %
Total Assets	*30.8	*23.8	*23.5	*14.5	*15.7 %
Domestic Demand	NC	*17.0	*18.8	*3.1	*3.8 %

## RATIO TABLE

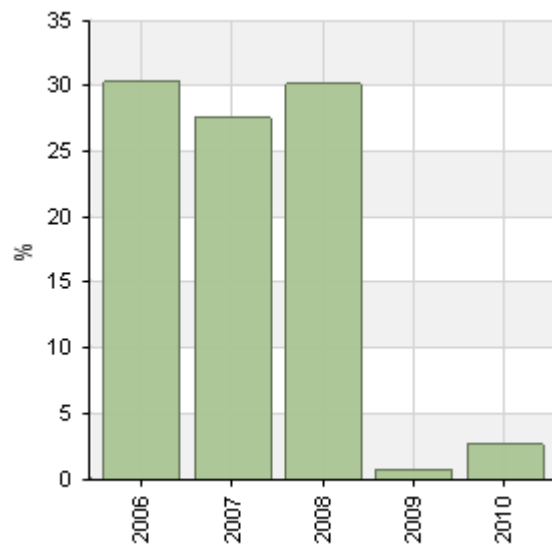
	2006	2007	2008	2009	2010
Imports share of domestic demand	*63.84	*60.69	*57.42	*43.44	*42.49 %
Exports Share of Revenue	*47.46	*47.64	*48.25	*29.65	*27.67 %
Average Revenue per Employee	*0.07	*0.08	*0.09	*0.08	*0.08 \$Mill
Wages and Salaries Share of Revenue	*7.19	*7.31	*7.82	*8.11	*8.58 %

## GRAPHS

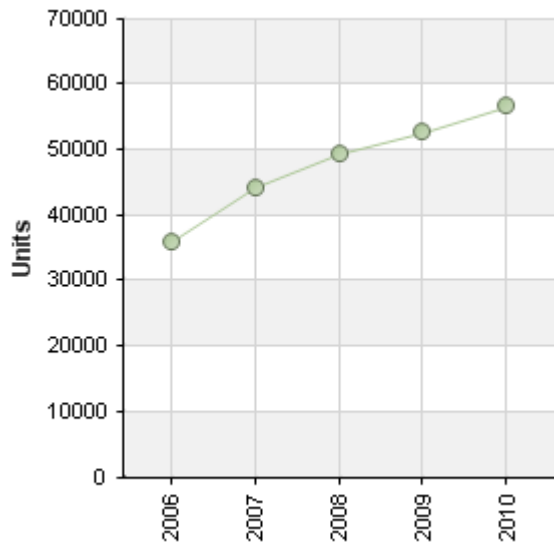
Revenue



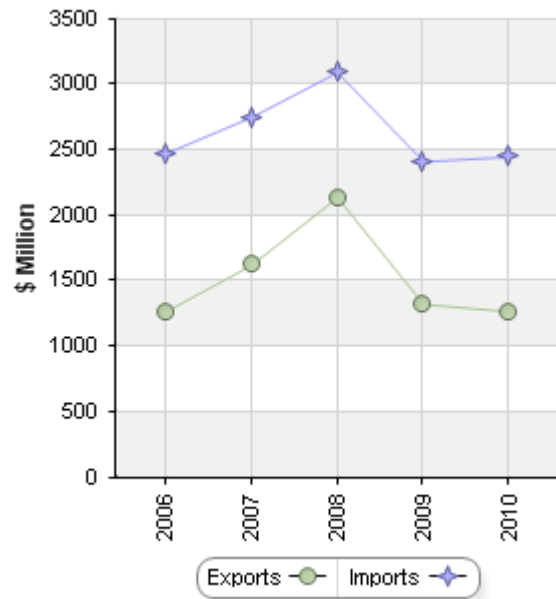
Revenue Growth Rate



Employment



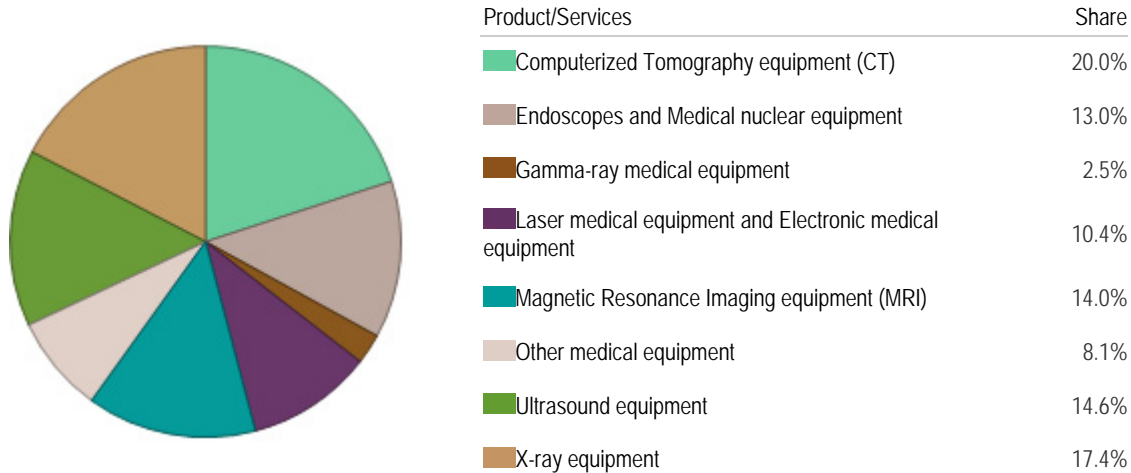
Imports and Exports



Note: Unless specified, an asterisk (\*) associated with a number in a table indicates an IBISWorld estimate and references to dollars are to US dollars.

# Segmentation

## PRODUCTS AND SERVICE SEGMENTATION



Various types of diagnosis equipment are the main items manufactured by this industry. Within this group, imaging diagnosis equipment are the main products.

Computerized Tomography equipment (CT) is the largest product segment and is expected to account for 20% of total industry revenue in 2010. This segment has experienced rapid growth of around 15% to 20% a year since 2001, and this is expected to continue for the rest of this decade.

The second-largest segment is the X-ray equipment segment which accounts for an estimated 17.4% of industry revenue in 2010. This segment consists mainly of Radiography, Fluoroscopy, Angiography, Cardiology, Mammography, Lithotripsy, Small C-arm and Medium C-arm equipment. In recent years, the market size of several of these high-end and special purpose products in this segment has increased significantly. The main drivers for such markets are: (1) the increased occurrence rates of some diseases, such as vascular diseases, breast cancer and urinary lithiasis; and (2) increased demand and the associated high costs for this type of equipment from hospitals, which results in high revenues and profits for this industry.

The third-largest segment is the ultrasound medical diagnosis, monitoring and treatment equipment, which is forecast to account for 14.6% of total industry revenue in 2010. Ultrasound equipment holds the highest penetration rate among all the imaging diagnostic equipment segments and the growth rate had gradually slowed down since 2004. The growth rate was about 12% in 2005 and is expected to slow to around 8% in future years. The market is expected to rebound in the years 2011 to 2013 because of an increase in replacements and updates by hospitals. In the past five years, the growth rates of monochrome and colored monitor segments were about 14% and 17%, respectively. In the future, the color monitor ultrasound diagnostic equipment segment is expected to have larger market potential and to grow faster than the traditional monochrome product segment.

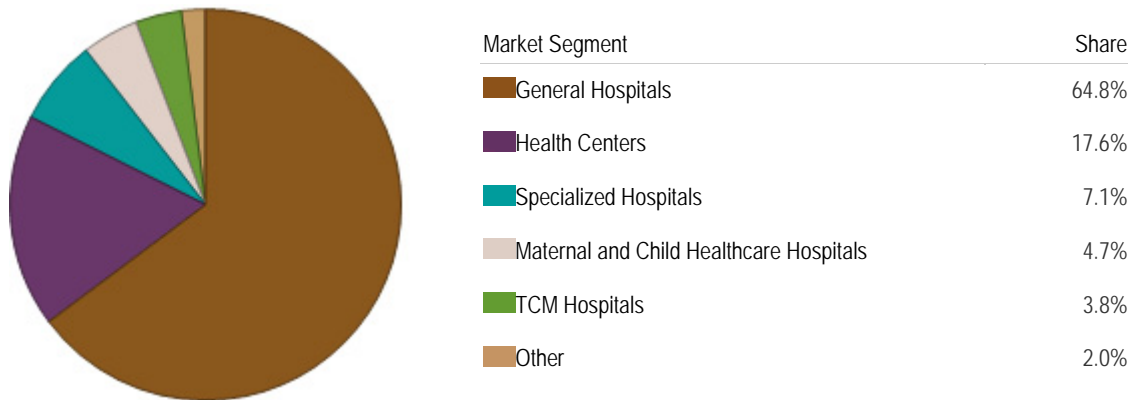
The Magnetic Resonance Imaging equipment (MRI) market is one of the fastest-growing segments. It has increased strongly since 2000 and is expected to continue rapid growth to 2010. The main drivers of this market are: (1) the

increased occurrence and diagnosis rates of neurological diseases in China; (2) the improved protection of patients against radiation; and (3) new applications of MRI systems due to the improved understanding and clinical practices of the brain. The market for high field strength MRI equipment (higher than 1.0T) is still limited because of the high cost. The market for low field strength products is expected to have the most potential in future years.

In addition to the above segments, endoscopes, medical nuclear equipment, electronic medical equipment and laser medical equipment are also important segments in the industry. These are estimated to have a joint market share of 23.4% in 2010.

Other medical equipment products include freeze treatment, radiation checking and treatment equipment, high frequency equipment, as well as some accessories and parts. These account for an estimated 8.1% of total industry revenue in 2010.

### MAJOR MARKET SEGMENTS



General hospitals are the largest customers of this industry, accounting for an estimated 64.8% of industry revenue in 2010 due to the high number of inpatient visits and numbers. According to the Healthcare Statistical Bulletin (2008) from the Ministry of Health, in 2008, there were 19,712 general hospitals in China, with about 2.88 million ward beds, nearly 1.78 billion visits and 73.9 million inpatients. Also, they have the largest purchasing power and utilize advanced diagnostic and treatment equipment such as MRI and CT.

Health centers, especially those at county level, is the second-largest segment, with an estimated 17.6% market share in terms of sales revenue in 2010. Although health centers are usually small in size compared with hospitals, they possess a much larger coverage rate across the country as they widely exist in rural areas and provide basic healthcare services to rural citizens. In 2008, there were 39,860 health centers in China, with about 865,383 ward beds, 862 million visits and 33.6 million inpatients. Health centers usually do not utilize advanced diagnostic or treatment equipment given their limited purchasing power. They usually will buy the low-end products such as ultrasound equipment and x-ray equipment.

Specialized hospitals and TCM (Traditional Chinese Medicine) hospitals are not as widespread as general hospitals. In 2008, these numbers were 3,437 and 2,688 respectively. Since TCM hospitals mainly use traditional Chinese medicine to treat patients, their utilization rate of medical equipment is relatively lower. ACMR-IBISWorld estimates that 7.1% of total industry revenue was from specialized hospitals and 3.8% from TCM hospitals in 2010.

