China's trade competitiveness in the area of agricultural products after the implementation of the World Trade Organization commitments

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Abstract: The paper provides evidence on the implementation of China's trade commitments into its institutional and legal environment, which influenced its agricultural trade. The contribution to the trade balance index and the revealed comparative advantage index are used for the identification of changes in China’s export competitiveness in agricultural products between 2001 and 2015. The World Trade Organization (WTO) trade liberalisation, followed by changes in the structure of economy, contributed to China building a trade deficit in the area of the agricultural products and losing competitiveness in some products. China gradually liberalised its agricultural trade in compliance with the WTO commitments. However, relatively high protection or state regulation of the domestic market has remained in products that China exports with a revealed comparative disadvantage. The existence of the state trading can also have a negative impact on the results of China's revealed comparative advantage in its exports of agricultural products.

Keywords: contribution to trade balance, revealed comparative advantage, state trading, trade competitiveness, World Trade Organization

Although many publications have been written about the Chinese economy until now, only a small part of them was focused on China’s agricultural trade (Yao 2006; Huang et al. 2007). It has a rational foundation because China is especially known as the leading exporter and importer of industrial products. However, China’s share in the world agricultural trade has also gradually increased since 1980. While in 1980 the China's share in the world agricultural exports was only 1.5%, it increased to 2.4% in 1990 and to 3.0% in 2000. In 2015, China was already the fourth leading exporter and the second leading importer of agricultural products with the share of 4.6% in the world agricultural exports and 9.5% in the world agricultural imports (WTO 2016a).

China's improving position in the world agricultural trade was especially caused by the domestic economic reforms, which also included agriculture reforms and the “open door policy” followed by the entrance of China into the World Trade Organization (WTO) in December 2001. China's membership in the WTO was connected with the adoption of trade commitments to remove the trade barriers. It influenced China's economic policy that formerly preferred feeding itself accompanied by the high regulation and protection of the agricultural sector. Panitchpakdi and Clifford (2002) state that agriculture was one of the most sensitive issues in China's accession negotiations, which was given by the fact that some 900 million of China’s 1.3 billion people lived in rural areas. About 400 million people, or more than a half of all employed people, were farmers. Removing trade barriers in the agricultural sector practically meant to open the domestic market to products that were cultivated in and imported from other countries. On the other hand, China’s commitments in the WTO contributed to introducing a free-market system in the agricultural sector in China. The farmers gained greater security over their land by the possibility to lease the land for 60 years (Panitchpakdi and Clifford 2002). The positive impact of the agricultural trade liberalisation on the average farm households in China and its

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implications for poverty was also confirmed (Huang et al. 2007).

The economic reforms in China were accompanied by a massive migration of the rural population to cities. The main motivation for them was getting better job opportunities and higher wages. Although the rate of urbanisation in China is still lower than in many high-income countries (in 2015, just over 771 million people lived in cities, i.e. 56% of China’s entire population of nearly 1.35 billion, NBS (2016)), China ranks among countries with the fastest advance of urbanisation in the world (Stuchlíková 2015). The Chinese government expects that the urbanisation rate is likely to reach 60% by 2020 (KPMG 2016). Urbanisation has had an impact on the structure of the economy and employment. Although the number of employed people in agriculture declined significantly from 70.5% in 1978 (Stuchlíková 2015) to 28.3% in 2015 (NBS 2016), it means that almost one third of the employed Chinese people still work in agriculture.

This paper aims to provide the empirical evidence on China’s trade competitiveness in the agricultural sector after its implementation of the WTO commitments. The long-term process of the transformation of China’s centrally planned economy into a socialist market-oriented economy has had an impact on the structure of the Chinese economy as well as its comparative advantages and export competitiveness. The object of the paper is, firstly, to find out how China implemented its WTO commitments in the area of agricultural trade into the domestic legal and institutional environment and, secondly, to find out what impact the trade liberalisation had on China’s trade competitiveness in the area of agricultural products after 15 years of its entrance into the WTO. The paper tests the hypothesis that the trade liberalisation supports the export competitiveness of a country in those commodities, in which it achieves comparative advantages. Based on the empirical evidence of the trade balance and the revealed comparative advantage, there are derived implications for the follow-up in the WTO liberalisation of the Chinese agricultural trade.

