An empirical analysis on the trade structure and trade competitiveness of Chinese creative industry: 1996-2010

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Abstract

With the extensive adjustment of world industrial structure & range, the trend transforming from the capital concentrated industry to the knowledge & technology intensive industry is more and more obvious. The creative capital with the core of knowledge creativity has become the key power for the core competitiveness and economic development of a country. The paper analyzes the industrial structure of Chinese creative industry by reviewing and researching related materials about Chinese creative industry trade, and studies Chinese creative industry's trade competitiveness using the trade competitiveness index and the Michaely competitive advantage index by collecting the trade data of Chinese creative products in 1996~2010 and creative service royalty & license fee in 1997~2010. Results show that China can be called a "creative nation", but its road to be a "creative power" is still long. On the one hand, the creative product shows strong competitiveness, but the advantages concentrate in labor intensive products and the competitiveness is still far from the creative powers for the creative products with strong original creativity and high technical input. On the other hand, for the division of creative product, sectors of handicraft, design and visual arts have relatively strong competitiveness, and printing sector shows a significant enhancing trend in international competitiveness according to the analysis on related indexes although its international competitiveness is not high and competitive advantage is not clear at present

Keywords: Creative Cultural Products, Technology Content, Trade Structure

1 Introduction

With the great adjustment of world's industrial structure With the extensive adjustment of world industrial structure & range, the trend transforming from the capital concentrated industry to the knowledge & technology intensive industry is more and more evident. The new ideas, techniques and business models at the new development stage of knowledge economy - creative economy have become the strong impetus for economic development [1]. Since the knowledge economy rose in 1990s, the creative industry has attached great attention in both developed countries and developing countries, and the international trade of creative industry more and more flourished. According to the statistics of the UNCTAD, the global export volume of creative product & service has increased by more than 2.6 times within 13 years, rising from $ 227.4 billion in 1996 to $ 592.1 billion in 2008 by 160.38% and accounting for about 3% of world export trade. The export volume declined to some extent in 2009 affected by the financial crisis, but it rose again in 2010 with an amount of $ 559.6 billion. Scholars consider the flourishing creative industry as a new market wave after the manufacturing industry and the IT industry.

The creative industry has a relatively short development history in China, but is emphasized more and more in recent years, and its trade shows a strong development momentum. The trade volume of creative industry has risen from $ 20.8 billion in 1996 to $110.8 billion in 2010, increasing by 5.3 times in 15 years with an AAGR of 12.7%, above the average growth rate of world creative product & service trade of corresponding period, especially the creative product whose ranking in export trade rose from the third in 1996 to the first in 2010 among global export countries of creative products. The total export-import volume of creative product also rose from the seventh in 1996 to the second in 2010 only after America. The creative industry with high demand elasticity and characterized by technicalization & high added-value without any pollution is an important opportunity in Chinese industrial structure upgrading. Developing the technicalized, high value-added and non-pollution creative industry can optimize Chinese industrial structure, reduce GDP energy consumption, and offer an important growth point for the sustainable development of Chinese economy. Therefore, it's necessary to make an elaborate analysis on the trade competitiveness of Chinese creative industry to find the deficiencies in development.

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2 Definition, classification and data specification of creative industry

As early as 1912, Schumpeter, the pioneer of creative economy, pointed out that the creativity had a promoting effect on economic development. He believed that the fundamental driver of modern economic development was no long the capital or labor force, but the creativity; the new idea could derive infinite new products, new markets and new opportunities for wealth creation, and the key of creativity was the production, dissemination and use of knowledge and information. The British economist John Hawkins said in his The Creative Economy: How People Make Money from Ideas that the combination of four industries—copyright, patent, trademark and design, constituted the creative industry and creative economy. He also predicted that the size of global core creative industry market would reach $ 8 trillion in 2020 [2]. Chinese scholar Licheng Liu believed that the creative industry referred to the sum of the activities, which came from the creativity and wisdom of human, had certain cultural connotations and could be industrialized in marketization operation with the support of science and technology [3].

From the perspective of country, the UK first proposed the creative industry as a state industrial policy and strategic idea. The Creative Industry Task Force of the UK（1997）defined the creative industry as “an industry which comes from individual creativity, skills and talents and has the potentials to create wealth and employment opportunities through the generation and use of intellectual property”. With the definition, the UK classifies 13 industries including the advertising, construction, art and cultural relic trade, handcraft, design, fashion, movie, TV and broadcast, music, performing art, publishing, interactive leisure software, software & computer service into the creative industry.

