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Exploring Beijing Export Competitiveness and Industry Upgrading

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Abstract: China export of mechanical and electrical products in 2012 reached USD 1.18 trillion and 57.56% of total export. For 18 consecutive years, it has become China's largest export commodity. The import scale of machinery and electronic products in China is expected to reach about \$4 trillion; therefore, the export market is still huge room. The export of mechanical and electrical products in Beijing, especially the different types of mechanical and electrical products export competitiveness were explored in this study. The main conclusion is that Beijing and Shanghai should export high-tech mechanical and electrical products, optimize the industrial structure; In addition, both ends of the mechanical and electrical products industry chain should be extended, the R&D, design and trade capacity in mechanical and electrical industry should be strengthened. Other main export areas in China for machinery and electronic products should focus on escalation of products.

Key words: Mechanical and electrical export, Beijing, Industry escalating

INTRODUCTION

Mechanical and electrical products refer to mechanical equipment, electric equipment, transportation, electronics, electrical appliances, instruments and other metal products and its parts and components. Its development level is an important symbol to measure a country or regional economic strengths. Its export capacity is an important indicator to measure the export competitiveness of a country or region. Beijing export of mechanical and electrical products rises by 6.1% to USD 37.39 billion in 2012, 62.68% of Beijing total export which is higher than 57.56%, national average. In this study the export of mechanical and electrical products in Beijing, especially the different types of mechanical and electrical products export competitiveness were explored.

BEIJING EXPORT OF ELECTROMECHANICAL PRODUCTS

Beijing mechanical and electrical export scale: During the period of 1992-2011, Beijing's exports of electromechanical products raised from \$1578million up to \$3510321 million, an increase of about 2124%. It can be seen from Fig. 1, during the above mentioned period, the export of Beijing mechanical and electrical products is in the rapid development. The value of exports increased almost every year, especially in 2003-2007. The exports of mechanical and electrical products in Beijing had grown year by year and its proportion of Beijing total exports

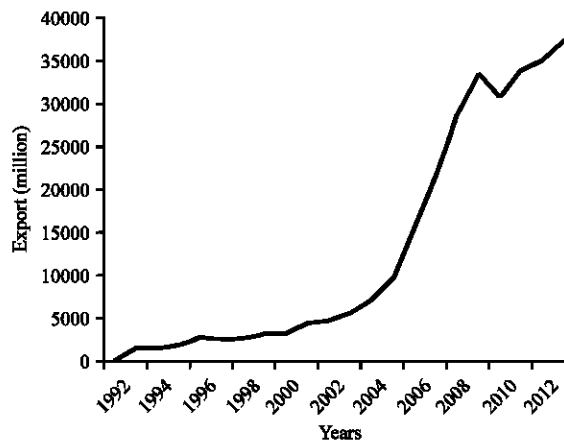


Fig. 1: 1992-2011 Beijing export of electromechanical products. Source: Beijing statistical yearbook and the Beijing 2011 national economic and social development statistical bulletin

had also increased, up to more than 50%. Even under the financial crisis of 2008, the proportion also increased slightly. In 2010 its proportion of the Beijing total exports has been accounted for about 61.23% which means that the export of electromechanical products in Beijing plays an irreplaceable role in Beijing foreign trade and the development of social economy. It cannot be ignored that in 2008, Beijing mechanical and electrical products export value was increased but the annual growth rate was dropped from 30.75-17.19%, even negative growth in 2009. The main reason is that in the end of 2008 our country is

affected by the United States sub-loan crisis. Beijing export growth fell significantly. But over the past 2 years, Beijing export of electromechanical products faster recovered, in 2011 exports reached US \$35.1 billion, 3.4% year-on-year growth.

Compared with other provinces, Beijing export of electromechanical products had not account for the national mechanical and electrical export very high, from 2006-2011 and remained at about 4% (Table 1). The market factors play important role. In the other areas of the country, the export of electromechanical products is rapidly developing, especially in Yangtze River Delta and the Pearl River Delta. Compared with Shanghai, Jiangsu and Guangdong, Beijing lags a lot. From 2006-2010 in Shanghai, Jiangsu and Guangdong the export of electromechanical products accounted for the proportion of national mechanical and electrical products export respectively at 14, 20 and 34%.

Mode of Beijing mechanical and electrical export: The export mode of electromechanical products has been the processing trade and become the most important export mode (Table 2). The processing export made of import materials is much larger than the processing export with customers materials. In 2007 the processing trade exports accounted for 54.73% of Beijing total export value. It is the main force of the export of electromechanical products.