Maternal and Child Healthcare Hospitals have an even smaller number. However, they utilize larger volumes of diagnostic and treatment equipment given their specialized patient-base. The market share of this segment is about 4.7%.

Community Health Service Centers, Clinics, Sanitariums, TCM-WM (western medicine) Hospitals and Minority Hospitals are all minor consumers for the industry, either because of their low numbers or small size.

The market segmentation can also be made by the grade of hospital. In China, hospitals are classified into 3 classes: Class 1, Class 2 and Class 3. In each class, there are 3 levels: Level A, Level B and Level C. An analysis of the major market categories within the industry during 2010 shows:

(1) Class 3 hospitals are the main users of high-tech and large medical equipment products, such as CT, MRI, nuclear medical equipment, angiography, cardiology and colored ultrasound equipment. Approximately 70% of medical equipment with value of over \$145,000 is installed in Class 3 hospitals.

(2) Around 30% of medical equipment with a value of over \$145,000 is installed in Class 2 hospitals. As Class 2 hospitals are the main medical service providers in most small cities and counties, these have installed a wide range of regular medical equipment products.

(3) Since Class 1 hospitals undertake medical services for residents in small communities and rural areas, these are usually equipped with only basic medical equipment, such as biochemical analyzers, small electrical medical equipment, entry-level X-ray imaging equipment, and monochrome ultrasound equipment.

## INDUSTRY CONCENTRATION

The level of industry concentration is medium

In 2010, the top four players in this industry are forecast to account for around 46.7% of total industry revenue. This represents a medium industry concentration level.

The industry concentration level for the Medical Diagnosis, Monitoring and Treatment Equipment Manufacturing Industry in China is increasing since this industry is expected to move into the mature phase of its life cycle towards the end of the outlook period, and there is a trend for larger participants to acquire smaller companies with fewer resources. Also, because of increasingly intensive competition, small companies will exit this industry or move into other industries.

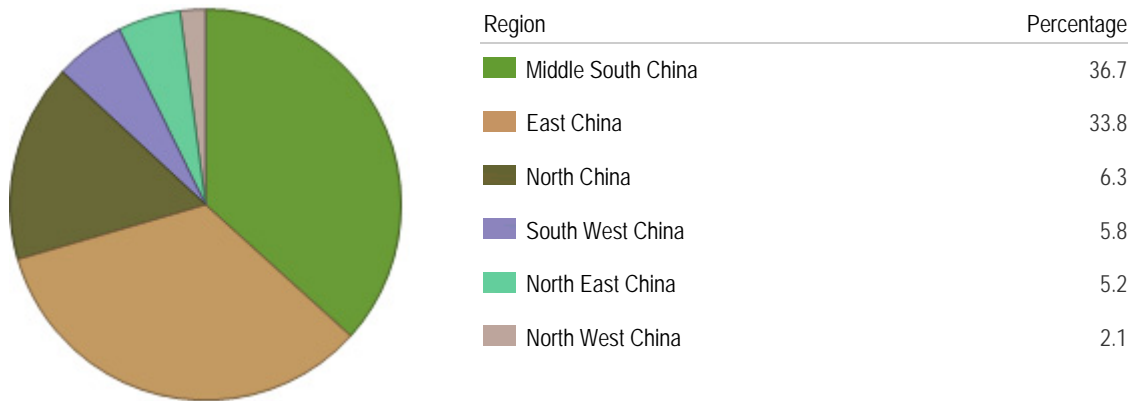
Foreign companies are well established in this industry, with three foreign firms in the top five list of the industry's major players. Industry revenue derived from these three companies accounted for over 40% of total industry revenue in 2010.

While there are large numbers of small players in the industry specializing in a small number of product lines to serve niche markets, major players in the industry will continue to expand market control through organic growth and acquisitions. Therefore, industry concentration is expected to increase in future years as firms continue to merge and consolidation levels increase.

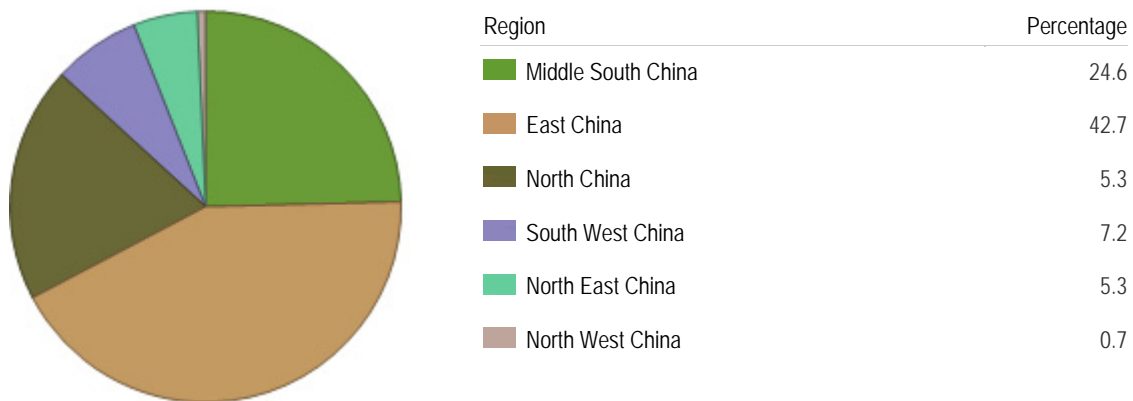
## GEOGRAPHIC SPREAD

Year: 2010

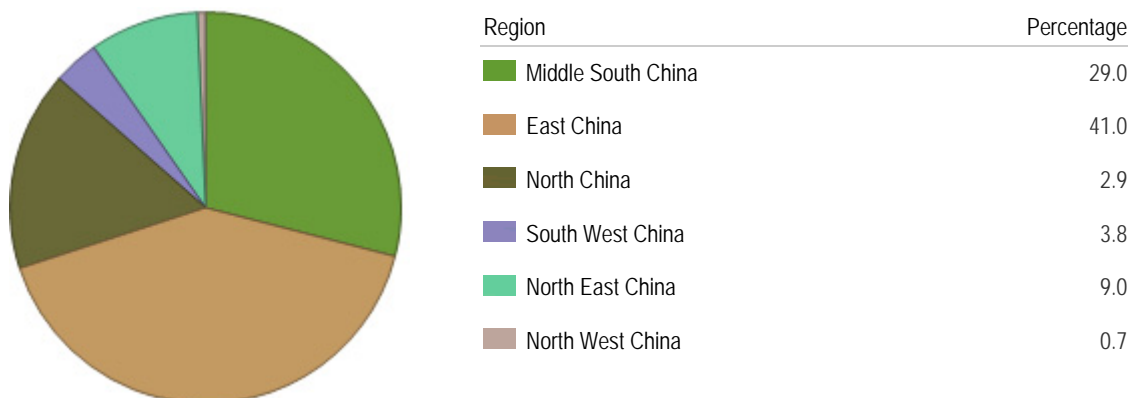
Employment Distribution by Geographic Region



Establishment Number by Geographic Region



Revenue Distribution by Geographic Region



Activity in the Medical Diagnosis, Monitoring and Treatment Equipment Manufacturing Industry in China is concentrated in two provinces and two municipalities: Guangdong province, Jiangsu province, Beijing and Shanghai.

Jiangsu province and Shanghai are expected to make up 16.4% and 13.2% of total industry revenue, respectively, in 2010. The respective average sales revenue per company in these two regions are at a medium level, reflecting the improved productivity and economies of scale. The number of enterprises in these two regions decreased after the SARS outbreak in 2003 due to the strong competition. Average sales revenue per employee in Jiangsu province is at the highest level and that in Shanghai is at a medium level. Firms in these two regions benefit from the large number of downstream customers and gradually developed their economies of scale. Reductions in staff numbers in the Jiangsu province and Shanghai occurred in 2003 and 2005.

With estimated 30.1% of total employment and 16.3% of total establishments, Guangdong province is expected to manufacture 23.2% of industry revenue. Shenzhen city in Guangdong province is a particularly strong performer in this industry. Companies tend to be recently established and have a weaker industry base. However, firms in this province have been better at attracting foreign capital and investment, as well as benefiting from the experiences and products of the domestic electronic industries. These firms have been the leaders in implementing new technologies and producing high value added products.

Beijing is expected to account for the third-highest level of industry revenue. Beijing has been a traditional manufacturing base of medical equipment, with a combination of well-established and new companies. In 2010, Beijing is forecast to make up 13.6% of total industry revenue.

The four main regions have the following features: (1) Supporting industry base. Access to, and cooperation with, upstream and downstream industries allow firms in this industry to benefit from easy access to new technology and client companies; (2) Accessibility. With convenient transportation networks and international ports, the four main regions have the advantages of easy access to trade infrastructure; (3) Good human resources. High levels of well-trained technology staff are concentrated in the four main regions; (4) High medical R&D and clinical level. Most Grade 3 hospitals are located within the four main regions; and, (5) Wide financing channel. This includes state-owned, private and foreign capital financing.

## Market Characteristics

### MARKET SIZE

Revenue within the Medical Diagnosis, Monitoring and Treatment Equipment Manufacturing Industry in China is expected to total \$4.58 billion in 2010, a relatively modest increase of 2.7% from 2009 as the global financial crisis hinders industry growth. Production output and industry revenue growth was stimulated by domestic demand demand, with exports forecast to decline by 4.2% in the year, following a 38.1% drop in 2009. Exports are forecast to account for 27.7% of industry revenue in 2010, down from a peak of 48.2% in 2008.

Domestic demand is forecast to increase by 3.8% from 2010, with competing imports accounting for about 42.5% of domestic demand for the year. The technology level utilized by China's large domestic players continued to improve and, therefore, export volumes of these firms are expected to increase in future years.

Key drivers for market growth include: the increasing purchasing power of hospitals; improvements in Chinese living standards and therefore increased demand for medical diagnoses; technology upgrades in hospitals; requirements for higher quality products; and, the development of western regions in China.

Foreign companies are well-established in this industry, with three foreign firms in the top five list of the industry's major players. Industry revenue derived from these three companies is forecast to account for over 40% of total industry revenue in 2010.

The industry is about to enter its mature phase of development and the competitive landscape in most sub-markets has been well-developed.

### LINKAGES

#### Demand Linkages

##### 8511 - General Hospitals in China

Hospitals providing diagnostic and medical treatment (both surgical and non-surgical) to inpatients and outpatients with a wide variety of medical conditions.

##### 8512 - Traditional Chinese Medicine Hospitals in China

Hospitals providing healthcare and treatment using mainly traditional Chinese medicine methods.

##### 8513 - Integrated Traditional Chinese and Western Medicine Hospitals in China

Hospitals providing healthcare using traditional Chinese and Western Medicines.

##### 8514 - Ethnic Minorities Hospitals in China

Hospitals providing healthcare using both general and specific medical treatments and methods for minorities.

##### 8515 - Specialized Hospitals in China

Hospitals specializing in specific medical fields such as Gynecology and Orthopedics.

##### 8550 - Maternity and Child Healthcare Services in China

Establishments providing medical care for mothers and children. These are defined as healthcare service facilities, not hospitals.