The creative industry has different names and classifications in different countries and there is no unified concept or classification currently. The UNCTAD defined the creative industry as follows: with the primary input of creative and knowledge capitals, including the creation-production-sales cycle process of product and service, the creative industry consists of a set of economic activities based on knowledge to produce tangible products and also produce intelligence or art services containing creative contents, economic values and market objectives. The *Creative Economy Report*s 2008 and 2010 published jointly by the UNCTAD and the NUDP considered core creative products and services as the main statistical objects of creative industry trades, and makes statistics of royalty& license fee and related industries. The core creative product is divided into seven categories including the handicraft, audio-visual product, design, performing art, new media, publication and visual arts. The creative service is divided into the advertising, market survey and public opinion survey service, the building, project and other technical service, the individual, cultural and entertainment service, and the research and development. In addition, the copyright data of creative industry cannot be compiled currently, but in consideration of the important role of copyright in creative industry, the statistics of copyright is made as a separate category [4].

TABLE 1 Classification of Trade of Creative Industry

Category		Content
Creative Product	Handicraft	Carpet, ceremony, paper product, wickerwork, yarn product, others
	Audio-visual	Movie
	Design	Building, fashion, glasswork, interior decoration, jewelry, toy
	New media	Recording media, video game
	Performing art	Music (CD, tap), music presswork
	Publication	Book, journal, others
	Visual arts	Antique, painting, photograph, sculpture, others
Creative Service	Advertising, market survey and public opinion survey service	
	Construction, project and other technical service	
	Individual, cultural and entertainment service	Audio-visual and related service, other individual, cultural and entertainment service
	Research and development	
Royalty and license fee		Franchise and similar right, royalty and license fee
Related industries		…

Date source: http://unctadstat.unctad.org/ReportFolders/reportFolders.aspx

Few counties make systematic statistics to the trade state of creative industry, which is an emerging industry, so the paper mainly uses the data of creative product in 1996~2010 and the creative service in 1997~2010 published by the UNCTAD to analyze the trade competitiveness of Chinese creative industry. Basing on the UNCTAD’s classification, the paper focuses on the analysis on core creative products and services and also analyzes the royalty and license fee. Because related industries are in a great variety, have comparatively less connections with the trade of creative industry, and have many missing data in statistics, the paper does not make related analysis. It should be noted that the sectors include complicated subsectors and the collection of some data is relatively difficult, so it is hard to reach every aspect in data statistics. For instance, the performing art includes a wide range of forms, such as theatre, dance, concert and acrobatic, and most of them are intangible services, so for the trade data of performing art product, the UNCTAD database only makes statistics to the music (CD and tape) and music presswork. For the accuracy of description, the sector shall be described as the “music” hereinafter. In addition, as to the creative service, China only offers the data of two sectors of the advertising, market survey and public opinion survey service and the audio-visual & related service in individual, cultural and entertainment service in 1997~2010, and the data of research & development in 1997~2002, of which the latter has little significance for reference, so the paper only analyzes the first two sectors. Similarly, for the accuracy of description, the “individual, cultural and entertainment service” shall be referred as the “audio-visual & related service” hereinafter.

3 Analysis on the trade structure of Chinese creative industry

3.1 GENERAL DEVELOPMENT STATE OF THE TRADE OF CREATIVE INDUSTRY

Table 2 shows the import and export volumes and their proportions in total import and export volumes of China, and the historical balance of trade of Chinese creative industry in 1997~2010. It can be seen from the table that the import volume, export volume and the total import-export volume of Chinese creative industry increased gradually before 2009. Although the sectors had different degrees of declines in 2009 affected by the financial crisis, they rose again in 2010 and have exceeded the levels in 2009. As to the export, the export volume of Chinese creative industry rose from $23.5 billion in 1997 to $ 100.8 billion in 2010, increasing by 330% in 14 years. Although the import volume of Chinese creative industry is not big, it still rose in 14 years from $3.1 billion in 1997 to $10 billion in 2010 by 220%; the total import-export volume grew from $26.6 billion in 1997 to $100.8 billion in 2010 by 279%. It can be seen that the import volume of Chinese creative industry takes small a small proportion in Chinese creative industry, and the values of export volume and import volume rounded have few difference. Thanks to the huge export volume of Chinese creative industry, the trade balance of Chinese creative industry also has a rising trend, and its growth rate in the observation period exceeded the growth rate of export volume.

The absolute value shows a rising trend of the trade volume of Chinese creative industry, but the proportion in Chinese trade shows that the proportions of import and export in total import and export volumes both have a trend of decline. Although the fast developing international trade of China accounts much for it, it still shows that the creative industry doesn’t take a prominent position in Chinese international trade currently, and shows a trend of decline.