Table 1: Beijing exports of mechanical and electrical products 2003-2011

Year	Export (USD million)	Annual rate (%)	Beijing total export (%)	China electromechanical export (%)
2003	7153.59	25.29	42.36	3.15
2004	9701.17	35.61	47.16	3.00
2005	15572.31	60.52	50.45	3.65
2006	21888.86	40.56	57.67	3.98
2007	28620.60	30.75	58.50	4.08
2008	33541.79	17.19	58.33	4.08
2009	30804.47	-8.16	63.70	4.32
2010	33943.08	10.19	61.23	3.64
2011	35103.21	3.42	59.47	3.23

Source: Beijing Statistical Bureau, Beijing Statistical Yearbook, China Statistical Yearbook

Theoretically, in the processing operations with import materials, the processing enterprises have much more decision making power when they purchase the required materials, produce, assembly and sell them. These enterprises can automatically reduce costs or enhance the added value of commodities, finally get more profit. In processing operations with customer materials, because processing enterprises can only charge labor processing fees, its profit obtained does not have the flexibility and the larger room.

The other mode of the export of electromechanical products, the normal export has an important influence on foreign trade and economy in Beijing, its proportion has been more than 30%. Overall, the main export modes of machinery and electronic products in Beijing are the processing and normal trade. The former is greater than the national average but the later less than the national middle level. Beijing total export has the similar picture.

Structure of the electromechanical export: The electrical and electronic exports are the highest ones among the mechanical and electrical exports in Beijing and the proportion is more than 50% annually from 2008-2011. Table 3 data show that its share reached its highest point in 2009, up to 58.7%, event in the time of the international economic crisis. The proportion of exports is volatile, downward trend compared to other types of mechanical and electrical products but still is the dominant one. This shows that the export of electronic information products is the number one among the mechanical and electrical exports in Beijing. The exports of machinery and equipment, means of transportation are ranked second and third respectively. The other categories of products, such as metal products, instrumentation, take a smaller proportion of exports. Among these four products, only metal products did not recover to the highest record of 2008. The other three categories have been restored to the record level before financial crisis. Except electrical and electronic products, the export value of the other products has declined after 2008 but in 2010 and 2011 it began to sustained recovery.

Table 2: 2006-2008 Beijing machine electromechanical export modes (Unit: USD)

Mode of trade	2006		2007		2008	
	Beijing mechanical and electrical export	Beijing mechanical and electrical export (%)	Beijing mechanical and electrical export	Beijing mechanical and electrical export (%)	Beijing mechanical and electrical export	Beijing mechanical and electrical export (%)
Normal	6898876993	40.19	7739245551	35.59	8878021026	35.91
Processing	8682758282	50.58	11902583891	54.73	12285363143	49.70
Import materials	8558898207	49.86	11717247205	53.88	11958319349	48.37
Customasmater-ials	123860075	0.72	185336686	0.85	327043794	1.32
Other	1584164328	9.23	2105060528	9.68	3558017967	14.39

Source: DRCNET statistics. The export of electromechanical products classified according to Decree No.7, 2008 of the Ministry of Commerce, the General Administration of Customs, the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China, promulgating the Measures for Administration of the Import of Electromechanical Products. Due to the lack of the data in the 93 chapters of H.S., there are some deviations in the electromechanical products data given by the provinces

Table 3: Structure of the electromechanical products export in 2008-2011 (Unit: million dollars,%)

	2008		2009		2010		2011	
	Value	(%)	Value	(%)	Value	(%)	Value	(%)
	1926	5.73	1418	4.60	1624	4.78	1890	5.38
①	6580	19.6	5762	18.7	6377	18.8	7412	21.1
②	19566	58.2	18080	58.7	19261	56.7	17904	51.0
③	3683	11.0	4163	13.5	5009	14.7	5739	16.3
④	1697	5.05	1265	4.11	1556	4.58	1987	5.66
⑤	158	0.47	121	0.39	135	0.40	171	0.49

①②③④⑤: Metal products, machinery and equipment, electrical and electronic exports, means of transportation, instrumentation and the other products. Source: Beijing Customs District of the People’s Republic of China

EXPORT COMPETITIVENESS OF ELECTROMECHANICAL PRODUCTS

TC index analysis of Beijing and other areas: Trade competitiveness index (TC index), also known as net export competitiveness index, is the ratio of net exports of a product and its total value of import and export. Not only does it take into account the export of the product and also the import impact on exports. The formula is the following:

$$TC_{ij} = \frac{X_{ij} - M_{ij}}{X_{ij} + M_{ij}}$$

Tc_{ij} is j country i product trade competitiveness index, X_{ij}: j country i product exports, M_{ij}: j country i product imports