### Supply Linkages

#### ☰2665 - Information Chemistry Product Manufacturing in China

Establishments providing all kinds of polymers to medical equipment manufacturers.

#### ☰3152 - Industrial Ceramics Manufacturing in China

Establishments providing special ceramics for medical equipment manufacturers.

#### ☰3411 - Metal Fabrication in China

Establishments providing metal materials to medical equipment manufacturers.

## DEMAND DETERMINANTS

The main factors affecting demand for products manufactured within the Medical Diagnosis, Monitoring and Treatment Equipment Manufacturing Industry in China include the government, incomes, technologies, downstream demand, usage preferences, equipment prices, financing packages, and currency fluctuations.

### Government's role in the sector

The government has established many regulations in relation to medical equipment manufacturing and hospital standardization that greatly influence the industry. For example, according to its next five-year plan (2006 to 2010), the government has increased its investment and input to small hospitals. This involved a large-scale government procurement and implementation of uniform medical equipment for these hospitals.

### Increasing level of real household disposable income and aging population

As household income increases, people are able to spend more of their income on health care. Also, the aging population generally requires higher levels of health care. Further, a greater number of hospital visits may bring more demand for medical equipment.

### Technological change and product innovation

Some hospitals in China have responsibilities for training and teaching medical staff and doctors. These hospitals need technically advanced medical equipment to meet these training and teaching requirements. Generally, the technical level of medical equipment in large hospitals in China is similar to those found in international hospitals.

### Demand from downstream industries

Increases in the level of capital expenditure in the Health Care and Social Assistance sectors of the economy can stimulate demand for medical equipment from this industry. Demand is also largely derived from doctors, general and specialized hospitals, ambulance services, and maternal and child health centers.

### Business decisions to use and purchase medical equipment

Hospital managers and decision-makers have an important role in purchasing medical equipment, which can impact on the development and performance of firms in this industry.

## Usage Preferences

For unusual and alternative types of medical equipment for some specific illnesses and diseases, the preferences of medical practitioners may directly influence demand.

## The price of medical equipment, especially for small hospitals

Demand for most goods and services is usually inversely related to price, and medical equipment is no exception. Due to the limited budgets and purchasing power of small hospitals, they are generally more price-sensitive, require lower prices, but still need relatively good quality medical equipment.

## Financing packages

Reasonable financial packages, such as a supplier's financial support, will increase the demand for medical equipment. Hospitals may pay installments for equipment without interest, or pay a lower interest rate than bank offers. Generally, this kind of service is mainly provided by foreign suppliers, which have professional finance companies to support them. A few domestic suppliers also provide financial installment services for their customers. A good financial package may ease the capital pressures for a hospital or medical center.

## Currency Fluctuations

Most parts and accessories in this industry are provided by global suppliers. Therefore, fluctuations in currencies will have an influence on the final price that a company can charge to maintain the same level of demand and profitability.

## DOMESTIC AND INTERNATIONAL MARKETS

### Domestic and International Markets Exports

The level of trade export is high

The trend of trade export is increasing

### Domestic and International Markets Imports

The level of trade import is high

The trend of trade import is decreasing

### Domestic and International Markets Analysis

Within the Medical Diagnosis, Monitoring and Treatment Equipment Manufacturing Industry in China in 2009, competing imports totaled \$2.41 billion, down 22% from 2008 (constant 2010 dollars). Competing imports accounted for 43.4% of domestic demand for the industry's products, down from 69.5% in 2005. Government policies set higher fee standards for medical examinations undertaken with foreign equipment, which brings higher profits for hospitals and increases demand for imported medical equipment.

Export values totaled \$1.32 billion in 2009, down 38.1% from 2008. These exports accounted for 29.6% of industry revenue in 2009, down from 44.7% in 2005. Exports to developed countries such as the US, Japan and Germany mainly originated from facilities owned by multinational companies in China. The large increase in exports in recent years was also derived from domestic companies targeting foreign markets.

The three largest trading partners of China in the industry in recent years have been the US, Germany and Japan.

The composition of competing imports within the Medical Diagnosis, Monitoring and Treatment Equipment Manufacturing Industry in China has experienced moderate changes from 2003. At that time, competing imports made up 66.5% of domestic demand and came from the US (30.1%), Japan (22.6%), Germany (21.3%), France (3.8%), the Netherlands (3.8%) and Israel (2.8%). Japan lost its position as the largest supplier of this type of equipment to China as US and German manufacturers developed specialized equipment and niche markets.

The composition of exports since 2003 has also changed moderately. The US, Japan and Germany kept their position as the major destination countries. In 2003, exports accounted for 32.9% of industry revenue and went to the US (30.8%), Japan (20.6%), Hong Kong (5.9%), Germany (5.3%), France (4.1%), Singapore (3.5%) and India (3.0%).

#### Major Import Sources - 2009

Source	Million Dollars Import Value	Percentage Share of Total
The US	673.4	29.5
Germany	565.2	24.7
Japan	479.1	21.0
Netherlands	99.1	4.3
France	77.3	3.4
The UK	73.4	3.2
Israel	54.5	2.4
Mexico	39.7	1.7
India	26.9	1.2
Switzerland	23.8	1.0

Source: China Customs

#### Major Imported Products - 2009

Product	Million Dollars Import Value	Percentage Share of Total
Parts	346.9	15.2
X-ray tomography instrument	347.7	15.2
X-ray tubes	145.9	6.4
Micro-dose X-ray security inspection system	21.3	0.9
Endoscopes	168.0	7.3
Diathermy Apparatus	11.2	0.5
X-ray image intensifier	8.9	0.4
Others	1236.4	54.1

Source: China Customs

### Major Export Destinations - 2009

Destination	Million Dollars Export Value	Percentage Share of Total
The US	347.0	27.7
Japan	149.7	11.9
Germany	112.3	9.0
France	63.1	5.0
Hong Kong	50.6	4.0
The UK	43.5	3.5
Namibia	37.7	3.0
The Netherlands	29.9	2.4
India	23.3	1.9
Singapore	21.4	1.7

Source: China Customs

### Major Exported Products - 2009

Product	Million Dollars Export Value	Percentage Share of Total
Parts	298.0	23.8
X-ray tomography instrument	233.2	18.6
X-ray tube	13.2	1.1
Micro-dose x-ray security inspection system	5.5	0.4
Endoscope	15.5	1.2
Diathermy apparatus	1.5	0.1
others	687.1	54.8

Source: China Customs

## BASIS OF COMPETITION

Competition in this industry is high  
 Competition in this industry is increasing

### Internal Competition

The major factors forming the basis of competition between firms in the Medical Diagnosis, Monitoring and Treatment Equipment Manufacturing Industry in China include price, quality, service and technology.

### Price

The price of medical equipment is one source of competition between firms within this industry. Due to the low subsidies and inputs from the government, hospitals, as the main customer of this industry, have to pay for medical equipment themselves. A major source of hospitals' capital is from their daily business. For hospitals with low capital levels that want to purchase medical equipment, price is crucial in their decision-making.

### Product quality

Firms that are able to offer high quality products at a competitive price are likely to hold a competitive advantage within the industry. While downstream industries want to pay low prices for the industry's products, these sectors also want medical equipment that is functional and durable. With the development of domestic firms, some technology was no longer monopolized by foreign firms, resulting in higher product quality and pricing decreases. For equipment that both foreign and domestic firms can produce, quality and performance at each price point is a source of competition.

### Service

Companies that operate in this industry can gain a competitive edge by providing a high standard of service to downstream businesses and distributors. Service includes financial packages, product support, maintenance and software updating. Each service item can provide a firm in this industry with a competitive advantage.

### Technological efficiency and innovation

Advancements in product design and manufacturing techniques can give a firm a competitive advantage over other firms. Generally, new products with new technology can earn excess profits for medical equipment manufacturers. For firms that produce generic type items, maximizing efficiency and productivity can be a successful business strategy. Also, ensuring that employees work to full capacity may be an important source of competitive advantage over other firms.

The competitive strengths of Chinese firms within this industry include: (1) the performance to price ratio of relatively low-end medical equipment, such as CT and MRI products; (2) the ability to develop export markets; (3) the ability to adapt a technology-intensive industry to incorporate labor-intensive practices, as Chinese firms have labor-cost advantages; (4) a willingness to implement new manufacturing technology; and, (5) access to a large market, both domestic and foreign, of downstream industries and distributors.

Chinese firms are not as competitive in the following areas: (1) input for research and development; and, (2) the manufacture and development of high-end medical equipment products, such as multi-slice and 64-slice CT scanners.

### External Competition

The major external competition within the industry comes from: (1) Traditional Chinese treatment methods. An increasing number of hospitals and doctors would like to choose the combination of Chinese treatment methods and western treatment methods; and, (2) Government polices. In the past, hospitals that purchased foreign medical equipment were able to receive a higher government reimbursement, depending on the government's reimbursement policies.

## LIFE CYCLE

### Life Cycle Stage

The life cycle stage is growth

### Life Cycle Reasons

- There is increasing acceptance of Chinese-made products in foreign markets
- The industry features a rapid rate of technological change
- There is increasing acceptance of new products in domestic markets
- Export growth has been stronger than competing import growth in recent years
- The industry has a large potential domestic market

## Life Cycle Analysis

The Medical Diagnosis, Monitoring and Treatment Equipment Manufacturing Industry in China is in the growth stage of its life-cycle, and is expected to enter its mature phase towards the end of the outlook period. Industry growth rates increased steadily to 2008 as demand for medical equipment increased. Competition in the industry is intense as participating firms continue to develop their market shares.

As with most technologically-advanced industries, there has been a constant introduction of new and improved products in this industry. Generally, highly-advanced foreign medical equipment is already used in many large hospitals in China, and the opportunities for greater market penetration are still significant. The level of equipment digitalization is rising and demand for better medical technology continues to increase.

In China, the Medical Diagnosis, Monitoring and Treatment Equipment Manufacturing Industry has a high globalization level with most of the larger industry participants in this industry being owned by, or in a joint venture with, foreign parent companies.

Imports growth rates are much lower compared with exports. Most domestic companies are increasing their exports. Export growth was high in recent years, except for 2009 and 2010, and are forecast to continue to increase steadily in the outlook period.

Currently, the general level of medical service charges in China is much higher than people's ability to pay, especially in rural areas. This is caused by the dysfunction of the current healthcare system and the low coverage level of medical care. With healthcare system reforms and the development of the social security system, especially the implementation and promotion of the "New Co-operative Medical Care System" in rural areas, more urban and rural citizens will be able to afford medical-related expenditures, creating a large potential domestic market for this industry's products.

## Industry Conditions

### BARRIERS TO ENTRY

Barriers to entry in this industry are high  
These barriers are increasing

The Medical Diagnosis, Monitoring and Treatment Equipment Manufacturing Industry in China is heavily regulated and promoted by the government due to its impact on the health and safety of the Chinese population. There are many departments that control and supervise the system, including AQSIQ (General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China), State Food and Drug Administration (SFDA), and other business administration departments. These bodies have implemented many rules and policies to ensure the industry conforms to the required government standards and specifications, including Management Rules for Using Large Medical Equipment, and Medical Equipment Manufacture Management and Administration Rules.