TABLE 2 General State of Trade of Chinese Creative Industry Unit: million dollars, %

Index / Year	Export		Import		Import-export		Trade Balance
	Export Volume	*Proportion (%)*	*Import Volume*	*Proportion (%)*	*Total Import-export volume*	*Proportion (%)*	
1997	23454	11.32	3172	1.93	26626	7.16	20282
1998	24169	11.65	3036	1.86	27205	7.33	21133
1999	24769	11.21	2813	1.48	27582	6.71	21956
2000	28674	10.26	3122	1.25	31769	5.41	25553
2001	30039	10.03	4184	1.54	34223	5.26	25855
2002	34011	9.31	5784	1.76	39795	4.91	28226
2003	39069	8.06	3673	0.82	42742	4.18	35397
2004	46501	7.09	4365	0.72	50866	3.68	42136
2005	56719	6.78	4673	0.66	61392	3.66	52046
2006	64297	6.06	5262	0.62	69559	3.36	59036
2007	75228	5.60	7112	0.69	82340	3.16	68115
2008	87427	5.53	8273	0.67	95700	3.11	79154
2009	78150	5.86	8295	0.75	86445	3.19	69855
2010	100762	5.75	10003	0.66	100765	3.08	90759

Note: There is no datum about Chinese creative service in 1996, so the table only analyzes the data in 1997~2010.
Data source: *The Creative Economy Report 2008*, the UN Statistical Database of Creative Industry

3.2 EXPORT STRUCTRUE ANALYSIS OF THE TRADE OF CREATIVE INDUSTRY

Table 3 shows that the export of Chinese creative industry currently is basically monopolized by the creative product, of which the historical proportion all exceeded 95%. However, in recent years, the export proportion of creative service rose slightly. For the creative product, the export of design took the first place with historical export proportions over 65% and a fluctuated rising trend. The sectors of handicraft, new media and visual art also took many shares. The export of handicraft kept a proportion of 10%~12% in the total export volume of Chinese creative industry and developed steadily; sectors of new media and visual art showed a trend of decline, falling from 10% and 7% in 1997, respectively, to about 5% in 2010. The remaining three sectors had small proportions, especially the audio-visual and music, which not only had small proportions but also showed a less optimistic development trend. The presswork product also had a small proportion, but thankfully, showed a good development trend. As to the creative service, the sector of advertising, market survey and public opinion survey did well, which not only had a higher proportion than the audio-visual & related service but also showed a rising trend in proportion. Currently, the two sectors have few effects on Chinese creative industry.

TABLE 3 Proportions of Export Volume of Sectors in the Export Volume of Chinese Creative Industry Unit: %

Year	Handicraft	Audi-visual	Design	New Media	Music	Presswork	Visual Art	Advertising, Market Survey and Public Opinion Survey Service	Audio-visual and Related Service
1997	10.011	0.0226	68.489	10.569	0.052	1.287	7.042	1.015	0.043
1998	10.390	0.0194	67.539	10.144	1.076	1.318	6.436	0.873	0.062
1999	11.006	0.0113	68.002	9.552	0.042	1.425	7.910	0.892	0.028
2000	10.504	0.0070	68.011	10.083	0.202	1.510	7.624	0.779	0.039
2001	11.204	0.0032	68.258	7.611	0.323	1.540	7.085	0.922	0.093
2002	10.493	0.0005	69.182	7.364	0.050	1.572	6.376	1.096	0.087
2003	11.247	0.0002	72.385	7.221	0.049	1.666	6.101	1.245	0.086
2004	10.842	0.0001	72.887	6.549	0.042	1.834	5.933	1.825	0.088
2005	10.942	0.0000	72.581	7.172	0.026	1.818	5.328	1.897	0.236
2006	11.806	0.0003	70.003	8.214	0.019	2.257	5.239	2.247	0.214
2007	12.448	0.0002	68.936	8.468	-	2.717	4.468	2.542	0.420
2008	12.264	0.0001	67.311	10.409	-	2.769	4.250	2.519	0.478
2009	11.490	0.0004	70.467	7.625	-	2.721	4.613	2.959	0.124
2010	10.534	0.0002	73.521	5.612	-	2.373	4.973	2.863	0.122

Note: There is no datum about Chinese creative service in 1996, so the table only analyzes the data in 1997~2010; "-"means data missing; because the data value of audio-visual service after 2002 are all small, many decimal places are retained.
Data source: *The Creative Economy Report 2008*, the UN Statistical Database of Creative Industry

3.3 IMPORT STRUCTURE ANALYSIS OF THE TRADE OF CREATIVE INDUSTRY

Table 4 reveals the import structure of Chinese creative industry. The table shows that the creative product still took an important position in the export of Chinese creative industry relative to the export trade of Chinese creative industry, but the creative service's proportion in the import of Chinese creative industry rose greatly and showed a trend of continuous rising. The sector of research & development in creative service must be mentioned. Although the stable does not list the import state of research & development, it's found by computing that the sector of research & development in creative service takes a significant proportion in the import. The import volume of research & development got a good lead in the import of Chinese creative industry in 2002 with a proportion of 45%. After 2003 when China stopped providing the data of research & development, the proportions of creative sectors in the table all rose to different degrees, and some sectors even rose by more than 10%.

