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The global competitiveness of the Chinese wooden furniture industry

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ABSTRACT

During the past two decades, the Chinese wooden furniture industry has witnessed high-speed growth, making China a leading furniture exporter. Given the intensification of global competition, it is crucial to assess the present status and competitiveness of the Chinese wooden furniture industry, as well as the changes and challenges China will face in competing with other principal trading nations. Based on Balassa's Revealed Comparative Advantage (RCA) Indices, it can be concluded that China has experienced a transition from comparative disadvantage into a high comparative advantage over the period, and has maintained a strong position in this labor-intensive industry. However, it still falls behind traditionally strong competitors such as Italy and Germany in terms of quality and unit price. It is also experiencing a growing challenge from lower-income countries such as Poland and Vietnam. Moreover, China now faces up more unfavorable macroeconomic circumstances such as rising cost, shrinking international demand, technology gap and escalating trade barriers. Thus, the government, industrial association and enterprises need to quickly take innovative steps coordinately to promote Chinese enterprises transitioning from the original equipment manufacturers (OEM) to the original design manufacturers (ODM), further to the original brand manufacturers (OBM).

1. Introduction

Global trade in furniture has grown rapidly in the past decades because of packing and shipping innovations such as ready-to-assemble and knock-down furniture as well as decreasing world trade barriers. The increased openness in the furniture markets has caused the international trade of furniture to grow faster than furniture production and the international trade of manufactures (CSIL, 2008). The world trade of furniture has increased from US$42 billion in 1997 to US$97 billion in 2007 (You, 2007). There has also been a dramatic shift in the supply and flow of furniture in the global market.

China has made remarkable progress in furniture production and export in the global supply and flow shift. The Chinese furniture industry has now become a huge integrated industry, with five million employees and US $55.26 billion in output, accounting for 18% of total world production (Cao et al., 2004; Virginia et al., 2003). Additionally, the combination of plentiful skilled labor and low costs enabled China to provide wooden furniture to the international market at highly competitive prices. China has emerged as one of the major suppliers in the world furniture market; from 1997 to 2006, China's share increased from 4% to 19% (CSIL, 2008).

The wooden furniture industry has retained an important niche in the Chinese furniture industry, and is ranked at the top in terms of production and export value among all furniture categories (SITV Rev.3 8215). As the main export forest product, it accounted for 52.96% and almost 50% of the Chinese furniture output and export, respectively, in 2005, accounting for the largest share of the global market.

Given the intensification of global competition, it is crucial to assess the present status, competitiveness, and challenges of the Chinese wooden furniture industry (Li, 2007; Zhang et al., 2008). In the next section, we provide an overview of China's wooden furniture industry. In Sections 3 and 4, we describe the methodology and selected data used in the competitiveness analysis. In Section 5, we present the analysis results of China's competitiveness against other leading furniture trading nations over the past 15 years. In Section 6, we point out the main emerging challenges facing the industry in China. Finally, in Section 7 we conclude our findings and discuss the need to apply more effective econometric models in global industry competitiveness analysis.

2. Overview of China's wooden furniture industry

2.1. Production trends

Driven (Virginia et al., 2003) by the rapid development of the domestic economy, high foreign investment and a booming export business, Chinese furniture manufacturing has made remarkable progress (Research and Market, 2006). Since the mid-1990s, the Chinese furniture industry has experienced fast growth, with an annual gross production that grew from 61.2 billion yuan in 1996 to 340 billion yuan in 2005, with the average annual growth rate at 21.4% (China National Furniture Association (CNFA, 2006), Fig. 1). The

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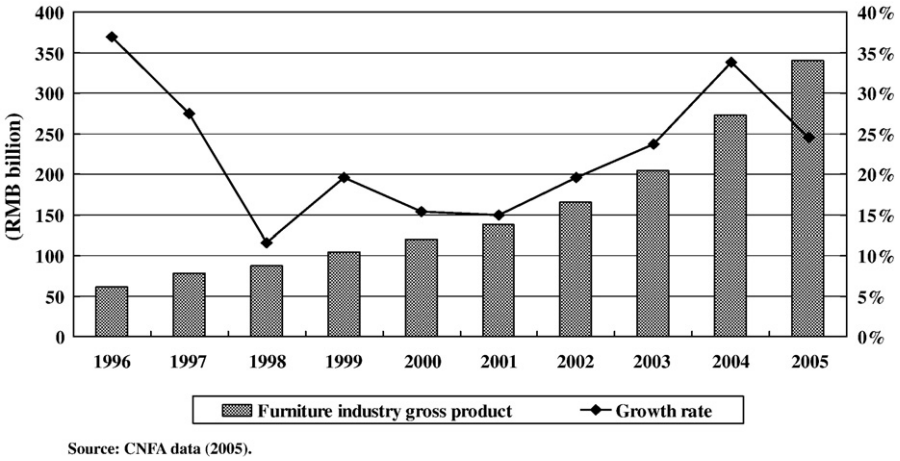


Fig. 1. Chinese furniture industry gross product.

development of the Chinese furniture industry has far exceeded China's average industry growth rate (10%), as well as the country's gross domestic product (GDP) growth rate (7% to 9%) during the same period (Cao et al., 2004).