A new company that intends to enter the industry needs a high level of start-up funds. For example, a new company that wants to manufacture ultrasound products has to invest at least \$610,000, so that the capital intensity is higher. However, the risk level is greater, as the product cycle of R&D is longer.

There are many well-known foreign companies operating in this industry, which mainly operate in the major high-end market. The industry's products manufactured in China have been sold around the world, and China has become the third-largest producer of medical equipment.

The industry in China is relatively new when compared to the equivalent industries in developed countries. However, the distribution network developed rapidly and will be expanded as firms enter the country market.

## TAXATION

### Value Added Tax

All manufacturers in this industry should pay the value added tax at a rate of 17%.

### City Maintenance and Construction Tax

City maintenance and construction tax is levied at different rates based on different locations of the enterprise. An enterprise in urban areas pays tax of 7% of its real value added tax amount. If it is located in rural areas, the rate is only 1%. Enterprises in counties and prefectures are required to pay the tax at 5%.

### Educational Surcharge

Educational surcharge applies to all domestic enterprises, which should pay the surcharge of 3% of their real value added tax amount. Foreign-funded enterprises are exempt from paying the educational surcharge.

### Corporate Income Tax

The Corporate Income Tax Law of China was implemented from January 1, 2008. It unifies the previously different income tax policies for foreign and domestic enterprises. Within the new system, income taxes will be levied on both domestic and foreign enterprises at a rate of 25%, with favorable tax rates applicable to high-technology enterprises (15%) and small-size domestic enterprises (20%).

The new system exempts enterprises' investment in research and development activities in calculating the taxable income. This is to enhance the general R&D level of all enterprises in China. The system also provides a five-year transition period for foreign enterprises to adjust, in order to maintain FDI in China.

Implementation of the new income tax system will help create an environment for fair competition, promote upgrade of industrial structure and improve the overall quality of foreign investment in China. It will also encourage investment in environmental protection and R&D.

The new income tax system will reduce competitive advantages of foreign players within this industry derived from favorable tax policies. Domestic enterprises, especially private ones, will be able to invest part of their tax burden in production and gain more market share.

## INDUSTRY ASSISTANCE

The level of Industry Assistance is high

The trend of Industry Assistance is increasing

### Key Tariffs

Goods	Low Rate*	High Rate*
Electro-Cardiograph	5.0	17.0

Ultrasound	7.0	35.0
Colored Ultrasound	5.0	17.0
Other Ultrasound and Scanning Equipment	5.0	17.0
MRI	4.0	17.0
Patient Monitoring Equipment	4.0	17.0
Endoscope	4.0	17.0
X-ray Multilayer Diagnostic Equipment	4.0	11.0
Low Dose X-ray Security Inspection Equipment	4.0	11.0
X-ray Full Automatic Fuel Slug Inspection Bench	4.0	11.0
Other X-ray Application Apparatus	4.0	11.0
Gamma-ray Medical Treatment	4.0	11.0
Pipe For X-ray Machinery	2.0	11.0
Others X-ray Pipes	2.0	11.0
X-ray Image Intensifier	6.0	11.0
X-ray Detector For X-ray Machinery	6.0	11.0
Ultraviolet Ray and Infrared Ray Medical Equipment	4.0	17.0
Other X-ray Applicable Equipment for Dental Use	4.0	11.0
Medical Linear Accelerator	4.0	11.0

\*Percentage of value unless otherwise specified

The Medical Diagnosis, Monitoring and Treatment Equipment Manufacturing Industry in China is classified as a new and high-technology industry. The government protects and supports these important industries by providing several favorable policies.

In Circular of the State Council Concerning the Approval of the National Development Zones for New and High-Technology Industries, and the Relevant Policies and Provisions, the income tax of development zone enterprises shall be levied at a reduced rate of 15% from the date of their acknowledgement and determination. When the value of exports of a development zone enterprise exceeds 70% of its total annual output value, the income tax shall be levied at a reduced rate of 10% after being verified by the taxation authorities. A newly established development zone enterprise may, upon approval by the taxation authorities of an application filed by the enterprise, be exempted from income tax in the first two years of operation. These policies contribute to the increased output and development of the domestic industry.

The government encourages industry exports by not applying export tariffs, and by providing tax refunds for exports. In 2004, the Chinese government decreased tax refunds for exports of many industries from 17% to 13%, while retaining the 17% tax refund rate for this industry.

The government exempts the import tariff (4%) and the value added tax (17%) for imported medical equipment used for research, teaching and training. In 2006, the ordinary taxation rate is between 17% and 50%, while the taxation rate for selected high-technology industries is between 2% and 15%.

## REGULATION AND DEREGULATION

The level of Regulation is heavy  
The trend of Regulation is increasing

The Medical Diagnosis, Monitoring and Treatment Equipment Manufacturing Industry in China is highly regulated and heavily controlled by the government. This is due to: (1) the importance of its development, which will improve Chinese medical diagnosis and therapy conditions; and (2) the product quality and application level directly relates to the safety of patients and operators.

The government has implemented many policies, regulations and technological rules to regulate the manufacture and sale of medical equipment. The main regulations are: Medical Equipment Manufacture Management and Administration Rules; Management Rules for the Application of Large Medical Equipment; Law of Public Bidding in China; and Medical Equipment Registry Management Rules.

Medical Equipment Manufacture Management and Administration Rules - is designed to standardize the manufacturing process of medical equipment, including product quality control, production safety, and company administration. The purposes of this policy are for safer and better quality medical equipment and products, a larger number of suppliers, and lower technology barriers. The government also wants to ensure product and market standardization, and steady development of the industry.

Management Rules for the Application of Large Medical Equipment - was implemented in March 2005 with the main purpose of regulating the use of large-scale medical equipment in hospitals. Different institutions of the Ministry of Health (MOH) will have the responsibility to control the use of large-scale medical equipment at different administrative levels and prevent hospitals from using old equipment to decrease the problems rising from this. This policy impacts heavily on less developed regions and hospitals in lower administrative levels with lower budgets that may not be able to purchase new equipment and prefer saving costs and purchasing used equipment. The impact of this policy will be positive on the industry's development and will enhance supply sources.

Law of Public Bidding in China - has been operational for several years and its effect on this industry is clearly visible. The policy aims at standardizing the purchasing procedures of medical equipment by hospitals, and decreasing sourcing and supply problems. Hospitals often organize public tenders, and about 20% to 30% of medical equipment and instruments are purchased through tenders. Using this practice, hospitals can get the lowest price for a given level of quality and technology, with suppliers and distributors competing in a regulated environment with transparent rules. Its overall impact is mainly positive, especially for large-scale medical equipment markets, but less effective for small-scale equipment.

Medical Equipment Registry Management Rules - is to standardize the product registration of medical equipment that is going to come into the market. The equipment cannot be sold and used without government permission. The rules also ensure the safety and efficiency of the products as the company that puts forward an application undertakes legal responsibility.

Medical Equipment Company License Management Rules - was launched in 2004 and details rules for granting, replacing, and changing licenses for the management and administration of medical equipment manufacturing companies. The State Food and Drug Administration (SFDA) enforces these rules.

GMP Certification Management for Medical Equipment and Instruments - The GMP (Good Manufacturing Practices) certification for medical equipment and supplies will be fully implemented in stages from 2007 to 2010, covering medical equipment, and medical and surgical instruments, etc. The GMP Flight Inspection system will also be executed. The

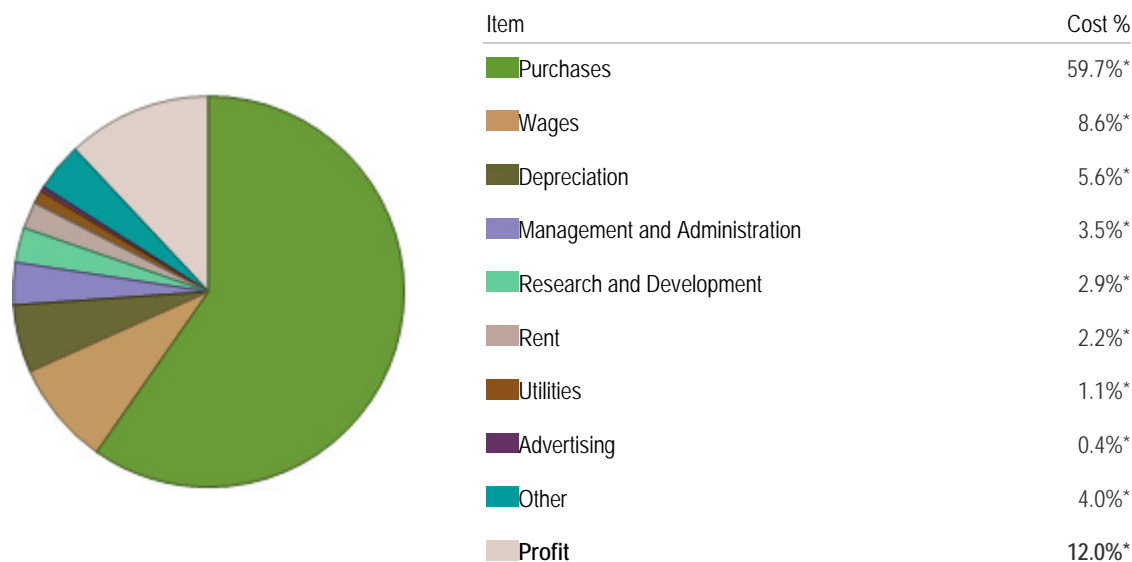
purpose of implementing GMP certification includes: (1) To strengthen supervision and control over the manufacturing processes within manufacturing units, so that high quality products can be produced. Items for supervision include size of factories, production capacity, product quality and risk management, etc. (2) To raise standards for new players' entry by establishing high barriers for small or poorly-operated players, so that a better environment of competition can be provided for stronger manufacturers. (3) To enhance medical products manufacturers' management level.

In addition, different provinces also make policies for the industry within the provincial scope.

The government also regularly reviews and adjusts the policies and rules to ensure the industry continues to develop strongly.

## COST STRUCTURE

Year: 2010



The profit level in this industry is expected to be relatively high in 2010 at 12%. This is attributed to the high technology levels of the industry's products, which attracts higher prices. Profit margins declined to 9% in 2006 due to increased competition and rising raw material prices. It recovered to 11% in 2007 as technology levels continued to improve and domestic demand was substantial.

The purchase of materials is the most significant part of this industry's cost structure. Firms tend to acquire parts, components and accessories from global and local suppliers, and complete the equipment assembly within domestic facilities. From 2004 to 2008, prices for raw materials, such as aluminum, steel and copper, increased significantly. This contributed to pricing and sourcing pressures in the industry in these years.

Labor costs in China are much lower than in developed countries. This includes wages for production workers at an estimated 8.6% of industry revenue in 2010, plus management and administration costs at 3.5% of industry revenue for the year.

Depreciation expenses have remained relatively stable in recent years. These are estimated to decline to 5.6% in 2010, down from 6% in 2008, reflecting lower-priced plant and equipment in the industry.

R&D costs have been at a steadily high level in recent years, as a result of technology development. Other costs include insurances and maintenance expenditures on property, plant and equipment.