According to the data of sectors listed in the table, for the creative product, the design product still took an important position in the import trade of Chinese creative industry, but different the state in the export, its proportion in the import of Chinese creative industry showed a tend of decline, and only accounted for 31.7% in 2010. Moreover, the proportions of new media, handicraft and presswork also carried weight. In 2010, the former's proportion in the import of Chinese creative industry exceeded 20%, and the latter two also accounted for 10% respectively in the import volume of Chinese creative industry. For the development trend, new media rose with fluctuations, presswork declined with fluctuations, and handicraft also declined in recent years. The proportions of the remaining three sectors - the audio-visual, music and visual art were small, but visual art sector presented a growth state. As to the creative service, the sector of advertising, market survey and public opinion survey service took a big proportion, and its proportion in the import of creative industry also showed a fluctuated rising trend, accounting for about 20% in the import volume of Chinese creative industry in 2010. The proportion of audio-visual & related service sector was still small, but increased significantly compa-red with the export, and its proportion in the import of Chinese creative industry also showed a growth trend.

TABLE 4 Proportions of Import Volume of Sectors in the Import Volume of Chinese Creative Industry Unit: %

Year	Handicraft	Audio-visual	Design	New Media	Music	Presswork	Visual Art	Advertising, Market Survey and Public Opinion Survey Service	Audio-visual and Related Service
1997	6.005	0.054	43.892	7.358	3.857	11.165	0.679	7.598	1.387
1998	5.098	0.052	41.476	5.254	1.892	10.618	0.624	8.729	1.285
1999	6.967	0.058	40.976	7.572	2.106	11.420	0.696	7.785	1.209
2000	7.239	0.064	38.601	7.704	5.318	10.956	0.641	6.484	1.199
2001	6.914	0.040	32.267	8.520	0.914	8.102	0.558	6.166	1.195
2002	8.883	0.021	20.134	10.862	0.432	5.209	0.504	6.819	1.660
2003	14.986	0.027	34.623	24.077	0.718	10.428	0.781	12.467	1.893
2004	15.165	0.049	30.670	24.653	0.772	7.794	0.871	15.999	4.028
2005	14.902	0.036	32.792	22.939	0.888	8.918	0.924	15.306	3.295
2006	15.251	0.288	31.155	22.678	0.744	8.211	1.216	18.150	2.309
2007	11.993	0.381	29.290	29.738	-	6.944	0.696	18.797	2.161
2008	10.824	0.307	31.292	23.736	-	6.484	0.820	23.458	3.078
2009	10.264	0.400	30.925	21.145	-	9.433	0.907	23.567	3.357
2010	10.193	0.274	31.726	22.944	-	9.676	1.079	20.397	3.707

Note: There is no datum about Chinese creative service in 1996, so the table only analyzes the data in 1997~2010; the export volume of creative industry in 1997~2002 includes the export volume of research & development, so the sum of proportions of the sectors in these years is less than 1; "-"means data missing.

Data source: *The Creative Economy Report 2008*, the UN Statistical Database of Creative Industry

4 Analysis on the export competitiveness of trade of Chinese creative industry

The trade competitiveness (TC) index and the revealed comparative advantage (RCA) index are common tools used by scholars to research the international trade competitiveness of a product or industry. The paper also adopts the method, but to better measure the comparative advantage and international competitiveness of export products from different angles and show the development imbalance of an industrial structure more clearly, the paper uses the TC index and the Michaely index for analysis.

4.1 TC INDEX ANALYSIS

The TC index is an important index measuring trade competitiveness and has a strong international comparability. It is the ratio of an industry's net export to the industry's total export-import volume in a country, showing the proportion of the import-export trade balance in the total volume of import-export trade in the country. Its formula is as follows:

$$TC = {(X - M)}/{(X + M)}.$$

In the formula, X means the total export volume of an industry in a country in a certain period; M means the total import volume of the industry in a certain period. The value range of TC is [-1，1]. When the value is close to 0, it indicates the trade competitiveness of the industry in the country is close to the average level; when the value >0, it indicates the industry has certain trade competitiveness, and the closer to 1, the stronger the trade competitiveness is; when the value <0, it means the industry has weak trade competitiveness, and the closer to -1, the weaker the trade competitiveness is.

The TC index not only reflects the net import or net export state of an industry in a country, but also, as a relative value to the total trade volume, removes the effects of macro fluctuations such as the inflation and also eliminates the incomparability of international data caused by the difference in country size[5], and thus has a certain comparability in different periods among different countries.

