TRADE SPECIALISATION AND PROTECTIONISM IN THE WORLD STEEL TRADE

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Abstract

The steel sector plays a very important role for many countries, because of its broad industrial use. However, not all countries have the same factor endowment for steel production and trade. Firstly, the paper is focused on the analysis of changes in the position of the main steel producers and exporters of steel and steel products in the world in the period 1998–2014. Secondly, it explores if these countries achieved a revealed comparative advantage in the steel sector or if their significant market share was caused by some unfair trade practices. The research methods included the analysis of statistical data about steel production and trade and in order to find out trade specialisation, the RCA index was used. The analysis confirms that China recorded the most significant changes in its market share. However, China as well as other main steel producers and exporters in the world recorded a revealed comparative disadvantage in the steel sector. On the other hand, they were the most often participants of the WTO's trade disputes in the steel sector. The results of the analysis are discussed and graphically presented.

Keywords: Protectionism, revealed comparative advantage, steel sector, trade dispute, WTO

1. INTRODUCTION

Steel industry is often one of the most sensitive areas for developed as well as developing countries. This is because of the significance of the steel industry for the individual economies. Steel is used in important industries, such as energy, construction, automotive and transportation, infrastructure and machinery. On the whole, the steel industry is the second biggest industry in the world that directly employs more than two million people worldwide, plus two million contractors and four million people in supporting industries. [1] Because of these economic and social factors that are connected with steel production, international trade in steel products is sometimes accompanied by some unfair trade practices. The research object of the paper is to analyse the revealed comparative advantages or disadvantages of the main steel producers in the world in 1998–2014. However, trade specialisation, i.e. the revealed comparative advantages of a country, can be influenced not only by better factor endowment, but also by some forms of protectionist measures. Another object of the paper is to find out which countries are the most often participants of trade disputes in the steel sector and to compare it with their revealed comparative advantage and their position in the world steel production and trade. The structure of the paper is as follows: Firstly, the definition and methods of trade protectionism and secondly, the development of steel production and export in the world is performed. Thirdly, discussion about the main results of the trade analysis in the steel sector is carried out. The conclusion summarises the main trends in the world steel trade and contains some topical issues that will probably influence steel production and trade in the future.

2. DEFINITION AND THE METHODS OF TRADE PROTECTIONISM

Protectionism represents a complex of measures for the support of domestic producers. Some authors distinguish three types of protectionism - progressive, degressive and agressive protectionism according to the kind of products and territory on which the state grants them protection. [2] Progressive protectionism is applied on the domestic market against foreign competition and is connected with using high import tariffs, import restriction or a ban on the imports of some products. All of these protectionism measures lead to the

deformation of the real comparative advantages of the national economy. [3] Degressive protectionism is typical especially of developed countries that try to prevent the lapse of some of their industries that have been less competitive during time. For example, Blonigen, Liebman and Wilson estimated the effects of various trade policy measures on the steel market in the USA in 1980–2006. They found out that the US steel market was very competitive with the exception of the period in which the USA received comprehensive voluntary restraint agreements (i.e. quotas) and were able to price sustainability above the marginal cost. All other forms of protection were in tariff form and had little effect on market power. [4] Agressive protectionism takes the form of state support of some economic sectors in order to expand to foreign markets. However, state support as well as dumping imports represents unfair trade practices. In order to protect the domestic market, countries also used trade defence instruments, such as anti-dumping, anti-countervailing or safeguard measures. While the principle of anti-dumping and anti-subsidy measures is to protect the domestic industry against unfair trade practices, such as dumping or subsidy imports, safeguard measures may be introduced when an industry is negatively affected by an unforseen, sharp and sudden increase of imports. All these protectionist measures are also used in the steel sector, although protectionist practices, especially unfair trade practices, usually lead to trade disputes that are solved on the multilateral level, i.e. among countries that are members of the World Trade Organization (WTO) via the mechanism of the WTO. The opposite of protectionism is trade liberalisation that was explored in the area of European steel trade by Winters. He confirmed the positive effects of removing barriers to trade between Eastern and Western Europe on welfare benefits. [5] On the whole, trade offensive as well as trade defence measures have a negative influence on world trade and the economic welfare of a country. They limit free trade, which causes the increase of production costs and the decrease of consumer utility.