**MATERIAL AND METHODS**

The first part of the analysis is focused on the implementation of China’s agricultural commitments into the domestic legal and institutional environment. These trade commitments are included in the Protocol on the Accession of China, including China’s Schedule of Concessions and Commitments on Goods, and the Working Party Report (WTO 2001). While the Protocol on Accession determines general provisions with respect to the multilateral trade principles, such as the national treatment rule and the rule of non-discrimination, the Schedule of Concessions and Commitments annexed to the General Agreement on Tariffs and Trade 1994 (GATT 1994) includes specific commitments that China accepted in the area of merchandise trade.

Thus, China’s commitments in agricultural trade, which is a part of the merchandise trade, include: (1) measures affecting imports; (2) measures affecting export; (3) internal measures.

The second part of the analysis is focused on China’s export competitiveness in the area of agricultural products. Although there are many different definitions of competitiveness, in this paper competitiveness is considered as a measure of a country’s advantage or disadvantage in selling its products in the international markets (OECD 2014). Firstly, China’s export and import in the agricultural sector will be shown in 2001 and 2015, and then the Contribution to Trade Balance (CTB) will be calculated and compared between 2001 and 2015. Rojíček (2010) states that a comparative advantage, which is expressed in the form of the CTB, represents the concept of the net trade or trade balance in commodities. It can be interpreted as an indicator of the “revealed comparative advantage”, as it indicates whether an industry performs relatively better or worse than the manufacturing total, no matter whether the manufacturing total itself is in deficit or surplus (OECD 2011a). If there was no comparative advantage or disadvantage for any industry \( i \), a country’s total trade balance (surplus or deficit) should be distributed across industries according to their share in the total trade. The CTB index is defined as follows (OECD 2011a):

\[
CTB = \left( \frac{exp - imp}{EXP + IMP} - \frac{EXP - IMP}{EXP + IMP} \times \frac{exp - imp}{EXP + IMP} \right) \times 1000
\]

where \( exp \) and \( imp \) represent the export and import of a given commodity group, while \( EXP \) and \( IMP \) express the total exports and imports. The indicator is generally expressed as a percentage of the total trade or gross domestic product (GDP).

Secondly, in order to find out China’s export competitiveness in agricultural products, the Balassa index of the revealed comparative advantage (RCA
index) is used. It is defined as a ratio of the product \( k \)'s share in country \( i \)'s exports to its share in the world trade (WTO 2012). These indicators were also used in other empirical studies. For example, Bojnec and Ferto (2016) analysed the export competitiveness of the European Union (EU) in fruit and vegetable products in the global markets using the Balassa’s RCA index in different modified forms. Fojtíková (2016) also analysed the changes in the export competitiveness of the EU member states through the RCA index. Laursen (2015) started with the Balassa’s RCA index and proposed two adjusted indexes. Firstly, he proposed a normalized RCA index that is similar to the standard RCA index (WTO 2012) and later Laursen (2015) defined the “revealed symmetric comparative advantage” when using the RCA index in econometric analyses. In this paper, the RCA index has the form (WTO 2012):

\[
RCA_i' = \frac{X_i / X'}{X_i / X}
\]

(2)

where \( X_i' \) is country \( i \)'s exports of good \( k \), \( X' = \sum X_i' \) its total exports, \( X_i = \sum X_i' \) world exports of good \( k \) and \( X = \sum \sum X_i' \) the total world exports.

A value of the RCA index above one in the commodity (or sector) \( k \) for country \( i \) means that \( i \) has a revealed comparative advantage in that commodity (sector). On the contrary, a value of the RCA index near zero indicates a revealed comparative disadvantage in that commodity or sector.

RESULTS AND DISCUSSION

Firstly, the analysis includes the specification of the domestic legal and institutional environment in China, which is connected with agricultural trade, after its entrance into the WTO. The determination of the institutional structure is important for the implementation of the WTO commitments with respect to the multi-levels of the policymaking process in China. Secondly, the analysis is focused on the evaluation of China’s export competitiveness in the agricultural products after 15 years of its entrance into the WTO.