4.1.1 TC index of Chinese creative product

Table 5 both show the TC index of Chinese creative product. In general, Chinese creative product showed strong trade competitiveness in 1996~2010. The TC index was bigger than 0.8 in this period except 1996, and kept a strong stability in the 15 years. It first rose slowly from 0.775 in 1996 to 0.875 in 2006, and then had small fluctuations, indicating the TC index of Chinese creative product has basically reached the top in these years. Figure 1 shows the changing trend of TC index of Chinese creative product and other sectors clearly. The TC index of creative product in sectors didn't change greatly in the 15 years except the sectors of printing and audio-visual. In 1996~2010, the trade competitiveness of printing product grew significantly, increasing from -0.243 in 1996 to 0.424 in 2010; the trade competitiveness of audio-visual product plummeted, falling from 0.641 in

1996 to -0.987 in 2010. From the perspective of export structure, the sectors of handicraft, design and visual art had a relatively high TC index. The TC index reached 0.95 above in each year expect 1996, in which case the visual art kept the first place among seven sectors of creative product steadily. Sectors of handicraft and design had TC indexes of 0.8 or so and 0.9 above in each year, showing the strong international competitiveness. The remaining four sectors including the audio-visual, new media, performing art and printing were relatively inferior. The TC value of audio-visual sector stayed negative after 2000, and even reached -0.988 in 2010, indicating the international trade of audio-visual product was in an only-in-no-out state and highly depended on the import. According to existing data, the TC value of Chinese music sector stayed negative since 1996, i.e. in a net import state, and it reached -0.519 in 2006, indicating weak trade competitiveness.

TABLE 5 TC Index of Chinese Creative Product in 1996-2010

Year	Creative Product	Handicraft	Audio-visual	Design	New Media	Music	Printing	Visual Art
1996	0.775	0.650	0.641	0.795	0.250	-0.554	-0.243	0.946
1997	0.801	0.677	0.563	0.832	0.433	-0.794	-0.170	0.964
1998	0.825	0.678	0.425	0.874	0.236	-0.643	-0.049	0.967
1999	0.830	0.691	0.008	0.887	0.046	-0.600	0.051	0.970
2000	0.839	0.702	-0.361	0.902	0.202	-0.542	0.118	0.970
2001	0.843	0.723	-0.703	0.889	0.501	-0.397	0.209	0.972
2002	0.848	0.748	-0.736	0.906	0.599	-0.188	0.279	0.973
2003	0.849	0.777	-0.851	0.914	0.523	-0.163	0.259	0.976
2004	0.858	0.768	-0.944	0.924	0.478	-0.266	0.430	0.973
2005	0.872	0.798	-0.986	0.928	0.583	-0.481	0.424	0.972
2006	0.875	0.809	-0.977	0.930	0.631	-0.519	0.541	0.963
2007	0.857	0.833	-0.988	0.923	0.501	-	0.611	0.971
2008	0.866	0.846	-0.992	0.916	0.645	-	0.637	0.964
2009	0.852	0.827	-0.983	0.911	0.545	-	0.462	0.959
2010	0.856	0.825	-0.987	0.918	0.423	-	0.424	0.958

Note: "-"means data missing.Data source: *The Creative Economy Report 2008*, the UN Statistical Database of Creative Industry

In the subclasses of products (see Table 6), only four kinds of products—movie, recording media, journal and antique had the TC index lower than 0 in 2010, and most of the other products showed the TC index over 0.5, indicating strong competitiveness. The TC indexes of carpet, ceremony, paper product, wickerwork, interior decoration, jewelry, toy, video game, painting and sculpture were very high, and some even reached or far exceeded 0.9.

4.1.2 TC index of Chinese creative service

Table 7 shows the TC index of Chinese creative service. The general data of copyright of creative industry cannot be compiled at present, but the copyright is very important for creative industry, so the paper adds the analysis on royalty and license fee in the analysis on the international competitiveness of creative industry trade based on the statistical data of royalty and license fee published by the UNCTAD currently. Because royalty and license fee more appears in the form of service, the paper analyzes the sector and the creative service together. In addition, as mentioned in section two, due to the data integrity, the creative service mentioned in figures and tables only include the advertising, market survey and public opinion survey service and the audio-visual & related service.