## CAPITAL AND LABOR INTENSITY

The level of Capital Intensity is high

- High capital start-up costs are required
- Intense R&D is required
- Labor is a visible input especially for technicians and sales staff
- Investment in manufacturing equipment and machinery is high

A typical firm within this industry utilizes approximately 2.2 units of labor for each unit of capital. A capital to labor ratio of 1:2.2 indicates a high level of capital intensity.

Labor for manufacturing and assembling medical equipment is a significant input for the industry due to the high technology content and strict quality requirements.

Capital intensity has risen steadily since 2000. This has been to increase output volumes and maintain competitiveness by investing in new manufacturing equipment and new technologies.

Due to increasing competition and the fast growing market, marketing and sales inputs increased rapidly in recent years. The overall level of capital investment in this industry should increase in the future as companies become more innovative in manufacturing and marketing processes.

## TECHNOLOGY AND SYSTEMS

The level of Technology Change is high

Although many products in this industry can be manufactured domestically, the technology level utilized by local firms is relatively low when compared to foreign firms. This is a technology-oriented industry and high-end equipment usually command higher prices and profits. However, this industry of China was established much later than in developed countries, and domestic firms rely heavily on foreign companies for technologies, parts, and other inputs.

Digital medical equipment utilizes high-end technology and is in high demand by hospitals. Digital medical equipment integrates traditional medical equipment technology, electronic information technology, and other technologies to become part of a hospital's information system and can be shared between different hospital departments. Large-scale medical equipment, such as CT, MRI, and X-ray, are digital medical equipment. Most of these types of equipment are manufactured by foreign companies and only a few of domestic companies can produce them.

The need to improve patient diagnosis and solve clinical difficulties is the main reasons for the development of new technologies for high-end medical equipment. For example, 64-slice CT equipment makes it possible for diagnosing heart

disease by CT by providing immediate images of the heart and its blood vessels. This information can be reconstructed into 3D views using advanced computer technology, and allows for more detailed imaging of the scanned parts.

As the technology used in medical equipment improves, it becomes more user- and patient-friendly. For some types of medical equipment, software upgrades are more frequent than changes to the core equipment.

Changing product regulations established by the government also require companies to update their technology on a fairly regular basis.

## INDUSTRY VOLATILITY

The level of volatility is high

Multinational companies that establish factories and joint venture operations in China contribute to industry growth. Domestic companies have developed their products in recent years and have begun to develop export markets.

Strong and stable increasing purchasing power from downstream industries, which increases revenue growth. Further, government procurement policies promote investment in particular types of medical equipment for hospitals.

Increasing prices of raw materials and utilities, continuous appreciation of China's currency, which started from 2005, as well as the lowering of export tax rebate rates, counteract the competitive advantages of domestically-made products in price. This has contributed to changes in revenue growth and increased industry volatility.

## GLOBALIZATION

The level of Globalization is high

The trend of Globalization is increasing

The Medical Diagnosis, Monitoring and Treatment Equipment Manufacturing Industry in China is subject to a high globalization level, which is expected to increase over time.

Foreign companies are well-established in this industry, with three foreign firms in the top five list of the industry's major players. Industry revenue derived from these three companies is forecast to account for over 40% of total industry revenue in 2010.

Further, sales revenues of foreign-funded firms accounted for about 49% of total industry revenue in 2009. The industry is dominated by globally-oriented multinational companies, such as GE and Siemens. Although they account for a small number of locations, these companies play an important role in the industry as their joint venture factories manufacture and finish products for the domestic and foreign markets.

Imported products are forecast to account for 43.4% of domestic demand in 2010. Around 80% of products used by downstream industries are made by joint ventures or imported from developed countries.

With the development of domestic companies, growth of competing import is expected to slow down in the future five years and account for a lower proportion of domestic demand. However, export is expected to increase significantly in future years and account for higher levels of industry revenue. Although the competitive structure of the industry will change in the future, this will continue to contribute to the increasing globalization trend.

### Enterprise Ownership Shares - 2009

Ownership	Percentage Revenue Share	Percentage Enterprise Number Share
State-owned	0.3	2.0
Collectively-owned	1.3	2.0
JECE	0.1	1.0
Shareholding	15.5	4.3
Private	21.9	42.4
Foreign	49.1	29.8
Other	11.8	18.5

Source: National Bureau of Statistics China

## Key Factors

### KEY SENSITIVITIES

The key sensitivities affecting the performance of the Medical Diagnosis, Monitoring and Treatment Equipment Manufacturing industry include:

#### **Downstream Demand - General Medical & Surgical Hospitals**

Increased downstream demand for the industry's products contributes to higher revenue growth.

#### **Funding (State & Local) - Health Services**

The level of both central government and local government funding of the health sector is important to this industry. Increased levels of government funding for health services have a positive impact on the level of demand for medical equipment and an impact on the production levels of these products.

#### **Industry Regulation**

This industry is subject to heavy regulations from different government administrations, such as National Development and Reform Commission, Ministry of Health, etc. Regulations such as GMP certification will force manufacturers to improve their product quality and manufacturing environment, which means higher costs for production. Therefore, this sensitivity has a negative effect on the development of the industry.

#### **Industry Systems and Technology - Medical Equipment and Supplies Manufacturing**

Protection of intellectual property encourages product innovation. Intellectual property in an enterprise is the unique combination of systems, skills and core competencies, continually enhanced by high levels of R&D that separates it from its competitors. As technological knowledge in medical and surgical equipment manufacturing improves, competition will increase and also drive improvements. Continuous product improvements will also increase demand for products in this industry as demand in

#### **Levels of Health - Private Health Insurance Membership**

Increases in the number of Chinese households covered by health insurance, including social insurance and commercial insurance, benefits this industry. Health insurance essentially provides insured patients with greater choice of doctors and medical equipment. They can pay a relatively low price themselves for a medical diagnosis when compared to uninsured patients, thereby increasing demand for the industry's products.

#### **Service Prices - Health Services**

The higher the health service prices, the smaller the demand for such services. Health service prices negatively affect demand for the equipment manufactured within this industry.

### KEY SUCCESS FACTORS

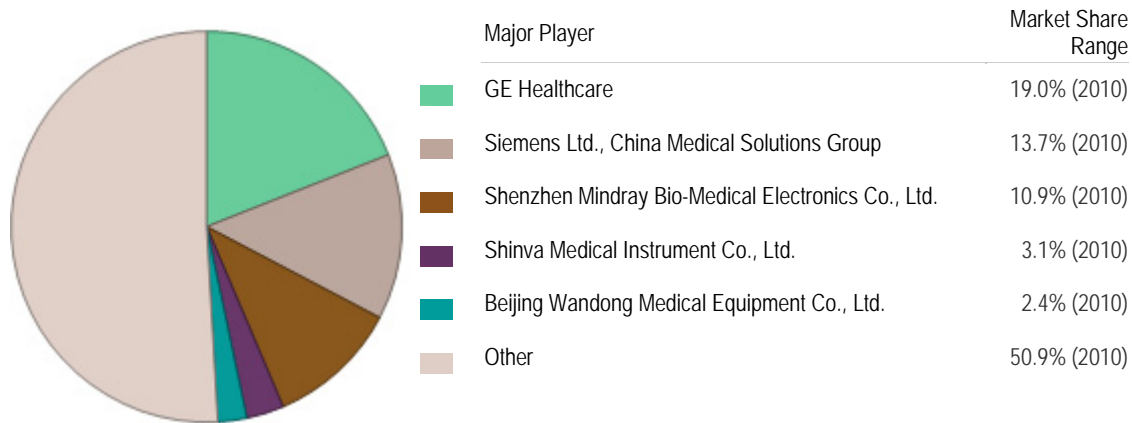
The key success factors in the Medical Diagnosis, Monitoring and Treatment Equipment Manufacturing industry are:

- Access to the latest available and most efficient technology and techniques  
Access to technological developments, through R&D and the development of strategic alliances.
- Ready access to investment funding  
Access to venture capital is important for new firms to succeed in this industry.
- Establishment of export markets  
Domestic companies need to focus on export markets to increase capacity utilization and reduce reliance on the domestic market.
- Having links with suppliers  
Firms need to establish and develop relationships with distributors and suppliers.
- Access to highly skilled workforce  
The availability of skilled labor is important to firms in this industry.
- Undertaking technical research and development  
The level of expenditure on R&D within the firm can influence future company growth.
- Economies of scale  
The size and scale of manufacturing locations influences output and revenues.
- Establishment of brand names  
The strength of the brand name can provide a company with higher sales growth.

## Key Competitors

### MAJOR PLAYERS

#### Market Share



### PLAYER PERFORMANCE

#### GE Healthcare

Brand/Trading Name(s): Hangwei Medical Systems Co., Ltd, GE Medical Systems (China) Co., Ltd, GE Hualun Medical Systems Co., Ltd

Market Share: 19.0%

GE Healthcare specializes in medical imaging and information technologies, medical diagnostics, patient monitoring and life support systems, disease research, drug discovery, and biopharmaceutical manufacturing technologies.

Headquartered in the United Kingdom, GE Healthcare is a \$15 billion unit of General Electric Company. Globally, GE Healthcare employs more than 43,000 people in more than 100 countries. GE Healthcare (China) produces large-scale medical equipment such as CT, MRI, X-ray, ultrasound, and nucleus medical diagnosis equipment. The company also has a bioscience unit.

GE Healthcare (China) was founded in 1979 and began importing and distributing medical equipment. In 1991, GE Healthcare (China) entered into Beijing Development Zones, setting up its first joint venture named GE Hangwei Medical Systems Co Ltd (GEHW). GEHW manufactures and develops world-class CT scanners for the Chinese markets and for export, as well as MRI systems. GE Healthcare (China) then established another two new joint ventures to manufacture full digital color ultrasound systems and X-ray equipments in Wuxi (Jiangsu Province) and Beijing in 1996.

GE Healthcare (China) now has four joint venture enterprises, one wholly-owned foreign enterprise, and more than 20 offices and maintenance centers in China that employs over 2,200 people.

Hangwei Medical Systems Co Ltd had sales revenue of \$238 million in 2006. GE Medical Systems (China) Co., Ltd reported \$70 million in revenue in 2006 and GE Hualun Medical Systems Co Ltd had sales revenue of \$43.5 million in 2005. About 70% of the company's products were exported in 2006. In 2007, the sales revenue of Hangwei Medical Systems Co., Ltd., GE Medical Systems (China) Co., Ltd. and GE Hualun Medical Systems Co., Ltd totaled \$374.1 million.

Similar to other players in this industry, GE Healthcare (China) would import a large proportion of parts and accessories, and complete the assembly in China. Only basic components and metals were purchased from Chinese companies due to the relatively lower standard of output of local supplier firms.