2.1 Measuring the Revealed Comparative Advantage

In order to identify which country achieves a comparative advantage in the production of steel, the Revealed Comparative Advantage (RCA) index will be used. The revealed comparative advantage index uses a trade pattern to identify sectors with a comparative advantage by comparing the country of interest´s trade profile with the world average. [6]

The approach of the RCA has theoretical background in the classical Ricardian comparative advantage concept and the neoclassical hypothesis of the Hecksher-Ohlin model. While the Ricardian theory assumes that a comparative advantage arises from differences in technology across countries, the Heckscher-Ohlin theory imputes a comparative advantage to cost differences resulting from differences in factor (labour and capital) prices across countries. Because of the fact that testing the Hecksher-Ohlin theory has some difficulties, Bella Balassa proposed the concept of a “revealed” comparative advantage based on observed trade data and derived an index (called the Balassa Index) that measures a country’s comparative advantage. [7] Alternative RCA indexes were developed by other authors, such as Leromain, Orefice, Laursen [8, 9], etc. Currently in literature, the RCA index is widely accepted in this form:

$$RCA_i = \frac{\sum_j x_{ijk} / \sum_j X_{ij}}{\sum_j x_{wjk} / \sum_j X_{wj}} \quad (1)$$

where x_{ijk} represents the exports of product k from country i to destination j, X_{ij} is the total export of country i to destination j, x_{wjk} is the total world export of product k to destination j and finally X_{wj} represents the total world exports to destination j. Consequently, the numerator means the share of exports of product k (i.e. steel products) in the total exports of country j, while the denominator represents the share of product k (i.e. steel products) in the total world exports across all countries. Data about steel export are based on a three digit level SITC revision 3 commodity classification, namely SITC 282, 672-679 and 691.

The RCA index takes a value between 0 and +∞. The observed country will achieve a revealed comparative advantage when the value of the index exceeds unity. When the value of the RCA index is lower than unity,

a certain country will achieve a relative disadvantage in certain groups of goods (i.e. the steel sector). Thus the RCA index shows a country's specialisation of goods production that is exported if its market share is higher than the world average.

The monitored period is 1998–2014, which also covers data that were published by the WTO about trade disputes in the steel sector. While the data about steel trade for the calculation of the RCA index in U.S. dollars were obtained from the statistical database of the UNCTAD (called UNCTADStat), the data about steel production and the export of semi-finished and finished steel products in millions of tonnes (Mt) were obtained from the World Steel Association yearbooks. The trade analysis covers the countries that are currently the major steel producers and/or exporters in the world, i.e. the Europen Union (EU), China, Japan, South Korea and the USA (producer) or Russia (exporter).

3. DEVELOPMENT OF STEEL PRODUCTION AND TRADE

The growth of industrial production in the world that was caused especially by the development of machinery and transportation also had an impact on the growth of steel production. Nowadays, the steel industry is the second biggest industry in the world after oil and gas with an estimated global turnover of 900 billion USD. [1] In volume expression, the global steel production increased from 777 Mt to 1670 Mt in 1998–2014. At the same time, the exports of semi-finished and finished steel products increased from 269 Mt to almost 453 Mt. While steel production increased two times, steel export grew only 1.7 times. This fact also occurred in the decline of the share of steel exports in the global steel production in 1998–2014. While the share of steel exports in the global steel production was 35 % in 1998, it was only 25 % in 2014. This development has showed that the growing volume of steel production is more consumed in domestic markets than abroad. The development of the global steel production and trade in the monitored period is shown in **Figure 1**.