The measure eliminates the impact of inflation and other economic aspects. Its range is from (-1) to (1). When TC = -1, the country or region only imports i product, does not export i product. Obviously, this product is the weakest in the international competitiveness, completely at a competitive disadvantage. When TC<0, it indicates that i product productivity of the country or region is lower than that of the international level, i exports do not have a competitive advantage. The index approaches -1, international competitiveness is weaker. When TC = 0, i efficiency of production in the j country or region is the same of international level, exports purely serve the international equivalent exchange. When TC>0, the i efficiency of the production in the j country or region is higher than that of the international level. J country or region is a net exporter of the i product. The index is closer to 1, the stronger is the international competitiveness. The i product has a certain degree of competitiveness in the j country or region, when 0<TC<0.5. When 0.5 = TC<0.8, the i products have strong competitiveness in the j country or region. When 0.8 = TC<1, i product has a very strong competitiveness in the j country or region. When TC = 1, the j country or

Table 4: TC index in Beijing and other main regions of China in 2006-2011

Area/year	2006	2007	2008	2009	2010	2011
Beijing	-0.27	-0.22	-0.20	-0.26	-0.32	-0.38
Zhejiang	0.55	0.62	0.64	0.65	0.66	0.67
Congqing	0.16	0.17	0.25	0.21	0.26	0.32
Fujian	0.23	0.28	0.31	0.30	0.25	0.28
Jiangsu	0.13	0.18	0.24	0.23	0.22	0.22
Guangdong	0.18	0.20	0.24	0.23	0.21	0.23

Source: Calculated according to the Statistical Yearbook of the relevant provinces and cities and the national economy and social development statistical bulletin

region only exports i products, does not import, absolutely at a competitive advantage (Chen and Zhou, 2010).

In the period of 2006-2011, the Beijing Electromechanical export indexes (Table 4) are negative, like U-shaped. It shows that the electromechanical product imports in this period were greater than its exports. The maximum TC index (-0.20) of mechanical and electrical products appeared in 2008. In 2011 the TC index has dropped to -0.38. According to the computing results of the TC index, the productivity and export competitiveness of mechanical and electrical products in Beijing is not only lower than that of the international level and also lower than that of the other major domestic provinces or cities. Beijing competitiveness in the market is weakest and has a downward trend. In contrast, the other five players export scale is larger than Beijing, or similar with Beijing. The most competitive player in the international market is Zhejiang Province, located in the Yangtze River Delta region. Its TC index is overall upward after 2007, has reached above 0.6. It indicates that Zhejiang Province's total exports of machinery and electronic products are much larger than the total imports. The electromechanical products in Zhejiang have strong competitiveness in international markets. The most significant development happened in Chongqing City, the western area of China. Its TC index rose from 0.16 in 2006 to 0.32 in 2011. Especially in the context of national policy guidance and industrial gradient transfer Chongqing as one of regions undertaking the industrial transfer of the eastern coastal areas, in 2010 mainly produces computers, electronic products, machinery and electronic products. The laptop industry clusters, “2+6+200” (two brands, six processing business, two hundred supporting factories) have been established. It makes its electromechanical products very competitive year by year. Being a electromechanical products production base in the Pearl River Delta, TC indexes of Guangdong and Fujian Province have growth but there are fluctuations. Although, it is modest fluctuations, the competitiveness of the mechanical and electrical products has been enhanced and import and export structure is relatively stable, in the future if these areas want to further increase

the international competitiveness of the mechanical and electrical products they need to improve their labor productivity, transform and upgrade traditional industries.

Among 6 areas in Table 4, only Beijing TC index is negative each year, its imports are much larger than its exports. The TC index of mechanical and electrical products are all negative in Beijing from 2006-2011. Its growing absolute value reflects its exports less competitive. Beijing is the political, cultural and economic center of the country, it has a lot of senior talent and high technology and the market demand. It provides a main diver for Beijing being as a large trader of mechanical and electrical products. To improve its competitiveness in the market, it should start from the development of high-tech electromechanical products and optimize its industrial structure. The high imports and exports of electromechanical products in Beijing show that the stability of the Beijing as a non-port-status Trade Center.

TC index of the main electromechanical products: Overall competitiveness of electromechanical products is relatively weak which is mainly because TC indexes of transport equipment and machinery and equipment are negative. TC index of electrical and electronic products is only 0.02, the best one in 2008. The above three categories of products are largest proportion in Beijing electromechanical exports.

In 2008-2011 (Table 5), among the main mechanical and electrical products in Beijing, only metal products' TC index was positive and metal products have an international competitiveness. TC indexes of machinery and equipment, electrical and electronic products, transport equipment, instrumentation and other categories are almost negative. The production efficiency of the above five categories is below international levels and their exports are lack of competitive advantage. The international competitiveness of transport equipment and instrumentation is the weakest among them. Their TC index reached -0.68 and -0.60 respectively, in 2011, close to -1, indicating that its imports far exceed exports. It cannot be ignored, from 2008 to 2011, TC index of the major types of mechanical and electrical products has declined. TC index of electrical and electronic products has heavy fluctuations from 0.02 in 2008-0.00 in 2009, in