Financial Performance of GE Healthcare (Worldwide) - 2004 to 2009

Year	Billion Dollars Sales	% change Growth
2004	13.5	N/C
2005	15.2	12.6
2006	16.6	9.2
2007	16.9	1.8
2008	17.3	2.4
2009	16.0	-7.5

Source: Annual Report

**Siemens Ltd., China Medical Solutions Group**

Brand/Trading Name(s): Siemens Med (China), Siemens Shanghai Medical Equipment Ltd (SSME), Siemens Technology Development Corporation Ltd, Siemens Mindit Magnetic Resonance Ltd. (SMMR), Siemens X-Ray Vacuum Technology Ltd

Market Share: 13.7%

Headquartered in Beijing, Siemens Medical (China) has three joint venture enterprises and two wholly-owned foreign enterprises in China with 1,400 employees. Siemens Med (China) currently produces about 20 categories of medical equipment in China, with the main products being CT, MRI, X-ray and ultrasound equipment.

The Chinese market is very important for Siemens Medical Solutions, which was established in July 1992 with an investment of more than \$13 million. Originally started as a joint venture, Siemens Shanghai Medical Equipment Ltd (SSME) was officially announced as a wholly-owned foreign enterprise in March 2005 by Siemens AG. SSME specializes in sourcing, manufacturing, developing and supporting Computer Tomography (CT) systems, X-ray systems, and other medical equipments. SSME also serves as an R&D center for further product developments.

SSME is set to become the world-class distribution company of Siemens medical products. In 2009, company revenue is expected to total \$207.8 million.

Siemens Technology Development Corporation Ltd. of Beijing was founded in 1989 and is a joint venture company that provides service and maintenance of Siemens medical equipment in China. The company also has offices in Shanghai, Guangzhou, and Shenyang, and has over 100 employees.

Located in Shenzhen High-Tech Industrial Park, Siemens Mindit Magnetic Resonance Ltd. (SMMR), is a high-tech company that specializes in the production of MRI systems. In March 2005, Siemens Medical Solutions Group set up a Siemens MR Center within SMMR. SMMR became one of the largest MR R&D and manufacturing centers outside of its headquarters in Germany. The facilities occupy 30,000 square meters, integrating functions of R&D, manufacturing, sales and technical support. In 2009, company revenue is estimated to be \$64.9 million.

Siemens X-Ray Vacuum Technology Ltd. was established in June 2003 as a new R&D and manufacturing base, and the only Siemens facility of its kind outside of Germany to focus on X-ray tube housing assemblies. Annual production

capacity of 4,000 to 5,000 sets of X-ray tube housing assemblies, which is a core component of CT machines and X-ray systems, is expected each year.

Siemens Hearing Instruments (Suzhou) Co., Ltd. is a wholly-owned foreign enterprise invested by Siemens Audiologische Technik for hearing instruments in 1995 in Suzhou Singapore Industrial Park. The company serves the China market and has more than 500 employees and six branch offices nationwide. In 2009, company revenue is forecast to be \$135.5 million.

### **Shenzhen Mindray Bio-Medical Electronics Co., Ltd.**

Brand/Trading Name(s): Shenzhen Mindray

Market Share: 10.9%

Mindray, a Sino-US joint venture, was founded in 1991. Initially a medical equipment distributor, the company began conducting its own R&D the following year and developed the first blood oxygen saturation monitor in China.

Mindray's headquarters are located in Shenzhen, with 29 offices in major cities of China, as well as representative offices in the US, Canada, UK, Turkey and Hong Kong.

Mindray focuses on R&D and manufacturing of medical devices including: Patient monitors; Clinical laboratory instruments; Ultrasound imaging systems; and Clinical anesthesia systems.

In China, Mindray supplies more than 10,000 hospitals via hundreds of dealers. The company's products are also sold in over 120 countries around the world. In 2005, foreign revenue accounted for 45% of total company revenue, up 76% from 2004, with half of this from exports to the US, Japan and England. This strong export growth was driven by successful partnerships with foreign Original Design Manufacturers (ODM) and the company's ability to manufacture high quality medical products to specification.

According to China Custom's data, of medical equipment exports in 2005, 61% of patient monitors and 32% of ultrasound imaging systems were manufactured by Mindray. Total sales revenue of Mindray in 2005 was \$127 million. This grew to \$194.1 million in 2006, of which 48.6% was from international trading.

With annual sales growing at 40% in recent years, Mindray has positioned itself as one of the largest electro-medical equipment manufacturers in China. Mindray obtained an ISO9001/EN46001 Quality Assurance certification in 1995 and a CE mark for its patient monitors in 2000, which establishes the company as a player in the global patient monitoring market.

In September, 2006, Mindray was listed on the New York Stock Exchange (NYSE). Each year, 10% of its sales revenue is invested in research and development activities. The company currently has around 800 R&D engineers working on the development of various clinical medical devices. For the year, Shenzhen Mindray Bio-Medical Electronics Co., Ltd. reported \$188.4 million in revenue.

In 2007, Shenzhen Mindray Bio-Medical Electronics Co., Ltd. expanded its investment scale in European markets with \$289.7 million in sales revenue. The company's Nanjing base was established at the end of 2008. In 2009, company revenue is expected to total \$461.4 million.

### **Shinva Medical Instrument Co., Ltd.**

Market Share: 3.1%

With location at Zibo city, Shandong province, Shinva Medical Instrument Co., Ltd (Shinva Medical) was listed on the Shanghai Exchange in 2002. Its main products include sterilizer, radiotherapy equipment, digital diagnosis equipment, surgical instrument, disposable syringe, environmental protection equipment for medical use, sterilization testing products and pharmaceutical machinery. In 2003, Shinva Medical developed DDR digital radiography system.

In 2009, the company increased its focus on market development and improved its core competitiveness. Therefore, company revenue of this company increased to \$129.7 million.

In 2008, the company increased its capacity and controlled production costs, and company revenue increased by 30.2% in the year. In 2007, Shinva Medical reduced production costs, focused on upgrading its products, and invested more in sales and marketing. Company revenue increased by 5.7% for the year.

Financial Performance of Shinva Medical Instrument Co., Ltd. - 2006 to 2009

Year	Million Dollars Revenue	% change Growth
2006	59.9	N/C
2007	63.3	5.7
2008	82.4	30.2
2009	129.7	57.4

Source: Annual Report

### Beijing Wandong Medical Equipment Co., Ltd.

Brand/Trading Name(s): Wandong Medical

Market Share: 2.4%

Established in 1997, Beijing Wandong Medical Equipment Co Ltd originally manufactured X-ray and dental equipment. Listed on the Shanghai Stock Exchange, the company now also produces X-ray diagnostic equipment, Magnetic Resonance Imaging equipment (MRI), and blood recovery technological products at the medium and low-end of the market.

Although Wandong Medical products are sold in many countries around the world, export are not currently a significant revenue source. In 2005, the company's most important sales region was Beijing, with revenue of \$41 million, or 67.7% of total revenues. Other regions in China account for no more than 10% of company revenue each.

In 2009, mainly due to a decline in international demand, company revenue growth slowed.

In 2008, Beijing Wandong Medical Equipment Co., Ltd. made full use of the brand strength of radiography products, manufacturing capability in a large scale and mature research and development capability. Therefore, sales revenue increased by 23.6%.

In 2007, the company developed the international market further, which saw sales revenue to increase by 8.7%.

In 2006, the company reported sales revenue of \$64.6 million, up 6.6% from 2005. The company increased its R&D investments to develop new products to meet requirements from the changing market environment. From 2004, rising raw material costs and greater competition resulted in company revenue increasing by just 1.6% to \$58.7 million. Wandong Medical also began to expand overseas markets to source additional revenue streams.

### Financial Performance of Beijing Wandong Medical Equipment Co., Ltd - 2004 to 2009

Year	Million Dollars Revenue	% change Growth
2004	58.7	N/C
2005	60.6	3.2
2006	64.6	6.6
2007	70.2	8.7
2008	86.8	23.6
2009	100.1	15.3

Source: Annual Report

## OTHER PLAYERS

### Neusoft Group

Currently, Neusoft Group has more than 15,000 employees, established eight regional headquarters, 16 software development and software support centers and six software research and development bases in China. In addition, Neusoft Group established marketing and service network in more than 40 cities. Moreover, Neusoft Group has subsidiaries in the US, Japan and Europe.

Neusoft Group focuses on software technology and provides industry solution and product engineering solution, relative products and service. Moreover, Neusoft Group has own-brand medical products.

Neusoft Medical Systems, as a main part of Neusoft Group, was founded in 1998. The company develops and manufactures large-scale medical equipment for hospitals, including CT scanners, MRI, X-ray machines, and ultrasound devices. Neusoft Medical System has over 2,000 regular customers for its large-scale medical equipment across 20 provinces in China, and also exports to the US, the Middle East, and Southeast Asia.

The company has experienced strong growth since it was established. This has seen company revenue increase from \$9.1million in 1998 to \$96.6 million in 2008.

In 2009, company revenue decreased by 4% for the year, mainly due to a change in product structure and intense competition in international and domestic markets.

In 2008, Neusoft Medical Systems Co., Ltd. developed overseas market and expanded the service cover area in domestic market. Therefore, sales revenue increased to \$96.6 million.

In 2006, sales revenue of the company did not see any growth compared with 2005. However, exports increased to \$11.5 million, or 19% of company revenue. In 2005, Neusoft Medical Systems reported revenue of \$60.4 million dollars with a 5.2% growth rate.

Philips and Neusoft Medical Systems Co., Ltd is a joint venture of Neusoft Group and Royal Philips Electronics Group, with the latter holding 51% of total shares. It was established in May 2005 and employed more than 600 employees. Its business focuses on R&D on and production of medical instruments such as CT, MRI, X-ray and ultrasound. In 2007, the company reported revenue of \$80.4 million.

### Unitron Hearing (Suzhou) Co., Ltd.

Brand names: Unitron, Indigo, Element, Conversa.NT, Unison, Breeze.

Unitron Hearing (Suzhou) Co., Ltd is a subsidiary of Canada Unitron Hearing Corporation, which was acquired by Phonak Group in 2001. In 2005, Canada Unitron Hearing Corporation witnessed sharp growth of 20% worldwide.

In 1998, the corporation established its first subsidiary in China in Chengdu - Unitron Hearing Co., Ltd. In 2003, Unitron Hearing (Suzhou) Co., Ltd was established and in June 2006, the sales team started to independently operate.

In 2009, company revenue is expected to total \$133.1 million.

### Ningbo Xingaoyi Magnetism

This is a private company and was established in 1998. The company initially produced magnets and started manufacturing MRI systems in 2001. The company sold 24 MRI units in 2002, which increased to over 40 units a year from 2003 to 2005. The company allows hospitals to pay by installment, which keeps its annual sales revenue low. Employee numbers have increased from 40 in 1998 to over 80 in 2005.

In 2009, company revenue is expected to total \$17.1 million.

### Shenzhen Anke High-tech Co., Ltd.

This is a Sino-foreign joint venture and a high-tech enterprise, founded at the end of 1986. It was one of the first high-tech enterprises certified by the Guangzhou and Shenzhen governments. The company's main business is in the development, manufacture, sales and service of high-end medical electronic equipment. The company's products include equipment for medical imaging, information, electronics and therapy. Shenzhen Anke has more than 300 employees, with annual revenue of about \$13 million.