In general, the trade competitiveness of Chinese creative service was weak in 1997~2010. The TC value of Chinese creative service stayed below 0 before 2004, indicating the import was greater than the export and the international competitiveness was low. But fortunately, Table 7 shows that Chinese creative service's international competitiveness presented a fluctuated rising trend and the TC index changed to be positive after 2004 and kept rising with fluctuations, indicating the competitiveness of Chinese creative service rose gradually with fluctuations. It should also be noticed that the TC value of Chinese creative service still didn't exceed 0.2 in 2010, indicating though the competitiveness of Chinese creative service increased in recent years it was still weak. Besides, Table 6 shows the TC indexes of the advertising, market survey and public opinion survey service and the audio-visual & related service both rose with fluctuations. The former performed relatively well and developed steadily, but the latter fluctuated dramatically and declined greatly in 2009, which continued to 2010.

TABLE 6 TC Index of Chinese Creative Product (2010)

Product Classification	TC	Product Classification	TC
All Creative Products	-	**New Media:**	-
Handicraft:	-	Recording Media	-
Carpet	-	Video Game	-
Ceremony	-	**Music:**	-
Others	-	Music (CD，tape)	-
Paper Product	-	Music Presswork	-
Wickerwork	-	**Publication:**	-
Yarn Product	-	Book	-
Audio-visual:	-	Journal	-
Movie	-	Other Presswork	-
Design:	-	**Visual Arts:**	-
Buildings	-	Antique	-
Fashion	-	Painting	-
Glasswork	-	Photograph	-
Interior Decoration:	-	Sculpture	-
Jewelry	-		-
Toy	-		-

Note: "-"means data missing.
Data source: *The Creative Economy Report 2008*, the UN Statistical Database of Creative Industry

TABLE 7 TC Index of Chinese Creative Service in 1997~2010

Year	Creative Service	Advertising, Market Survey and Public Opinion Survey Service	Audio-visual & Related Service	Royalty and License Fee
1997	-0.069	-0.006	-0.630	-0.816
1998	-0.147	-0.113	-0.444	-0.739
1999	-0.052	0.005	-0.659	-0.827
2000	-0.011	0.049	-0.536	-0.882
2001	-0.005	0.036	-0.282	-0.893
2002	-0.098	-0.028	-0.528	-0.918
2003	-0.007	0.030	-0.350	-0.941
2004	0.009	0.097	-0.622	-0.900
2005	0.164	0.201	-0.070	-0.943
2006	0.190	0.204	0.062	-0.940
2007	0.198	0.177	0.346	-0.920
2008	0.088	0.063	0.243	-0.895
2009	0.038	0.084	-0.482	-0.925
2010	0.110	0.172	-0.502	-0.880

Note: The creative service in the figure only includes the advertising, market survey and public opinion survey service and the audio-visual & related service, not involved with the research & development data in 1997~2002 and the sector of royalty and license fee in the figure.
Data source: *The Creative Economy Report 2008*, the UN Statistical Database of Creative Industry

In term of export structure, the advertising, market survey and public opinion survey service had the higher competitiveness in the two creative service sectors with complete data currently. Its TC value was positive in these years except 1997, 1998 and 2002, indicating certain international competitiveness, which was not high. The TV value of audio-visual & related service sector remained negative before 2006, changed to be positive temporarily in 2006 and the next two years, and then returned to be negative, indicating the sector's international competitiveness was low and its import volume was bigger than the export value. The TC value was lower than -0.5 in 2000, 2002, 2004 and 2010, indicating a serious dependence on the import in these years.

The TC value of royalty and license fee was always lower than -0.7 in the observation period, indicating the low international competitiveness, a high dependence on the import and a big trade deficit in the observation period. For the development trend, the sector's TC value was basically around -0.8~ -0.9 and declined slowly with fluctuations, indicating an inferior position in international competition and the slowly declining competitiveness.

4.2 ANALYSIS ON THE MICHAELY INDEX OF COMPETIVE ADVANTAGE （MI VALUE）

The Michaely index comprehensively considers the proportions of the export and import of a product or industry of a country in the total export and import volumes, respectively, and its main function is to measure the average change of economic variables each year. Its formula is as follows:

$$MI = X_i \Big/ \sum X_i - M_i \sum M_i .$$

In the formula, and represent the export volume and import volume of commodity i in a country, respectively; and represent the total export volume and total import volume in the country, respectively. The change range of MI value is [-1, 1]. When the value is close to 0, it indicates the trade competitiveness of the product or industry in the country is close to the average level; the closer to 1, the stronger the trade competitiveness is; the closer to -1, the weaker the international competitiveness is.