The wooden furniture industry has retained an important niche in Chinese furniture manufacturing, and it has experienced rapid expansion in recent years. Although its share of total production declined from 80% to 53%, it is still at the top in terms of production and export value among all furniture categories, and accounts for over one-third of China's total timber product exports each year (Sun et al., 2005).

2.2. Enterprises—concentration, ownerships, and performance

Wooden furniture production is a resource-based, labor-intensive industry, with low entry barriers in trade. The industry is fragmented in China, with few large firms and numerous small manufacturing producers. Up to the end of 2006, there were only 2149 manufacturers with total annual sales revenue of more than 5 million yuan in China, accounting for 3% of the total industry (OCN, 2007). The concentration rate is used as an indicator of the relative size of firms in relation to the industry. One commonly used concentration ratio is the four-firm concentration ratio (CR4), which consists of market share as a percentage of the four largest firms in the industry. The CR4 of Chinese wooden furniture manufacturing is only 6.62% of the total sector turnover (Jin, 2007), indicating the perfect competition market of this industry.

There are several types of ownership, with at least 90% of companies not state-owned. According to data in the 2003 Chinese Furniture Investment Report, among the 6937 wooden furniture manufacturers selected, 83.56% are collective enterprises, 7.12% are joint ventures, and only 6.79% are state-owned (Stock Exchange Executive Council, 2003).

The profit rate of Chinese wooden furniture manufacturers has been stable, averaging at 4% in recent years (Jin, 2007). Though higher than other product types within the furniture industry, it is still lower than that of other rapidly developing industries.

2.3. Industrial distribution

Over 80% of Chinese furniture firms are located in four regions stretching from the south to the east coastline of China (see Fig. 2). Overall, the four regions accounted for 94.5% of the total output, with southern China alone producing more than half of the total amount. With 34% of the total domestic production in 2005 (CNFA, 2006), Guangdong has been at the top of production for years, followed by Zhejiang, Fujian, Shandong, and Liaoning. Increasing investments from Hong Kong, Taiwan, and some American and European furniture manufacturers have expanded capacity since the late 1980s, contributing to this distribution (Sun et al., 2005). Approximately 50% of exports are from one South China province—Guangdong.

2.4. Exports

In the past two decades, the Chinese furniture industry has witnessed accelerated growth, and China is quickly becoming the world's furniture manufacturing center and biggest exporter. The international competitiveness of China's wooden furniture industry has improved dramatically, and China is now a major exporter of wooden furniture. China's wooden furniture exports rose almost ten times in value, with a double-digit annual growth rate since the 1990s, higher than the world average rate (Fig. 3).

With approximately one-third of furniture output exported each year, China surpassed Italy and became the largest global wooden furniture exporter in 2004. Emerging countries such as Poland and Vietnam are expanding their export market rapidly as well.

Within the wooden furniture category, there is a position variation between different types of products. Exports of wooden bedroom furniture, wooden seats and other wooden furniture have grown quickly, and accounted for roughly 90% of total wooden furniture exported each year, as shown in Fig. 4. These two types of products exported from China captured the largest share of global market. In contrast, office and kitchen furniture hold less substantial places in exports, ranking second and fourth, respectively, among world exports in 2006.

Though the number of countries importing wooden furniture from China has increased steadily, North America, the European Union, Japan, and Hong Kong are still its major export markets. Together, the top five importers of Chinese wooden furniture accounted for 75% of the whole exports in 2006, in which USA alone accounts for almost half of China's total export.

3. Methodology for competitive analysis

Assessing the competitiveness of an industry is a complex process, and it can be analyzed from several perspectives. This paper hereby adopts the widely accepted revealed index to reflect the relative competitiveness of the Chinese wooden furniture based on long-term trade data.

3.1. Market share (MS)

Comparative advantage can be measured by market share to identify size advantage and degree of specialization in the market. Market share is the percentage or proportion of the total available market or market