Table 5: 2008-2011 TC index of major mechanical and electrical products in Beijing

	2008	2009	2010	2011
Metal products	0.34	0.20	0.22	0.24
Machinery and equipment	-0.28	-0.38	-0.37	-0.40
Electricals and electronics	0.02	0.00	-0.33	-0.06
Means of transportation	-0.57	-0.57	-0.66	-0.68
Instrumentation	-0.47	-0.58	-0.60	-0.60
Other products	-0.03	0.00	-0.15	-0.35

Source: Beijing Customs District of the P.R.C

2010 it has dropped to -0.33, in 2011 it rose again to -0.06, closest to 0 which indicates that its production efficiency is similar with that of international level and belongs to the international equivalent exchange. TC index of instrumentation, transport equipment and machinery and equipment products declined slightly, the export competitiveness of these types of products is still not optimistic.

CONCLUSION AND RECOMDATION

Conclusion: Trade deficit of electromechanical products in Beijing is quite different with other provinces and cities. Apart from Beijing and Shanghai, the other major mechanical and electrical export provinces and cities are trade surplus (Hu and Chen, 2009). Beijing takes a very important role in machinery and electronic imports and exports, being a very significant no-port trade hub (Lu, 2007). Electromechanical products trade is mainly processing exports from import materials and its exports have rapidly increased since 2003 but the total imports are much larger than its exports and the deficit further increased (Fig. 2). Although, Beijing's international competitiveness of whole mechanical and electrical export is relatively weak, the mechanical and electrical export competitiveness of some individual types has increased. Therefore, Beijing and Shanghai should extend both ends of the value chain of the mechanical and electrical industry and strengthen their capacity in R&D, design and trade functions. The other major export provinces of electromechanical products and cities should mainly

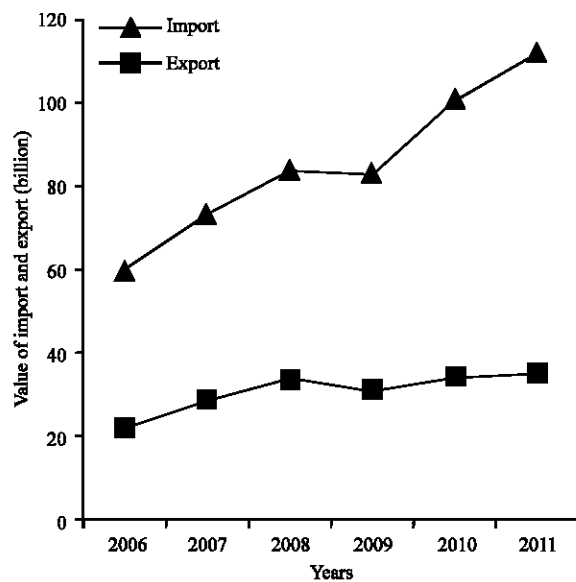


Fig. 2: 2006-2011 Beijing machinery and electronic import and export

improve the technological content of its existing export of mechanical and electrical products and optimize the industrial structure.

Recommendation: Mechanical and electrical products is technology-intensive and deep processing products with high-value-added features, compared with China's traditional industries of textile and garment industry. Electrical and mechanical industrial upgrading of the different regions in China can find the right way from the following.

The mechanical and electrical enterprises in Beijing and Shanghai should make use of the advantages of high-tech talent to improve the technology of mechanical and electrical products while using modern information technology reduces transaction costs and improves profit margins. The potential advantages of the high-tech products should be vigorously developed to increase export competitiveness. Business strategy should fit the functional position of Beijing and Shanghai, focus on research and development, design and trade and other provinces still pay attention on production of mechanical and electrical products (Liu and Li, 2007).

Government should reform the fiscal, financial and industrial policy to provide a favorable domestic environment for the development of mechanical and electrical enterprises in R&D, design and trade. Specific measures include encouraging scientific and technological innovation, improving the technological level of the mechanical and electrical industries and R&D capabilities and laying a good foundation for the development of high-tech mechanical and electrical enterprises. Government should take strategic trade policy to support the import and export of electromechanical products with high technical content and to promote the development of electromechanical industrial clusters. Beijing can be an electronics and electrical appliances service cluster of sales and logistics to drive a regional economy, through integrating Beijing advantageous resources, especially the Zhongguancun quality resources to improve the economies of scale.

In addition, the China Chamber of Commerce for Import and Export of Machinery and Electronic Products should play its core role to strengthen the effective guidance of the mechanical and electrical enterprises, to improve its professional level of service and to provide high-quality market information for enterprises. The enterprises can adjust the quantity of products, prices and market development strategy according to the changes of government policy and the market. It should provide legal assistance and guidance for the enterprises encountering anti-dumping, technical barriers and the other trade issues to reduce and settle the trade disputes.

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