4.2.1 MI value of Chinese creative product

Table 8 give the MI value of Chinese creative product in 1996~2010, showing a trend of high start and low development. Chinese creative product's MI value experienced three years of growth in 1996~1999 and then began to decline, and rose again temporarily in 2009. In term of value, MI value is positive, but it was lower than 0.1 in the period except 1998, indicating Chinese creative product had certain trade competitiveness, but the competitiveness was small. Table 7also showed in the sectors of creative product, the category of design had the highest MI value, which kept over 0.04 but showed an obvious decline trend. The value rose again in the last two years in the observation period, but it was still hard to determine whether the MI value would enter into the rising path. In addition, the MI values of handicraft and audio-visual products also declined significantly; the values of new media, music and visual art fluctuated relatively. In the seven sectors of creative product, the printing developed relatively well and its MI value rose slowly with fluctuations and changed from the negative to the positive. Although the MI value never exceeded 0.002, the international competitiveness was growing gradually. Comparing with the MI index and TC index, it's found that the two indexes have big differences in the development trend of overall creative product, design and handicraft.

In term of specific value, design sector had strong international competitiveness in the seven sectors, but its value also shows the international competitiveness was not high, because the biggest MI value was 0.0828 in 1998 and the trade competitiveness in recent years was even weaker. In the remaining sectors, handicraft and visual art were relatively better with MI values stayed around 0.0055 and 0.0025, respectively, in recent years. The values also show the low trade competitiveness. Among the remaining, sectors of audio-visual and music lacked international competitiveness seriously with the MI values lower than 0 in successive years, indicating their inferior positions in the international competition.

TABLE 8 MI Index of Chinese Creative Product in 1996~2010 (%)

Year	Creative Product	Handicraft	Audio-visual	Design	New Media	Music	Printing	Visual Art
1996	9.2217	1.3194	0.00343	7.3466	0.0455	-0.0094	-0.0974	0.6142
1997	9.5599	1.2049	0.00191	8.2519	0.0112	-0.0004	-0.0767	0.6718
1998	10.0866	1.1160	0.00129	8.2773	-0.0919	0.0019	-0.0435	0.7383
1999	9.9099	1.1351	0.00045	7.8535	-0.0301	0.0022	-0.0103	0.7494
2000	9.2909	0.9972	-0.00008	7.5661	0.0317	-0.0896	0.0185	0.7740
2001	8.7590	0.9086	-0.00021	6.8252	0.2628	-0.0495	0.0365	0.7193
2002	8.0341	0.8200	-0.00032	6.0843	0.4939	-0.0030	0.0545	0.5846
2003	7.2477	0.7834	-0.00020	5.5477	0.3847	-0.0020	0.0489	0.4851
2004	6.3793	0.6596	-0.00034	4.9473	0.2870	-0.0026	0.0739	0.4144
2005	6.0987	0.6438	-0.00024	4.7039	0.3355	-0.0041	0.0647	0.3551
2006	5.4164	0.6209	-0.00176	4.0473	0.3576	-0.0034	0.0860	0.3098
2007	4.8954	0.6152	-0.00261	3.6624	0.2702	-	0.1045	0.2456
2008	4.8687	0.6052	-0.00205	3.5106	0.4160	-	0.1095	0.2294
2009	5.1360	0.5970	-0.00296	3.8998	0.2894	-	0.0892	0.2636
2010	5.0783	0.5386	-0.00179	4.0182	0.1717	-	0.0728	0.2788

Note: - means data missing; because the MI value of audio-visual sector is always small, the decimal places retained are different from those of other sectors.

Data source: *The Creative Economy Report 2008*, the UN Statistical Database of Creative Industry

4.2.2 MI index of Chinese creative service

Table 9 show the MI index of Chinese creative service. The paper puts royalty and license fee in this section for analysis just like the TC index. In addition, the creative service mentioned here also includes the advertising, market survey and public opinion survey service and the audio-visual & related service.

Table 9 shows that Chinese creative service lacks competitiveness and the three broken lines are below the scale mark 0 most of the time. The creative service had a good overall development in the previous decade when the MI index rose slowly and changed from the negative to the positive and the international competitiveness enhanced slightly. In recent years, affected by factors like the financial crisis, MI value has big fluctuations. In the two sectors, the advertising, market survey and public opinion survey developed relatively well with a MI value rose slowly with fluctuations in the observation period. In term of value, Chinese creative service's competitiveness was very low with the highest value of 0.0002 in 2006. In most time in the observation period, the MI value was lower than 0, indicating a slightly inferior position in the international competition. The MI values of two sectors were both small with many negative values, indicating a lack of international competitiveness. Comparatively speaking, the sector of advertising, market survey and public opinion survey had a higher MI value and more years of positive value, thus having the relatively high international competitiveness.

Table 9 shows that the MI index of royalty and license fee was low and declined by a big margin in the observation period, indicating the low and continuously falling international competitiveness and an obviously inferior position in the international competition. Of course, the MI value lower than 0 continuously in 14 years was not unrelated to the long-term trade deficit.