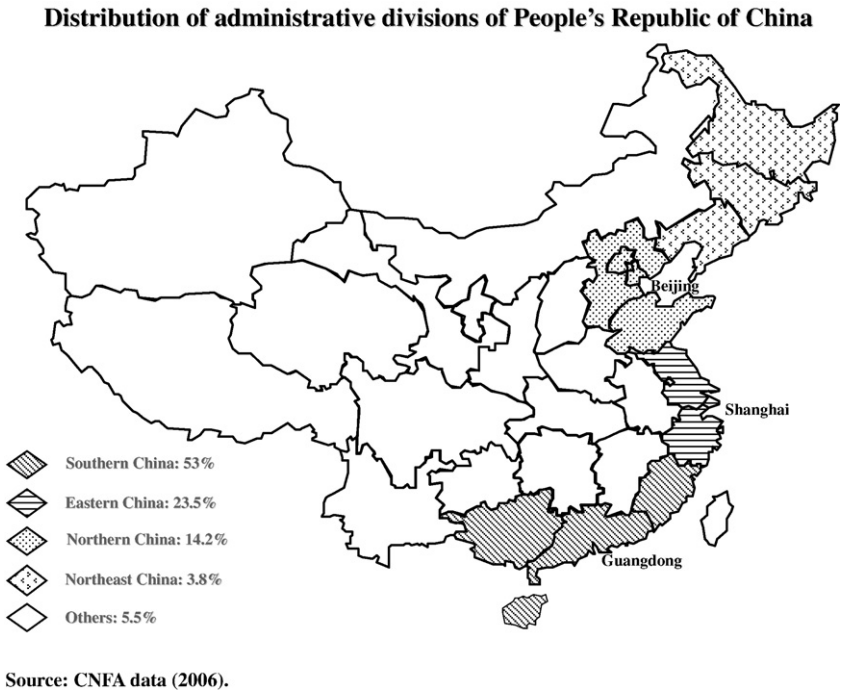


Fig. 2. Industry gross product by area 2005.

segment being captured by a country. It can be expressed by the following equation:

$$MS_{ij} = X_{ij} / X_{iw} \quad (1)$$

Where MS is market share, X is exports, i is a commodity, and j is a country. X_{ij} is the exports of commodity i to country j; X_{iw} are the world exports of commodity i.

3.2. Revealed comparative advantage (RCA)

Balassa (1979) defined a measure for international trade competitiveness that he termed 'Revealed Comparative Advantage' (RCA). RCA is an index that compares the export share of a given commodity or sector in a country with the export share of that commodity or sector in the world market. Eq. (2) enables the calculation of RCA as follows:

$$RCA_{ij} = \frac{X_{ij} / \sum_i X_{ij}}{\sum_j X_{ij} / \sum_i \sum_j X_{ij}} \quad (2)$$

where X is exports, i is a commodity, and j is a country. X_{ij} are the exports of commodity i to country j; $\sum_i X_{ij}$ are the total exports of country j; $\sum_j X_{ij}$ are the world exports of commodity i; and $\sum_i \sum_j X_{ij}$ are the total world exports.

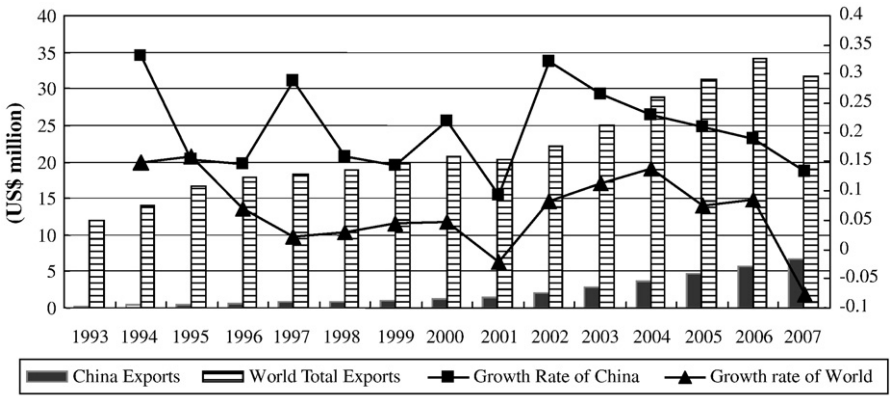
A country is said to have a comparative advantage in a commodity when the index is greater than one. Where the index value is less than one, the country has a revealed comparative disadvantage.

3.3. Trade competitiveness (TC)

It has been argued that the RCA index is biased because of the omission of imports especially when country size is important (Greenaway and Milner, 1993). Thus, as a relative index, trade competitiveness expresses whether country j has net export or import, reducing the distortion effect of macroeconomic fluctuations such as inflation.

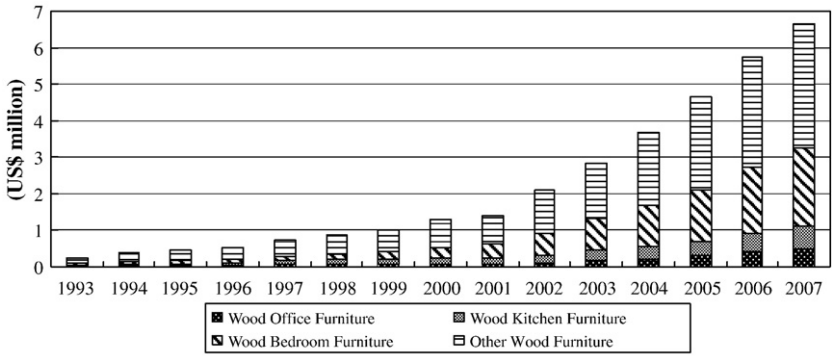
$$TC_{ij} = (X_{ij} - M_{ij}) / (X_{ij} + M_{ij}) \quad (3)$$

In the case of Eq. (3), the index ratio ranges from −1 to 1. If $TC_{ij} > 0$, country j's productivity of commodity i is higher than the world



Source: UN Comtrade database Standard International Trade Classification (SITC) Rev.3. 8215.