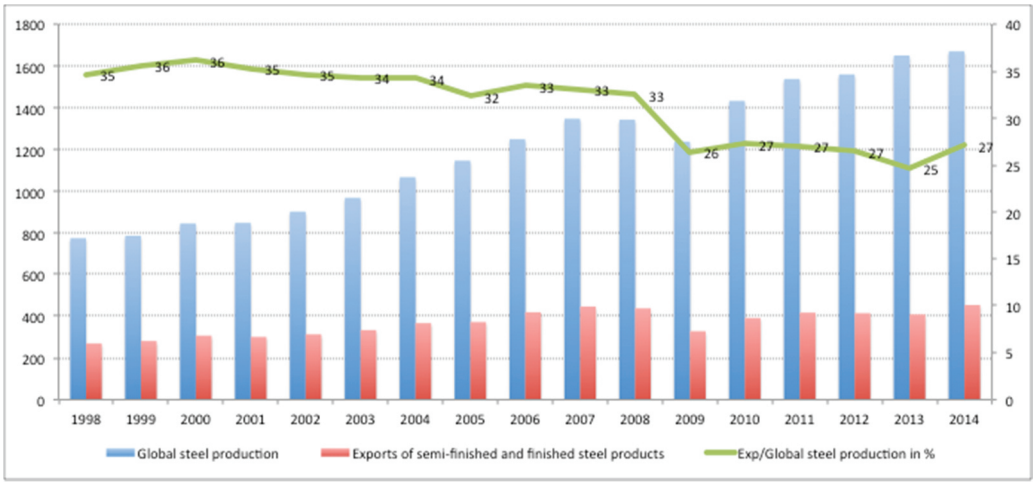

Figure 1 Development of the global steel production and exports of semi-finished and finished steel products in 1998–2014 (Mt), [10, 11]

The main steel producers were the European Union (EU) in 1998 and China in 2014. In both years 1998 and 2014, the USA, Japan and Korea also belonged to the leading steel producers in the world. These five countries (the EU is considered as one unit) increased their share in the world steel production from 51 % to 76 %, especially due to China's production (see **Figure 2**). The development of steel production showed that the share of China in the global steel production increased from 1 % in 1998 to 49 % in 2014. It also corresponds with the increase of China's steel demand. [12] On the other hand, the EU's share in the world steel production declined in the monitored period, although the EU was expanded several times by new member countries. While the EU had 15 members and its share in the global steel production was 21 % in

1998, later the EU increased to 28 member countries, but its share declined to 10 % in 2014. Some of the new EU member countries, such as Poland, the Czech Republic, Romania, etc., were also significant steel producers earlier. However, the data about steel production in the EU gives evidence of the decline of the EU's share in the global steel production. The reason for this fact can be explained by the relocation of industrial (and steel) production from Europe to Asia, i.e. China. Other developed industrial countries, such as the USA and Japan, also recorded a decline of their share in the global steel production at the same time. The share of Korea in the global steel production remained at a similar level.

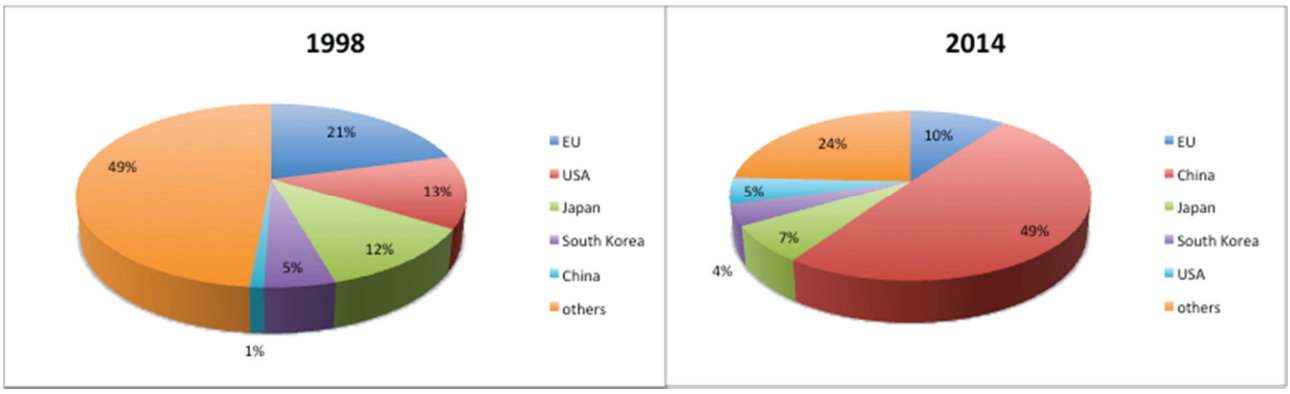

Figure 2 Share of the main producers in the global steel production in 1998 and 2014 (%), [10, 11]