TABLE 9 MI Index of Chinese Creative Service in 1997~2010 (%)

Year	Creative Service	Advertising, Market Survey and Public Opinion Survey Service	Audio-visual and Related Service	Royalty and License Fee
1997	-0.0537	-0.0317	-0.0219	-0.3037
1998	-0.0769	-0.0603	-0.0166	-0.2264
1999	-0.0297	-0.0151	-0.0147	-0.3822
2000	-0.0117	-0.0008	-0.0109	-0.4822
2001	-0.0116	-0.0026	-0.0091	-0.6775
2002	-0.0394	-0.0182	-0.0212	-0.9130
2003	-0.0103	-0.0017	-0.0086	-0.7683
2004	-0.0085	0.0143	-0.0227	-0.7053
2005	0.0225	0.0281	-0.0056	-0.7285
2006	0.0228	0.0241	-0.0013	-0.7587
2007	0.0220	0.0133	0.0087	-0.7662
2008	-0.0124	-0.0182	0.0058	-0.8010
2009	-0.0199	-0.0022	-0.0177	-0.9618
2010	0.0131	0.0304	-0.0174	-0.8102

Note: The creative service in the table only includes the advertising, market survey and public opinion survey service and the audio-visual & related service, not involved with the research & development data in 1997~2002 and the sector of royalty and license fee in the figure

From the analysis above, it can be found for the creative product, the results of TC index and MI index have big differences. There are two reasons: first, Chinese creative product has kept a state of trade surplus for years and the trade surplus is expanding continuously, so the TC values of creative product and some sectors of creative product are big; second, the trade of creative industry takes a small proportion in the overall trade of China, so the value of MI index is always small whether it is more than or less than 0. Under the comprehensive influence, the trade competitiveness reflected by the TC index, whether in the superior or the inferior position, is far greater than the trade competitiveness reflected by the MI index.

5 Conclusion and recommendation

5.1 CONCLUSION

The following conclusions are drawn from the analysis above:

Chinese creative product has strong trade competitiveness as a whole. The creative service has weak trade competitiveness as a whole. The sector of royalty and license fee lacks trade competitiveness. As to the division of Chinese creative product, sectors of handicraft, design and visual art have relatively strong international comparativeness; sectors of audio-visual, music and printing have weak international competitiveness, especially the audio-visual sector.

In term of development trend, the international competitiveness of sectors of audio-visual, new media, performing art and loyalty & license fee declined significantly in recent years. Chinese printing sector performed relatively well. Its international competitiveness is low and competitive advantage is not obvious currently, but its TC and MI indexes show an increasing trend of international competitiveness.

The MI index also reflects that the creative product, the creative service and the sector of royalty & license fee all take small proportions in Chinese international trade, and their positions remain to be improved.

China is only a “creative nation”. The creative product of China has strong competitive advantages, but the advantages concentrate in labor intensive products and the products with certain original creativity but low technical content. However, for the creative products and services with strong original creativity and high technical input, China is far from developed countries like the UK and America in the international competitiveness. Moreover, Chinese creative industry also includes a certain proportion of OEM product. For instance, according to foreign statistics, Chinese books’ export volume is four times of import volume, which actually includes the books of Japanese or American book companies printed in the Chinese mainland and sold abroad.

5.2 RECOMMENDATION

China has strong advantages in the global market of creative product, but the advantages concentrate in labor intensive products and the products with certain original creativity but low technical content, which will be impacted by factors such as the rise of labor & raw material cost in China and the rise of labor intensive industry in countries like India in recent years. As to the creative products and services with strong original creativity and high technical input, China has a big gap with developed countries in international competitiveness and some sectors show a surprising contrast. The disadvantage does not get any substantial improvement.

Therefore, to stay competitive in the global export market of creative product, China must enhance original creativity and technical innovation capacity while keeping existing advantages. First, to play the macro guiding role of government through financial, taxation and administrative measures, to improve the financing environment of creative enterprises and the intellectual property protection system, make reasonable planning, and promote the construction of creative industry cluster district; second, to persist in the talent lead policy and accelerate the introduction, cultivation and collection of talents with means of share opinion, high salary, part-time job and reward for creative achievement; to encourage schools and enterprises to make joint efforts to cultivate practical and comprehensive creative talents; third, to develop the creative industry and build the brand awareness with an international view; to enhance Chinese creative industry's competitiveness through international cooperation and study, and to promote and popularize good creative products of China by exhibition; to promote the sales of creative product by encouraging the development of intermediary companies such as marketing planning and sales agency[6]; fourth, to accumulate the emerging factor endowment, such as the high-quality talent and technology, relying on existing factor endowment like the labor force and resources, and to rationally use the factor endowment hasn't been fully used, such as cultural resources, in order to improve the international competitiveness of Chinese creative industry and promote China to change from a "creative nation" to a "creative power" as soon as possible.

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