Fig. 3. China and global wooden furniture export performance, 1993–2007.



Source: United Nations (UN) Comtrade database SITC Rev.3 .
Note: Wooden furniture complex includes SITC 82151, 82153, 82155, 82159.

Fig. 4. China's wooden furniture exports by segment.

average level and has comparative advantage; if $TC_{ij}<0$, that country *j*'s productivity is lower than the world average level and shows comparative disadvantage.

4. Selection of competitors and data

Trade data was obtained from the UN Comtrade database using SITC (Rev.3) data from 1993 to 2007. The UN Comtrade is considered the most comprehensive trade database available, containing annual international trade statistics data detailed by commodities and partner countries since 1962. The sufficient time series of data permits longer-term trends to be identified. From the SITC (Rev.3) list, wooden furniture consists of the type used in offices, kitchens, bedrooms, and others identified corresponding to SITC82151, SITC82153, SITC82155, and SITC82159, respectively (Table 1).

Since the comparative advantage is related to the relative factor endowments (Fitzgerald and Hallak, 2004) and per capita income is a widely accepted index for the relative abundance of physical and human capital the countries are divided into four groups according to their per capita Gross National Income (GNI). In addition, the comparable nations selected are mostly leading exporters, also taking available data and geographical location into account to reflect the diversity and change of nations participating in the global market for the past 15 years. Thus, some East European and South American countries were included in the sample, as the leading wooden furniture trading nations within their income group or geographic region. Overall, ten countries included were selected, as listed in Table 2.

5. Results

5.1. Trends in China's market share competing with other nations

Overall, the concentration rate of world wooden furniture exports has moved up since the 1990s. Ten countries selected are currently major exporters, now contributing to 70% of the global market. However, the global market was largely dominated by the high-income countries a decade ago, now their shares dwindled to 50% from 80%, and significantly replaced by the medium- and low-income countries. In terms of the direction of change, there was a split between high-income countries and countries in medium- and lower-income levels. High-income countries such as the USA, Italy, Germany, and Canada showed a declining trend in market share, while some medium- and lower-income countries have emerged as potentially significant new sources of furniture exports to the international market. Among them, China has exhibited an impressive expansion in exports. With its entry into the World Trade Organization (WTO) at the end of 2001, China obtained equal access to international markets, surpassing Italy in 2004, and emerged as the leading exporter of the wooden furniture with a share of 20.91% (Fig. 5).

5.2. Trends of RCA within China's wooden furniture industry

Generally, when the RCA is above one, the country is said to be specialized in that sector, or have a comparative advantage in a commodity (Laursen, 1998). Some scholars narrowed down the categories further specifically (Zhang et al., 2008). If—RCA>2.5 means an extremely strong comparative advantage; 1.25<RCA<2.5 means a strong comparative advantage; 0.8<RCA<1.25 means a moderate comparative advantage; RCA<0.8 means a weak comparative advantage; and RCA<0 means a comparative disadvantage.

During the past 15 years, China has witnessed a transition from a comparative disadvantage in aggregate wooden furniture from 0.81 to a moderately high comparative advantage—RCA at 1.93, averaging at about 1.48. However, China's competitive position is not uniform across different product sectors. Fig. 7 indicates that wooden bedroom furniture, the largest sector of Chinese wooden furniture exports, had a moderately high RCA average of 2.74, and its strength was partly offset by lower comparative advantages in furniture used in the office, kitchen, and others, which averaged 1.06, 1.18, and 1.45, respectively. However, China's overall performance leveled off in 2003 and began to decline in 2007. This is probably due to a deteriorating situation in kitchen furniture, where RCA fell considerably from 1.63 in 1999 to

Table 1
Definition of SITC goods by type of wooden furniture.
Source: UN Comtrade database.

8215	Name: Furniture, n.e.s. of wood Description: Furniture, n.e.s. of wood
82151	Name: Furniture, n.e.s. of wood, of a kind used in the office Description: ...of a kind used in office
82153	Name: Furniture, n.e.s. of wood, of a kind used in the kitchen Description: ...of a kind used in the kitchen
82155	Name: Furniture, n.e.s. of wood, of a kind used in the bedroom Description: ...of a kind used in the bedroom
82159	Name: Furniture, n.e.s. of wood Description: ...other

Table 2
Selected countries classified by income group.
Source: World Bank gross national income (GNI) country classification, 2008 and UN Comtrade Database.