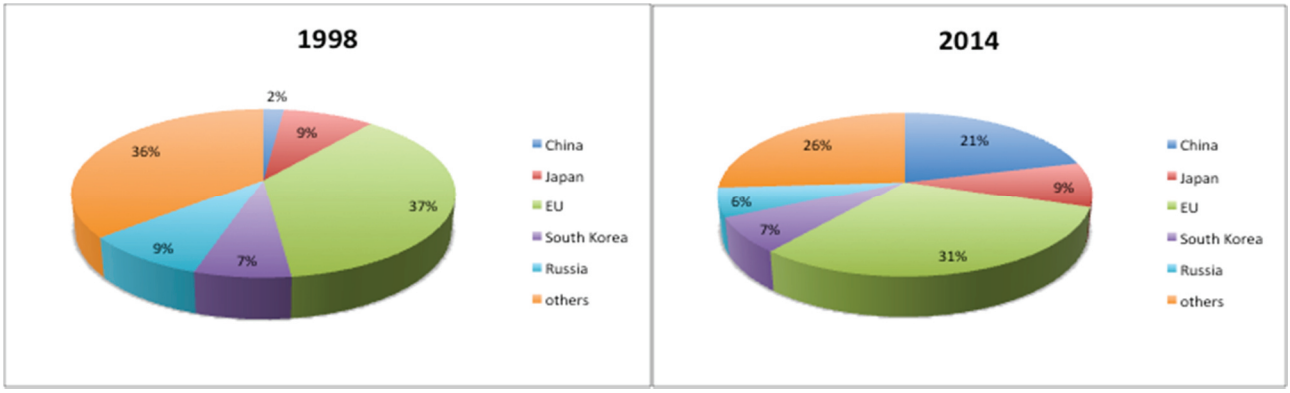

Figure 3 Share of the main exporters of semi-finished and finished steel products in the world steel exports in 1998 and 2014 (Mt), [10, 11]

The list of the main steel exporters is a little different from the list of the main steel producers (see **Figures 2 and 3**). While the USA belonged to the five main steel producers in the world in 2014, they took the 13th position on the list of the main global steel exporters at the same time. The leading exporters of semi-finished and finished steel products were the EU, China, Japan, Korea and Russia in 2014. These five exporters (the EU as one unit) again increased their share in the global steel exports from 64 % in 1998 to 74 % in 2014. While the share of Japan and Korea remained at a similar level in both monitored years, the share of the EU and Russia declined. On the contrary, China increased its export share from 2 % in 1998 to 21 % in 2014. The results about the world steel production and export showed that China recorded a significant growth of its market share in both cases.

4. RESULTS AND DISCUSSION

The analysis of the revealed comparative advantage in the steel sector by using the RCA index showed interesting results. Korea only achieved a revealed comparative advantage in steel exports for the entire

monitored period, although its share in the global steel exports remained at the same level in 1998 and 2014. Japan and Russia also recorded a revealed comparative advantage in the steel sector in the prevailing part of the period. However, while Russia has lost it since 2008, Japan recorded a RCA from 2006 until 2014. Russia's loss of the RCA corresponds with its decline of the share in the global steel exports between 1998 and 2014. The EU and China achieved a revealed comparative disadvantage in steel exports for the entire period (see **Table 1**).