Implementation of China’s agricultural commitments into the domestic legal and institutional environment

China’s entrance into the WTO in 2001 was connected with several changes in the institutional structure of trade-policy making and the review of legislation, including issuing a considerable number of new laws. The highest organ of state power is the National People’s Congress (NPC), and its permanent body is its Standing Committee. Executive power is vested in the Central Government, which is the State Council. The division of state power in China corresponds to its administrative structure, which includes provinces, autonomous regions, special administrative regions and municipalities. In addition to the central and provincial levels, administrative jurisdictions are further sub-divided into prefecture-level cities, counties and townships. The individual bodies can issue different laws. People’s congresses at a local level and local governments also have the authority to issue the local regulations and rules (State Council of the People’s Republic of China 2014). Local rules and regulations may vary across regions, reflecting the local differences. However, in compliance with the China’s commitments in the WTO, all rules, documents and other policy measures formulated by various departments of the State Council or by the local people’s governments at all levels and their departments, that are related to the foreign trade,
must comply with the international rules (WTO 2016b). However, some domestic measures still enable to create a more favourable treatment for the Chinese firms than for the others. For example, besides tariff, China has applied the value added tax (VAT) to agricultural imports. In compliance with the WTO agreements and the national treatment rule, the VAT on domestic and imported goods has to be the same. However, the VAT on agricultural products, i.e. 13%, is not applied to the agricultural products produced and sold directly by the small-scale farmers. This enables them to obtain more favourable conditions for achieving trade competitiveness.

In terms of the institutional structure, at least 16 institutions are involved in governing agriculture and its subsectors. They are divided into four tiers according to the level of responsibility (WTO 2006). The central bodies, which are involved in the agriculture policy-making and implementation, are shown in Table 1. The Ministry of Commerce (MOFCOM) has the main responsibility for the policy coordination and implementation related to all trade-related issues. It also issued the China Foreign Trade and Cooperation Gazette, in which it publishes China’s trade laws, regulations and rules. However, the information is available only in Chinese.

In order to meet the WTO trade commitments, China has enacted new trade-related laws and regulations. The main law covering international trade is the Foreign Trade Law, most recently revised in 2004. The Customs Law, which governs customs and the related matters, was amended in 2000 and 2013. The Regulations of the People’s Republic of China on Import and Export Duties was issued in 2003. It contains the tariff schedules, as well as the laws and regulations relating to the standards, antidumping, countervailing and safeguard measures, and the intellectual property rights. The Customs Rules on Administration of the Levying of Duties on Imports and Exports was enacted in 2005 and amended in 2014. In addition, agriculture is regulated by a number of other laws and regulations, such as the Agricultural Law, the Law on Land Contract in Rural Areas, the Grassland Law, the Land Administration Law, the Seed Law, the Fisheries Law and others, which have been gradually entering into effect since the 1990s. Overall, the institutional and legal framework contributes to the creation of a more transparent and stable area that is important for doing business and trade.

Table 1. Review of China’s central bodies in agricultural sector

<table>
<thead>
<tr>
<th>Tier</th>
<th>Institution*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tier 1</td>
<td>State Council</td>
</tr>
<tr>
<td>Tier 2</td>
<td>Leading groups, Development Research Centre (DRC) of the State Council, the Communist Party’s Central Policy Research Centre Office</td>
</tr>
<tr>
<td>Tier 3</td>
<td>National Development and Reform Commission (NDRC), State Owned Assets Supervision Administration Commission (SASAC), People’s Bank of China, Ministry of Finance, Ministry of Commerce (MOFCOM)</td>
</tr>
<tr>
<td>Tier 4</td>
<td>Ministry of Agriculture, Ministry of Water Resources, Ministry of Land and Resources, Ministry of Education</td>
</tr>
</tbody>
</table>

*The list of institutions is not exhaustive
Source: WTO (2006)

China’s trade competitiveness in the agricultural sector

As China progresses to high-income status, some loss of agricultural land is likely, and a large shift of labour out of agriculture is inevitable (Fukase and Martin 2016). However, while the contribution of agriculture to GDP and employment in China declined in 2001−2015, from around 15.8% and some 45% in 2001 to 9.3% in 2015 (GDP) and 29.5% in 2014 (employment), the situation in the area of foreign trade was not so unambiguous. While the share of agricultural products (WTO definition) in China’s total exports declined, from 4.6% in 2001 to 2.5% in 2015, the share of agricultural products in the total imports increased significantly from 4.3% to 6.5% in the monitored period (Figure 1). However, this does not prove that China is less competitive in agricultural products, it only means that China has increased its non-agricultural exports and has been the world’s leading exporter of industrial products since 2009. On the whole, China’s trade competitiveness in the agricultural sector has been influenced by different internal factors, such as: (1) geography (area, climate and land use); (2) economic factors
(workforce, productivity, prices, exchange rate, consumption); (3) environmental factors (especially the sustainability of the land and water resources); (4) research and innovations (e.g. digitalisation in agriculture) and (5) institutional factors (national strategies and plans, economic and trade policies, institutions, instruments). Besides these internal factors, the situation in the world economy is also important with respect to the development of world prices, supply and demand. On the other hand, world trade is more dependent on China’s economic decisions with respect to the common geopolitical situation (Baláž et al. 2012) and many countries take it into their consideration and try to create the strategic partnership with China (Cihelková and Nguyen 2017).