High-income countries:	USA, Canada, Germany, Italy
Upper-middle income countries:	Brazil, Malaysia, Poland
Lower-middle income countries:	China, Indonesia
Low-income countries:	Vietnam

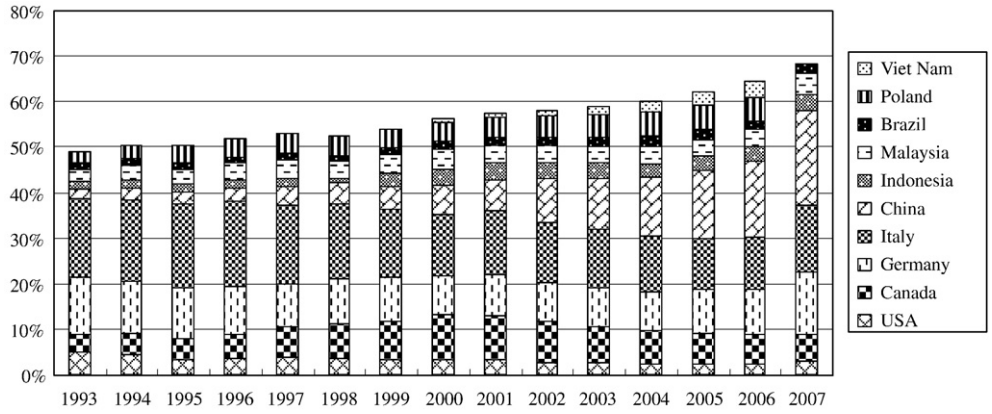


Fig. 5. Trends of market share in selected countries, 1993–2007.

1.09 in 2007, as well as the stabilized patterns of bedroom and other furniture since 2003. In contrast, China's position in office wooden furniture showed an upward trend in comparative advantage rising from 0.66, in 1993 to 1.49 in 2007 (Fig. 6).

5.3. Trends in China's RCA competing with other nations

Table 3 summarizes the RCA for the aggregate wooden furniture (SITC 8215) of selected countries from 1993 to 2007. Almost all the middle- to low-income countries exhibited an increasing RCA trend; by contrast, the downward trend was most marked in nations with high-income except for Canada. With regard to individual performance, Italy, Poland, Malaysia, Indonesia, and Vietnam showed an extremely strong comparative advantage; China and Canada displayed a strong comparative advantage; Germany showed a moderate comparative advantage; and USA lost its competitive edge with global producers, exhibiting an overall disadvantage over the period.

China experienced a transition from a disadvantage at the beginning of the period to a moderate advantage by 2007, and now ranks 8th of 10 selected nations. However, China still falls far behind Poland and Italy, whose average RCA are 7.33 and 3.48, respectively.

It should be noted that Germany, despite being the third largest wooden furniture exporter, its average RCA is only 0.99 and ranks second last among all the ten nations. It may be the result of the defect of the traditional comparative advantage theory on intra-industry trade (IIT). The rise of IIT, that is, exchanges by two countries within the same industry or standard industrial classification (Nafziger, 2006), is an increasingly important part of total trade flows in today's globalizing world, particularly within developed countries. Thus, this paper uses the Grubel and Lloyd Index (1975), a measurement of the significance of intra-industry trade to assess Germany's wooden furniture trade status. A higher GL Index indicates higher degree of intra-industry trade.

$$GL_k = \left[1 - \frac{|X_k - M_k|}{X_k + M_k}\right] \times 100 \quad (4)$$

Where GL_k is the intra-industry trade index for industry k and Xk and Mk are exports and imports in industry k valued at home country's currency (Hu and Ma, 1999).

From Fig. 7, the average GL of Germany's wooden furniture industry is 89.74, indicating that it is primarily an intra-industry trade. It is mainly because that more than half of German furniture trade flows are within Europe (CSIL, 2008), and intra-industry trade tends to be prevalent between countries like Western European countries that are similar in their capital–labor ratios, skill levels, and so on (Krugman and Obstfeld, 2004). Since the RCA index measures comparative advantage to examine inter-industry trade, it cannot fully reflect Germany's trade competitiveness.

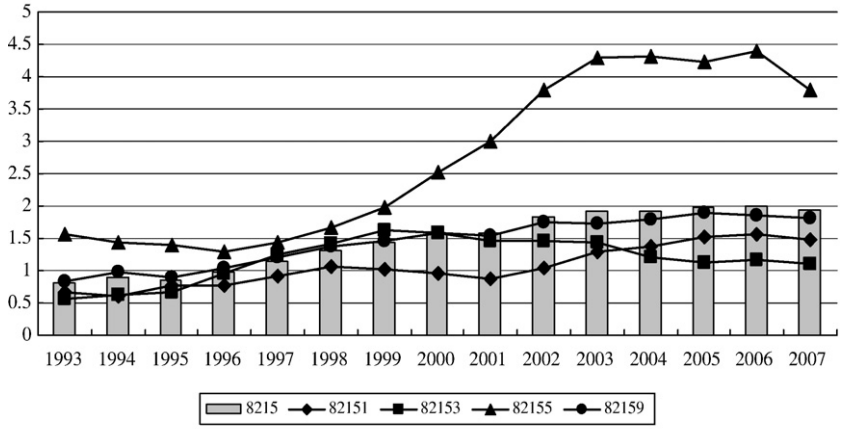


Fig. 6. Trends of RCA in China's wooden furniture, 1993–2007.

Table 3
China's RCA wooden furniture against selected countries, 1993–2007.