Table 1 Results of the RCA index, based on [13]

	1998	2000	2002	2004	2006	2008	2010	2012	2014
EU	0.86	0.92	0.85	0.85	0.87	0.83	0.88	0.87	0.82
China	0.37	0.47	0.31	0.47	0.72	0.91	0.65	0.71	0.86
Japan	0.94	0.93	1.09	0.98	1.01	1.03	1.29	1.35	1.39
Korea	1.37	1.22	1.09	1.06	1.07	1.05	1.23	1.36	1.31
USA	0.26	0.29	0.30	0.33	0.36	0.42	0.47	0.47	0.41
Russia	1.88	1.79	1.68	1.79	1.12	0.92	0.91	0.88	0.89

If the main steel producers and exporters of steel, such as China and the EU did not achieve a RCA in steel exports, than there is the question by what instruments these two countries were able to compete in steel trade. In 1998–2014, there were 36 cases of trade disputes in steel and stainless steel trade in the WTO. The most trade disputes in the steel sector occurred in 2002, but on the other hand, there were not any trade disputes in 2007–2009 (see **Figure 4**). These disputes were connected with using trade defence instruments. The USA were the most often the defendant in the steel disputes (26 cases from 36), as well as China (3 from 36). Conversely, the most complaints in the WTO in the steel area were given by the EU (11 cases from 36). Among the participants of trade disputes were also other main producers of steel, such as Korea and Japan. [14]

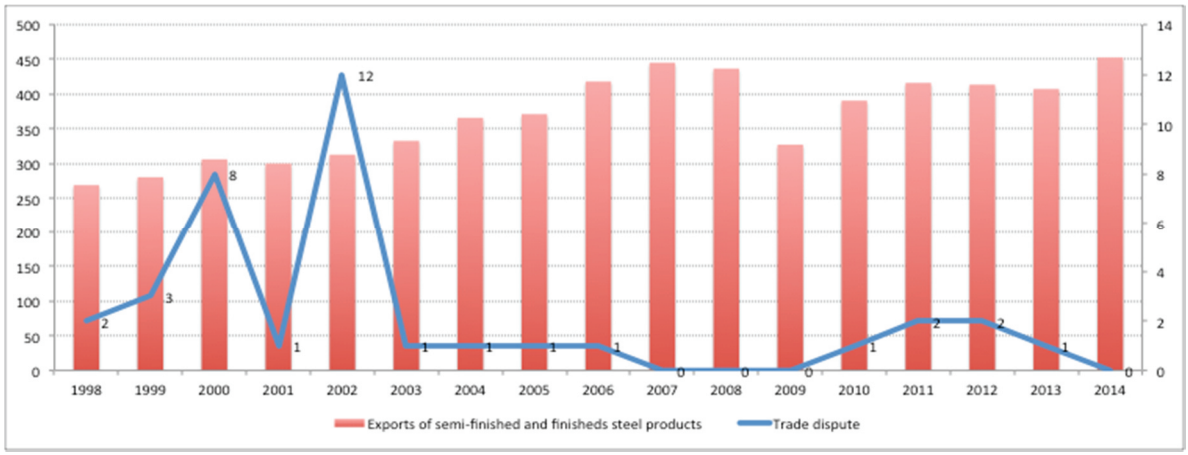

Figure 4 Steel export and the number of trade disputes in the steel sector in 1998–2014, based on [14]

5. CONCLUSION

The results of the trade analysis showed that especially Korea achieved a revealed comparative advantage in the steel sector, although its market share in the global market remained at the same level for the entire period. On the other hand, the EU and the USA recorded a revealed comparative disadvantage in the steel sector and were the most often the participants of trade disputes in the WTO (the EU as the complainant, the USA as the defendant). China recorded the most significant increase of its share in the global steel production and trade,

although it also recorded a revealed comparative disadvantage in the steel sector. Then it is obvious that the main producers and exporters of steel and steel products, who did not have a revealed comparative advantage in steel export in the monitored period, carried out unfair trade practices and became the most often the participants of trade disputes in the WTO. The importance of steel industry in the world will increase in connection with the growing urbanisation and environmental protection. From this aspect, it is possible to expect that trade protectionism will continue in this way.

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