In terms of government interventions in the agricultural sector, although still significant, they have decreased (WTO 2006). China has progressively reduced import tariffs, partially removed licensing requirements on imports and exports, abolished some quotas and converted others to tariff rate quotas (TRQs), and removed some price controls. The agricultural tariff gradually declined in 2001–2015, although agriculture remained the most protected area in China all the time. However, the level of a simple average most favoured nation (MFN) applied tariff to agricultural products was less than 15% in 2015 (WTO 2016b), which was under the final bound level to which China committed upon the entrance into the WTO. On the other hand, China has been increasing its support of agriculture, which was slightly above half the OECD countries in 2008–2010. The total support at 2.3% of GDP was relatively high compared to the OECD average of 0.9% (OECD 2011b).

The liberalisation of China’s agricultural trade after its entrance into the WTO affected its imports and exports. While China’s total trade balance was in a surplus of 600 billion USD in 2015, the agricultural trade was in deficit at the same time. Figure 2 shows that China’s trade balance in agricultural products (WTO definition) has changed during the monitored period, i.e. there was a small trade surplus of 1.7 billion USD in 2001, but a trade deficit of 52.6 billion USD in 2015. This means that China’s agricultural imports were higher than its agricultural exports. Thus, the implementation of the WTO commitments contributed to a higher openness of the Chinese market. At the same time, China’s rapid economic growth has raised wages and given consumers more spending power. China currently has the biggest middle class in the world that demands imported food (CNBC 2015). The Chinese lax food safety standards have produced periodic scares and in this way, they also boosted the demand for the imported goods. Thus, the growing living standard of the Chinese population is another factor that influences China’s and world trade in agricultural products. As Baláž et al. (2012) states, the commodity structure and its changes were influenced by domestic demand, but also the intention of the Chinese government to better coordinate the supply on the domestic market and the targeted increase of imports for final consumption (Figure 2). Although China is a net importer of agricultural products, some agricultural products have con-
the protection of these products remained relatively high. For example, the average MFN tariff applied to cereals and beverages reached up to 65%. The exports of cotton, rice, maize and tobacco were subject to state trading and also export quotas, except for tobacco (WTO 2016b).

This confirms the fact that changes in the trade balance (or comparative advantage) can also be caused by changes in the consumer taste. In reaction to the rising incomes, the Chinese now consume more meat, eggs, seafood and dairy products and less grains and vegetables. However, while the Chinese consumers’ tastes have shifted, the nation’s farmers have not been able to keep up

Figure 3. Contribution to trade balance (CTB) in the agricultural sector in China in 2001 and 2015
HS 01–24 – Chapters of Harmonized System
Source: Own calculation based on the UN Comtrade Database (2017)
with the demand. To feed the China’s rising middle class is thus the opportunity for other global food producers (CNBC 2015).

Another analysis confirmed this development. In 2015, China reached the revealed comparative advantage in the export of the products of animal origin (HS 05), edible vegetables and certain roots and tubers (HS 07), lac, gums, resins and other vegetable saps and extracts (HS 13) and preparations of meat (HS 16). However, the export of the products of animal origin (HS 05) was subject to 40% export duty (WTO 2016b). This means that this market was not liberalised enough by the Chinese government. The comparative disadvantage was obvious especially in the export of meat and edible meat offal, dairy produce, cereals, animal or vegetable fats and oils and cocoa. The values of the RCA index in these products were near zero and were the lowest of all (Table 2). In these tariff lines, China applied the highest MFN tariff ranging from 0−65%. In addition, the Chinese government has highly subsidised some of them, especially cereals. For example, in January 2017, the USA initiated to establish a WTO dispute panel to examine subsidies provided by China to its domestic producers of wheat, rice and corn, because the support exceeded the permissible level of the domestic support China agreed to upon its accession to the WTO (WTO 2017).

The number of tariff lines is different in the individual HS Sections. In more detail, the analysis showed the following results: In HS Chapter 05, China had a revealed comparative advantage in export only in three out of eight HS Headings in 2015. The highest value of the RCA index was recorded in the export of pigs, hogs and other products of HS 0502. Figure 4 shows the level of the RCA index for the products of HS 05 in more detail.