	USA	Canada	Germany	Italy	China	Indonesia	Malaysia	Brazil	Poland	Vietnam
1993	0.37	0.98	1.18	3.64	0.81	1.66	1.88	1.29	6.12	–
1994	0.35	1.11	1.10	3.79	0.89	1.91	2.12	1.23	7.10	–
1995	0.28	1.14	1.03	3.90	0.86	2.00	2.08	1.49	7.72	–
1996	0.28	1.37	1.02	3.85	0.98	2.04	2.38	1.47	8.57	–
1997	0.29	1.65	0.99	3.87	1.15	1.80	2.71	1.49	9.36	–
1998	0.27	1.93	0.95	3.63	1.32	1.00	2.70	1.35	8.39	–
1999	0.25	2.01	0.98	3.45	1.44	3.37	2.70	1.72	7.91	–
2000	0.27	2.19	0.97	3.56	1.56	3.59	2.81	2.04	8.22	3.00
2001	0.26	2.21	0.96	3.44	1.58	3.78	2.63	1.80	7.39	3.52
2002	0.25	2.21	0.89	3.26	1.82	3.93	2.59	1.94	6.98	4.42
2003	0.26	2.19	0.83	3.13	1.91	3.94	2.60	2.02	6.78	6.13
2004	0.26	2.05	0.83	3.10	1.91	4.11	2.62	2.18	6.34	7.91
2005	0.27	1.90	0.98	3.03	1.97	3.81	2.57	1.91	6.15	8.66
2006	0.27	1.85	1.04	3.15	2.00	3.51	2.71	1.60	5.56	9.66
2007	0.29	1.56	1.15	3.37	1.93	3.42	2.90	1.52	–	–
Mean	0.28	1.76	0.99	3.48	1.48	2.92	2.53	1.67	7.33	6.19
Rank	10	6	9	3	8	4	5	7	1	2
Direction	−	+	−	−	+	+	+	+	−	+

5.4. Trends in China's trade competitiveness with other nations

Trends in China's trade competitiveness in wooden furniture are summarized in Table 4. High-income countries showed a diverse development path. The USA exhibited an overall comparative disadvantage and went on a downward trend; Italy and Canada experienced the same downward trend over the period, but they still maintained a strong comparative advantage. However, against all countries in the group, Germany witnessed an upward trend transitioning from disadvantage to advantage in the past 15 years.

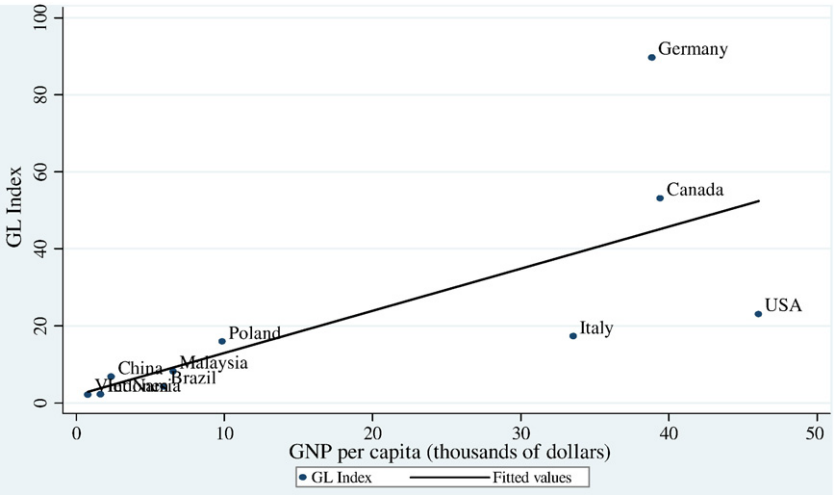
All middle income countries showed a very strong comparative advantage over 0.8. Among them, Indonesia, Malaysia, and Brazil's trade competitiveness index declined modestly but continued to exhibit a very high comparative advantage over 0.9 at the end of the period; Poland's trade competitiveness index remained relatively stable at 0.8–0.9; China showed a strong improvement with an increase by 21%. As the only low-income country selected, Vietnam has shown extremely high trade competitiveness since 2000 and has kept climbing, accompanied by a surge of wooden furniture export.

6. Emerging challenges facing the industry

In short, during the past two decades, Chinese wooden furniture has witnessed high-speed growth, and maintained a strong competitive position. However, there are some storm clouds on the horizon: rising cost, technology gap, escalating international trade barriers, unfavorable macroeconomic environment. How the Chinese wooden furniture industry reacts to these intensifying pressures will be a major driving force behind its competitive position in coming years.