### Shanghai Medical Equipment Works

Shanghai Medical Equipment Works was established in 1946 and is a stock company with one of the largest production bases of medical X-ray equipment in China. Special X-ray equipment and medium and small size X-ray equipment are the main products of this company. Company revenue is expected to be about \$46.6 million in 2009.

### Financial Performance of Neusoft Medical Systems Co., Ltd. - 2004 to 2009

Year	Million Dollars Revenue	% change Growth
2004	57.4	N/C
2005	60.4	5.2
2006	60.4	0.0
2007	84.6	40.1
2008	96.6	14.2
2009	92.7	-4.0

Source: Annual Report

# Industry Performance

## CURRENT PERFORMANCE

### Industry Revenue

The Medical Diagnosis, Monitoring and Treatment Equipment Manufacturing Industry in China experienced rapid development during the five years through to 2010. Industry revenue increased by 17.5% per annum on average during the period.

In 2006, 2007 and 2008, industry revenue surged by over 27% in each of these three years, mainly due to the substantial increase of exports and domestic demand. After these large increases, in 2009, the global financial crisis caused revenue growth to slow to 0.8% as foreign and domestic demand weakens. In 2010, with a weakening of this crisis, industry revenue is expected to increase by 2.7% for the year.

The main changes that occurred in this period included: rapid growth in demand for medical diagnostic equipment from hospitals; more capital investment from foreign firms; intensified market competition within the industry, especially in the years after China's entry to the WTO; and tariff reductions on medical equipment.

The industry is in the growth phase of development and the competitive landscape in most sub-markets has already been formed. Growth in production output and industry revenue is stimulated by both domestic demand and demand in foreign markets. The technology level of large domestic players continues to improve and, therefore, export volumes of these firms will contribute to future industry growth.

### Domestic Demand

Domestic demand for medical diagnostic and treatment equipment in China increased strongly in recent years. This is a particularly important market for foreign suppliers, which have strong positions in the market. Domestic demand growth slowed in the past five years due to market saturation in developed regions and large hospitals, and fewer cyclical replacements for specific product groups. However, demand for medical diagnostic equipment is still large, which offers opportunities for industry participants in the future.

Key drivers for market growth are the increasing purchasing power of hospitals; improvements in Chinese living standards and, therefore, demand for medical diagnoses; technology upgrades in hospitals; requirements for higher quality products; and, the development of China's western regions.

A trend towards equipment digitalization and the use of advanced information systems started in the China market at the beginning of the current performance period. Along with the development of computer information and technologies, and the Internet, the trend towards the use of IT systems in hospitals has become an increasingly important method for hospital management. Hospital Information Systems (HIS) requires Clinical Information System (CIS), while Picture Archiving and Communication Systems (PACS) is the core of CIS and requires advanced digital imaging equipment. Demand for such products has increased significantly in recent years.

Generally, digital equipment is expensive and growth in its demand has further stimulated the industry's development and growth in imports, as most digital products are supplied by foreign companies. Hospitals in this market have substantial preferences for the use of foreign diagnostic equipment, and this is especially true for large hospitals in developed

economic regions. The market for these, however, has been saturated for many products, and suppliers now seek opportunities at medium and small hospitals, as well as in western economic regions in China.

## Foreign Markets

Demand for medical diagnostic equipment in foreign markets has also increased strongly in the five years to 2010. Multinational companies operating in China started exporting part of their production from 2000. Since 2002, some domestic manufacturers have exported their products, including mainly medium and low-end products. This further stimulated output growth and intensified competition in the domestic market in recent years.

## Market Supply

The industry's profit level is relatively high due to the high technology features of the industry's products. Profit margins declined to 9% in 2006 due to increased competition and the rising price of raw materials. It recovered to 10.4% in 2008 and to about 11.8% in 2009 as the technology levels in products continued to improve.

Competition has intensified in the industry in the past few years. While overall industry revenue experienced relatively strong growth, profit rates declined in 2005. There were no new market entrants and the number of establishments decreased in the year. Many small companies could not survive the intense competition, which, in addition to the higher technology and quality requirements and less demand for low-end products, pushed them to exit the industry. Establishment numbers dropped by 7.2% in 2005.

An additional factor for the declining number of establishments was the process of mergers and acquisitions that occurred in recent years. After the SARS outbreak in 2003, the industry recovered strongly in 2004.

## Imports and Exports

Imports played a very important role in this industry. Competing imports experienced a generally decreasing trend during this period. In 2006, competing imports declined by 4.1% due to weaker domestic demand, but still accounted for 63.8% of domestic demand. Imports increased by 11.3% in 2007 and 12.4% in 2008 as domestic demand for high-end medical equipment increased strongly. In 2009, the global financial crisis contributed to a 22% import decline for the year. In 2010, competing imports are expected to increase by 1.5% and account for 42.5% of domestic demand.

In the current performance period, the import volume of high-tech medical equipment increased strongly. The government issued a policy to forbid the importation of second-hand medical equipment, which had a negative impact on the industry's development and on patient safety. With China's entry to the WTO, the average import tariff level of medical equipment decreased from 11% before 2000 to between 5% and 6% in 2003. This was an important driver of import growth in the next several years.

Domestic companies increased their attention toward foreign markets and exports increased substantially in each year to 2008.

Restricting the importation of second-hand medical equipment had a favorable impact on the development of domestic companies with relatively higher technology capabilities, such as Neusoft Medical. This company has increased its exports, and contributed to the industry's export growth, though in terms of volume rather than value. The main exported products are still low- and medium-end products. However, many multinational companies use China as the main manufacturing base for products sold in the Asian market, and play an increasingly important role for export growth.

## HISTORICAL PERFORMANCE

The development history of the Medical Diagnosis, Monitoring and Treatment Equipment Manufacturing Industry in China can be separated into three stages:

**1949 to 1977: Start-up stage.** During these years, the first medical equipment manufacturers emerged in China. In this period, this industry was gradually separated from other equipment manufacturing industries to become an independent industry. The majority of Chinese medical equipment manufacturers produced low-end products with limited technological innovation.

**1978 to 1987: Growing expertise stage.** In this period, establishments within this industry attracted industry experts and engineers in order to develop technologies and improve production processes. This was the period of accumulating experience, knowledge and expertise by Chinese medical equipment manufacturers.

**1988 to current: Development and growth stage.** In this period, different product segments experienced different development stages. Product segments with lower technology barriers experienced faster development than those with higher technology requirements. Towards the end of the period the industry entered into a rapid development phase, stimulated by the production localization processes of the main market players. The development of large-scale equipment products that incorporate high technology inputs led to remarkable growth in sales revenues in the later years of the period.

### Medical X-ray Imaging Equipment

The medical X-ray imaging equipment segment has a development history of more than 50 years. The first medical X-ray imaging equipment was manufactured in 1952. The overall production level of domestic companies was low in the 1980s and 1990s, with manufacturers offering mainly medium- and low-end products to small hospitals. Few companies were able to manufacture high-tech products, such as digital X-ray equipment, angiocardiographic systems, and high frequency X-ray products. The main market players in this field were domestic players, including Beijing Wandong Medical, Neusoft Medical and Shanghai Medical Equipment Works.

Output increased at an average annual increase rate of 18% in the period from 1954 -1985.

### Patient Monitors

The first patient monitors appeared in the market in the 1980s. The overall volume of domestic patient monitors was also lower than that of foreign products. While small-scale domestically manufactured patient monitors could meet ordinary clinical requirements, large-scale and high technology patient monitors relied on imports.

There were about 30 companies manufacturing patient monitors in the 1990s, among which the most well-known domestic enterprises were Shenzhen Mindray and Shenzhen Anke. Examples of such products are patient monitors for anesthetic procedures and for breathing.

### MRI

Production of Magnetic Resonance Imaging (MRI) started with permanent and low magnetic (0.1-0.5T) equipment in 1984. The first MRI unit was sold in the market in 1987. Since then, the market maintained an annual increase rate of about 20% on average. In 2001 and 2002, the growth rate reached 40% and 46%, respectively.

There have been more than 10 domestic companies and several multinational companies competing in this field in recent years, including Siemens, Shenzhen Anke, and Ningbo Xingaoyi. MRI products were mainly imported, with almost no exports.

### Ultrasound Equipment

Manufacturers of ultrasound products started their development in the early 1990s. Ultrasound equipment can be segmented into four types - A, B, C and D according to the state standard in China. Type A and Type B are medium- and high-end products, including color and color Doppler ultrasound equipment. Type C and Type D are medium- and low-end ultrasound equipment, which are mainly black and white equipment.

The ultrasound segment experienced rapid development in the years through 2002 due to its lower technologic barriers, relatively lower product prices, short product life-cycle, and strong sales growth. The industry expanded quickly and entered its mature phase, with several companies involved in mergers and acquisitions in 1999. Siemens acquired Acuson for \$800 million at the end of 1999, while Philips acquired Agilent for \$700 million in the same year. Further, GE, Toshiba and Hitachi entered this market and intensified market competition. They occupied shares in the medium- and high-end market, while domestic companies competed in the low-end market. The main domestic companies included Shenzhen Anke, and Shantou Ultrasound. There were dozens of companies in this segment, although only 20 of them had more than \$1.2 million of annual sales revenue. About 3 or 4 companies reached \$12 million of annual sales revenue. Domestic products with low technology content have been gradually replaced by imports.

Import volumes before 1996 remained over 1,300 units per year, but decreased in 1996 and the years after. Import values declined slower than volumes, as the main imported products were of high technology and value. The decline in imports was due to the improving production ability of domestic manufacturers, as well as the production localization of foreign competitors.

### Laser Medical Equipment

First domestic laser medical equipment appeared in China in 1990. Medical lasers are used mainly for eye treatment and cosmetic surgeries.

### X-CT

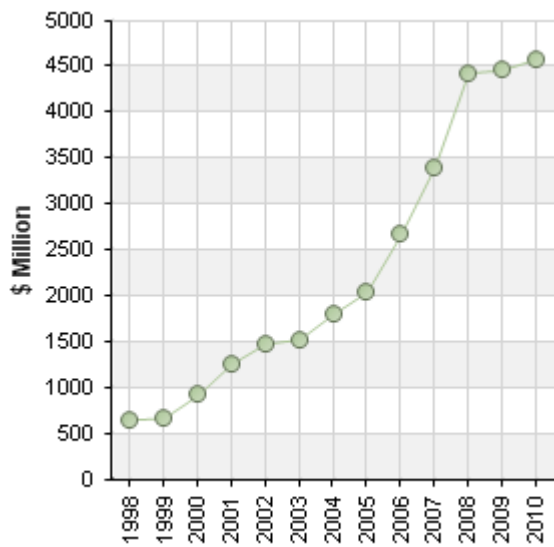
The first X-CT equipment in China was manufactured in 1983, although these were not sold in the local market. During the 1980s, Shanghai Medical Equipment and Siemens established Shanghai Siemens for assembling the third generation X-CT equipment with an annual production capacity of 35 units. In the 1990s, GE Medical (China) produced economical X-CT equipment with an annual output of 200 units, about 70% of which was exported. In the same period Neusoft Medical launched X-CT (CT 2000), with technology and functions that reached international standards.