6.1. Increasing cost

The Chinese wooden furniture industry has seen its margins shrink owing to increasing cost. Wooden furniture is a resource-based industry and wood accounts for almost half of its total cost. However, China is a forest resource-scarce country on a per capita basis. In addition, the rapid manufacturing growth and China's natural forest protection has increased wood products' demand and supply gap. Its dependence on timber imports, raw material supplies, and price trends could be the most uncertain factors for sustained development (Xu et al., 2003). Per capita wage in China is also rising at an average rate of 12% in the last four years (National Bureau of Statistics, 2008). Additionally, the Chinese government's introduction of minimum wage legislation on 1 January 2008 means that firms are now legally responsible for increasing wages, further pushing up labor cost (National People's Congress, 2007). China cannot have an inexhaustible supply of cheap labor forever. Moreover, soaring fuel prices have



Source: UN Comtrade database; World Bank, 2007.

Fig. 7. GL Index vs. GNP per capita in selected countries.

Table 4
Summary of China's trade competitiveness with selected countries for wooden furniture, 1993–2007.

	USA	Canada	Germany	Italy	China	Indonesia	Malaysia	Brazil	Poland	Vietnam
1993	−0.55	0.20	−0.10	0.86	0.77	0.99	0.95	0.99	0.81	.
1994	−0.59	0.33	−0.12	0.88	0.80	0.98	0.96	0.98	0.86	.
1995	−0.66	0.43	−0.12	0.90	0.88	0.98	0.96	0.93	0.88	.
1996	−0.66	0.54	−0.13	0.90	0.94	0.98	0.93	0.89	0.88	.
1997	−0.67	0.55	−0.14	0.90	0.95	0.99	0.96	0.89	0.85	.
1998	−0.74	0.60	−0.12	0.88	0.94	0.97	0.97	0.87	0.81	.
1999	−0.80	0.62	−0.10	0.84	0.96	1.00	0.98	0.95	0.81	.
2000	−0.81	0.62	−0.04	0.84	0.97	1.00	0.97	0.97	0.83	0.96
2001	−0.83	0.60	−0.01	0.83	0.97	0.99	0.95	0.97	0.81	0.99
2002	−0.86	0.57	0.02	0.82	0.97	0.99	0.89	0.99	0.84	0.98
2003	−0.87	0.54	0.04	0.80	0.96	0.99	0.89	0.99	0.85	0.97
2004	−0.88	0.47	0.02	0.76	0.97	0.98	0.86	1.00	0.86	0.98
2005	−0.88	0.41	0.07	0.72	0.97	0.96	0.84	0.99	0.85	0.98
2006	−0.87	0.34	0.13	0.73	0.97	0.95	0.83	0.99	0.84	0.98
2007	−0.85	0.20	0.20	0.74	0.95	0.94	0.83	0.98	.	.
Mean	−0.77	0.47	−0.03	0.83	0.93	0.98	0.92	0.96	0.84	0.98
Rank	10	8	9	7	4	2	5	3	6	1
Direction	−	−	+	−	+	−	−	−	+	+

pushed up freight cost, which may further hamper the future growth of the industry.

6.2. Technology gap and innovations

To secure competitive advantage, Chinese firms should not be exclusively concerned with cost-competitiveness, especially when facing increasing cost. There are still gaps in the productivity of labor, management, and technical levels compared with developed countries such as Germany and Italy. In addition, with its large contract manufacturing base, numerous small- to medium-sized firms with limited investment for the majority of Chinese wooden furniture industry, have not developed their original designs and innovative capabilities (Sagren, 2003). The lack of their own brand and updated technology has hampered their efforts to move upward along the value chain and thus they cannot sustain a more competitive industry in the long run.

6.3. International trade disputes and barriers

In late 2004, the US Department of Commerce imposed antidumping duties on Chinese bedroom wooden furniture producers and exporters (U.S. Department of Commerce, 2004). The value of the trade in the affected products from the USA to China was US$1.2 billion in 2003 (China Daily, 2004). This was the largest case of 11 antidumping charges in 2003.

The low prices of the Chinese wooden furniture have also triggered antidumping investigations by EU countries that have helped China's major competitors, such as Vietnam, Mexico, and Indonesia (Cao et al., 2004). Apart from the tariff barriers, more and more technical barriers and international certification standards call for cleaner production and greener products, which are restricting the expansion of the Chinese manufacturing sector and its export (Wang, 2006; Qiu and Yang, 2007).

6.4. Deteriorating terms of trade

A measure of relative export prices, the commodity terms of trade (TOT) equals the price index of exports divided by the price index of imports (Nafziger, 2006). Compared to the base year 1997, the overall terms of trade are deteriorating, which illustrates that China has imported middle- to high-end wooden furniture with higher prices, and exported low-priced products. The increase in export price was not commensurate with the increase in export growth, which indicates that Chinese wooden furniture is still positioned at the medium- to low-end of the market.

Additionally, according to the commitments to the WTO (ITA, 2001), China has cut down its tariff gradually to zero on furniture while Italian, German, Swedish, and US firms are all striving to increase their furniture exports to China, intensifying the competition in China's domestic market, and further lowering the profit margin of Chinese manufacturers.

6.5. Macroeconomic factors

External demand and prices for products (including wooden furniture) of China could decline sharply when the global average of growth slows down after the US mortgage financial turmoil. Prospects for further decline in the US dollar represent an additional risk factor. It would hurt the competitiveness of many firms exporting to the US (World Bank, 2008), since the growing reliance on the North American market makes them vulnerable.

In order to improve its industrial structure, China has recently adjusted its international trade policies. Chinese export rebates of wooden furniture have been slashed as well (USDA, 2006). Ice storms and catastrophic earthquakes in South China in 2008 have also largely decreased the domestic timber supply, and injured many furniture firms.

These factors are forcing the Chinese wood products industry to quickly take innovative steps to upgrade their entire industrial base to produce higher-margin goods, improve brand reputation and innovation capabilities in various ways. Though China is a leading manufacturer and exporter in the global wooden furniture economy, there is a huge gap that must be bridged if China is to sustain and strengthen its global competitiveness. Being cost competitive is not enough, China now needs to pay attention to non-qualitative factors as well, transitioning from current role as an original equipment manufacturer (OEM), to an original design manufacturer (ODM), and further to an original brand manufacturer (OBM) (Kaplinsky et al., 2003).

7. Discussion and conclusions

This study provides an exploratory framework for China's competitiveness analysis on the wooden furniture industry from the international trade theory perspective.

According to the summary in Table 5, there was a significant variation in the competitive trend across the various countries in terms of income level and geographic regions.

The overall changes of the RCA indices for the past 15 years support the hypothesis of the comparative advantage shift, which was advocated by Balassa, that the changes in the trade pattern are associated

Table 5
Summary of changes in RCA, MS, TC with selected countries for wooden furniture.

Income level of countries	Mean / Standard deviation	Start of period RCA	MS	TC	End of period RCA	MS	TC	Direction of change
High income	Mean	1.54	9.69%	0.10	1.58	7.55%	0.08	−
	Standard deviation	1.44	0.06	0.59	1.23	0.04	0.68	
Middle income	Mean	2.35	2.03%	0.90	3.08	6.18%	0.92	+
	Standard deviation	2.147	0.01	0.11	1.57	0.06	0.08	
Low-income	Mean	–	–	–	9.66	3.34%	0.98	+
	Standard deviation	–	–	–	–	–	–	
Total	Mean	1.99	5.43%	0.55	3.13	6.44%	0.59	+
	Standard deviation	1.81	0.06	0.56	2.72	0.049	0.59	

with shifts in comparative advantage between regions and relative factor endowments of a country in different levels (Balassa, 1979). The result of the competitiveness analyses suggests that, despite the strong export performance and large market share held by some high-income countries in the wooden furniture trade, they are gradually losing their comparative advantage to the lower-tier countries in East Asia, Southeast Asia, East Europe, and Latin America by two different paths. Production and exportation were transferred to locations with proximity and lower labor costs, such as Poland and Mexico. Poland took the advantage of proximity to the West European market, and has become an export-oriented furniture producer. Almost 90% of its production has been exported, 78% of which has been transported to EU countries. Mexico has the same pattern, shipping 90% of its furniture to the USA. On the other hand, the other path is shifting toward Southeast and East Asian countries with their abundant cheap labor and raw material, such as China, Malaysia, and Vietnam. It should be noted that, despite their large production and export capacities, these countries are relatively small furniture importers, which compounds their status as export-dependent furniture producers (Ratnasingam, 2002).

With respect to the competitiveness shift of China, it can be concluded that China has experienced a transition from comparative disadvantage into a high comparative advantage over the period, and has maintained a strong position in this labor-intensive industry. However, it still falls behind traditional strong competitors such as Italy and Germany in terms of quality and unit price. It is also experiencing an increasing challenge from a number of low-to-medium and low-income countries such as Poland and Vietnam. In addition, though China has witnessed an overall upward trend in export with high surplus, its RCA growth has started to slow down over the last few years. In 2007, its overall competitiveness as well as each sub-sector within the industry dropped for the first time in the past 15 years. China may lose its competitive position to lower-income countries over time if it does not upgrade its industrial structure. Aside from that, China's wooden furniture trade competitiveness varied sharply between different types of products; as a result, China needs diverse development strategies within various categories as well as enterprises, especially facing the emerging challenges and grim world economic circumstances.

However, several limitations in this paper need further research in the future. First, since the competitiveness varied sharply between different types of products, the analysis could be detailed into the specific wooden furniture categories within selected countries. Results may be more applicable and exact to a larger number of countries selected with specific product categories. In addition, though widely utilized by numerous papers (World Bank, 1994; Chi and Kilduff, 2006; Yu et al., 2008; Greenaway and Milner, 1993; Laursen, 1998; Diarmaid Addison-Smyth,, 2005; Zhang et al., 2007), the RCA indices in the trade theory, as undirected and comparatively simple measurement for assessing the actual competitiveness of national industries, do have limitations. Changes in a country's RCA cannot distinguish improvements in factor endowment from other factors such as development of related or supporting industries, demand changes, appropriate trade policies, and so on (Siegfried and Li, 2002). Thus, qualitative econometric models of competitiveness analysis including these factors are needed to further future research.

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