Revenue (constant prices)

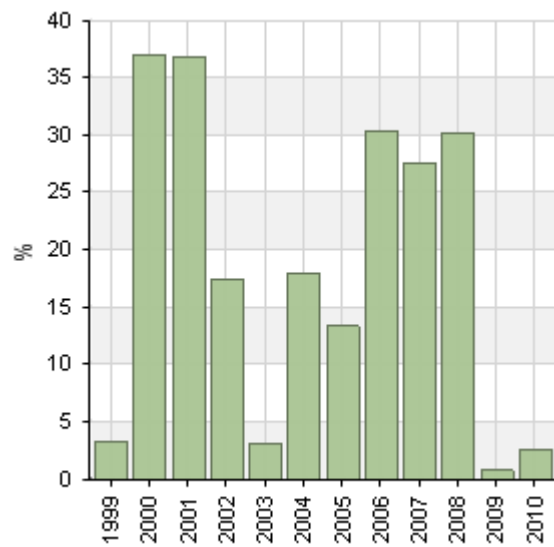
	Revenue \$ Million	Growth %
1998	651.2	N/A
1999	672.6	3.3

2000	922.3	37.1
2001	1,262.3	36.9
2002	1,481.4	17.4
2003	1,528.3	3.2
2004	1,803.3	18.0
2005	2,044.5	13.4
2006	2,666.5	30.4
2007	3,402.7	27.6
2008	4,431.0	30.2
2009	4,464.7	0.8
2010	4,583.1	2.7

Revenue



Revenue Growth Rate

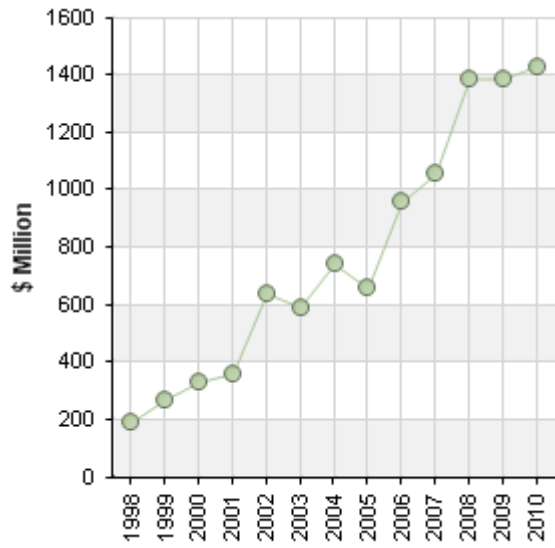


Gross Product (constant prices)

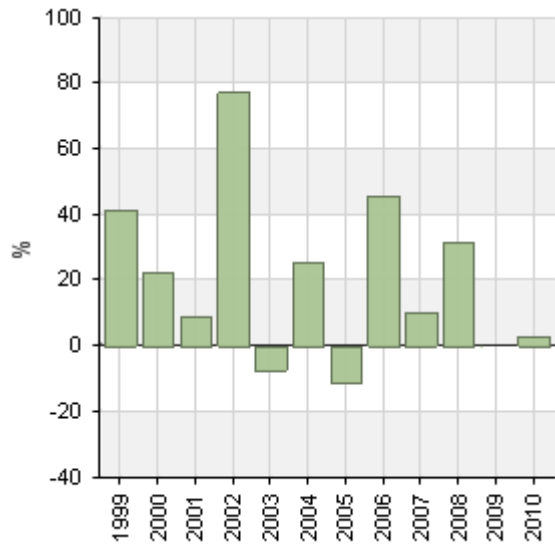
	Gross Product \$ Million	Growth %
1998	191.5	N/A
1999	270.7	41.4
2000	331.5	22.5
2001	361.2	9.0
2002	640.0	77.2
2003	592.9	-7.4
2004	742.3	25.2
2005	658.8	-11.2
2006	958.8	45.5
2007	1,055.5	10.1
2008	1,386.9	31.4
2009	1,388.5	0.1

2010	1,430.6	3.0
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Gross Product



Gross Product Growth Rate

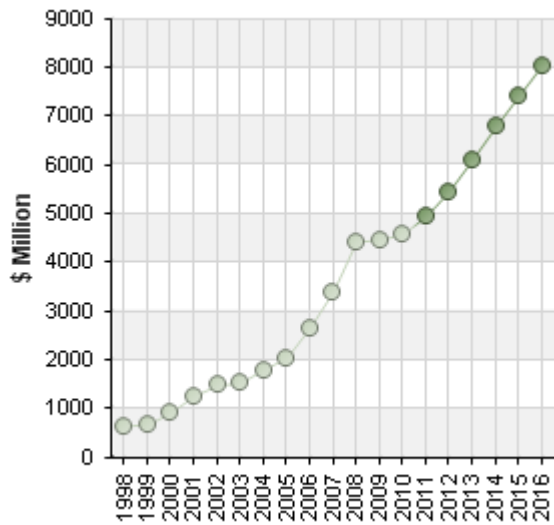


# Outlook

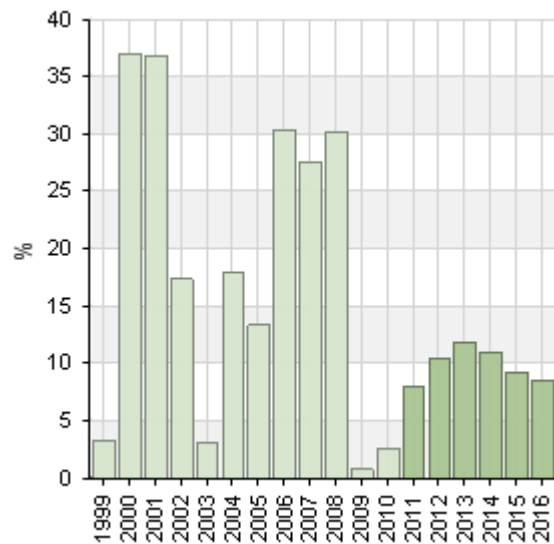
Revenue (constant prices)

	Revenue \$ Million	Growth %
2011	4,949.8	8.0
2012	5,464.6	10.4
2013	6,114.9	11.9
2014	6,787.5	11.0
2015	7,418.7	9.3
2016	8,049.3	8.5

Revenue



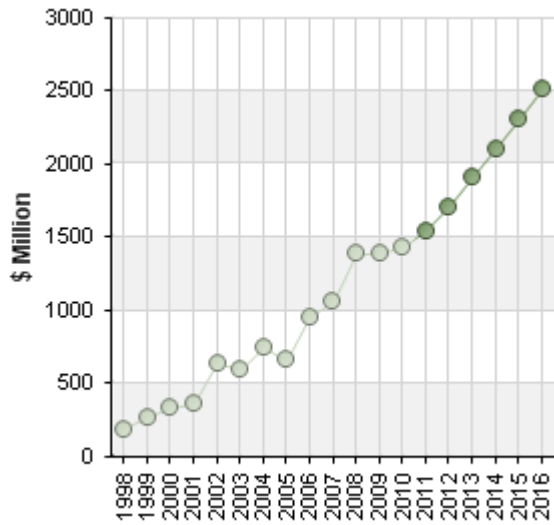
Revenue Growth Rate



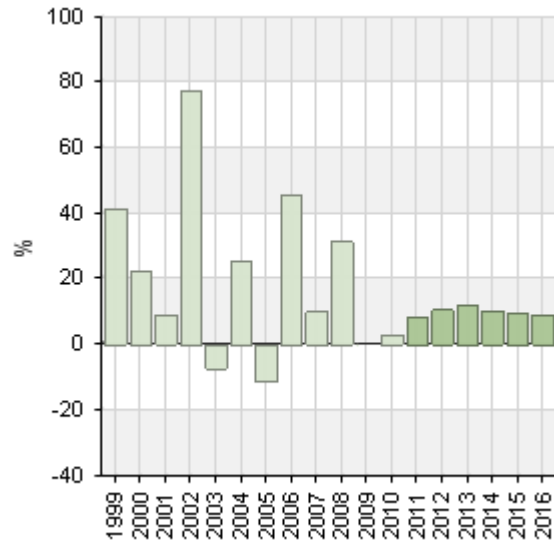
Gross Product (constant prices)

	Gross Product \$ Million	Growth %
2011	1,547.9	8.2
2012	1,710.4	10.5
2013	1,910.6	11.7
2014	2,105.4	10.2
2015	2,303.4	9.4
2016	2,510.7	9.0

Gross Product



Gross Product Growth Rate



Future demand for products from the Medical Diagnosis, Monitoring and Treatment Equipment Industry in China will depend on the incentives facing consumers, patients, doctors and hospitals. This also has an impact on the industry's future revenue growth, which is expected to increase at an annualized rate of 10.1% in the five years to 2015.

Revenue will be influenced by government policies in the health system, fluctuations in exchange rates, the degree of import competition, the export performance of major players, and overall economic growth. ACMR-IBISWorld expected industry revenue to be driven by steady increases in domestic demand and exports, and slower increases in imports.

Affected by the global financial crisis and difficult macroeconomic conditions in China, the industry is expected to experience slow growth in 2010. However, the industry is expected to recover in 2011 and beyond as foreign and domestic demand increases strongly. Future industry revenue growth is forecast to peak at 11.9% in 2013, before slowing to 9.3% in 2015 as the industry continues to mature.

### Domestic Demand

Domestic demand is expected to increase at an annualized rate of 8.9% over the five years to 2015. The main growth drivers include: strong forecast economic growth in China in the outlook period from 2011; international experience that shows that demand for medical equipment increases as a country experiences growth in income and wealth levels; hospital information requirements continuing to drive demand for the industry's products; and, government policies designed to increase domestic demand and promote the industry's development.

Due to patient complaints regarding the high and increasing cost of medicine and medical services, the government implemented policies to restrict medicine reimbursements, and to procure medicines and pharmaceuticals themselves, rather than by the hospitals. The policy will gradually decrease hospital revenues from medicines and compel hospitals to improve service levels to retain the same funding level. The purchase of medium-end and high-end medical equipment is expected to improve service and quality levels in these hospitals. Also, the government spent more than \$10 billion for the purchase of medical equipment for small and medium-sized hospitals in the five years to 2010.

## Industry Exports

The industry export value is expected to increase at an annualized rate of 3.8% over the next five years. Multinational companies will continue to develop their global strategies, which generally involves China as a manufacturing center, and then selling the medical equipment in the domestic and foreign markets. At the same time, domestic companies will enter foreign markets at a higher rate than in the past five years, which will increase their global market share of medical equipment sales.

The government will also continue to promote policies that encourage export expansion by providing financial and taxation incentives to exporting firms.

## Competing Imports

The industry's competing imports are expected to increase at an annualized rate of 3.8% over the next five years. Imports are expected to increase due to the government establishing a policy at the end of 2005 allowing the same financial reimbursements for hospitals for imported and domestically-produced medical diagnosis equipment.

Several domestic companies that have been operating in the industry for many years now have the ability to produce high-tech medical equipment at a reasonable price to meet market requirements. Also, hospitals often prefer to choose domestic products and reduce the reliance on imported medical equipment.

Also, poor financial packages for domestic companies, and the existing technology gap between domestic and multinational companies, will continue to result in steady demand for some medical equipment imports in the future.