HS 07 includes fourteen Headings, but only six reached a revealed comparative advantage in 2015.

### Table 2. Revealed comparative advantage index (RCA) in 2015

<table>
<thead>
<tr>
<th>Commodity Code</th>
<th>RCA</th>
<th>Commodity Code</th>
<th>RCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>HS 01</td>
<td>0.217048298</td>
<td>HS 14</td>
<td>0.957735125</td>
</tr>
<tr>
<td>HS 02</td>
<td>0.065247192</td>
<td>HS 15</td>
<td>0.052761471</td>
</tr>
<tr>
<td>HS 04</td>
<td>0.054258708</td>
<td>HS 16</td>
<td>1.228780036</td>
</tr>
<tr>
<td>HS 05</td>
<td>1.397294563</td>
<td>HS 17</td>
<td>0.269541987</td>
</tr>
<tr>
<td>HS 06</td>
<td>0.109240228</td>
<td>HS 18</td>
<td>0.068022522</td>
</tr>
<tr>
<td>HS 07</td>
<td>1.031211627</td>
<td>HS 19</td>
<td>0.163003884</td>
</tr>
<tr>
<td>HS 08</td>
<td>0.354258388</td>
<td>HS 20</td>
<td>0.802407956</td>
</tr>
<tr>
<td>HS 09</td>
<td>0.383143301</td>
<td>HS 21</td>
<td>0.323201317</td>
</tr>
<tr>
<td>HS 10</td>
<td>0.020672409</td>
<td>HS 22</td>
<td>0.129806292</td>
</tr>
<tr>
<td>HS 11</td>
<td>0.221730346</td>
<td>HS 23</td>
<td>0.252105725</td>
</tr>
<tr>
<td>HS 12</td>
<td>0.224928331</td>
<td>HS 24</td>
<td>0.230155588</td>
</tr>
<tr>
<td>HS 13</td>
<td>1.236748242</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

HS 01−24 – Chapters of Harmonized System

Source: Own calculation based on the UN Comtrade Database (2017)
The highest value of the RCA index was recorded in the export of vegetables (HS 0712) and onions (HS 0703). These two HS Sections were also among China’s top five exported agricultural products in 2015 (WTO 2016a).

In HS 13, there are two Headings, from which only one, i.e. the export of vegetable saps and extracts, reached a revealed comparative advantage with the value of the RCA index of more than one (Figure 6).

HS 16 includes five Headings, from which two recorded RCA index in 2015 (Figure 7). This means that China exported crustaceans, molluscs and other aquatic invertebrates, prepared or preserved, and also prepared or preserved fish, caviar with a revealed comparative advantage.
CONCLUSION

Based on the analyses carried out in this paper, we can conclude that China adapted its institutional and legal environment in order to liberalise its agricultural trade in compliance with its WTO commitments. However, some barriers to trade on the Chinese market remained all the time. These barriers are connected with a lower transparency area for foreign producers and exporters, who are not able to translate some information that is published only in Chinese language. Other barriers to trade can be the result of the Chinese government policy focused on the support of agriculture and rural development. Although the share of agriculture in China’s GDP and employment has gradually decreased since 2001, it remains a sensitive area for China with respect to the national security and development goals all the time.

Another analysis in this paper focused on China’s trade competitiveness in agricultural products showed an imbalance between the domestic supply and demand for agricultural products on the Chinese market. On one hand, the supply of agricultural products was negatively influenced by China’s growing industrialisation (people moving from land to factories) and urbanisation (seizing arable land for building new cities), which was documented by the decline of the agricultural sector in GDP and employment in the monitored period. On the other hand, the demand for agricultural products by the Chinese population increased. It was given by the growing wages of the urban population and their better living standard. The growing China’s middle class demanded healthy food and changed the traditional Chinese diet. These imbalances between the domestic supply and demand for agricultural products had to be compensated by growing imports from abroad. The trade liberalisation, which was caused by the China’s entrance into the WTO, meant easier access to the Chinese market for the other WTO members, but also an advantage for China, based on the non-discriminatory treatment of currently more than 160 countries in the world. However, the trade liberalisation in the agricultural sector also contributed to China’s trade deficit, which has gradually increased since 2008. China lost its competitiveness in more products, such as meat and edible meat offal, cereals, preparations of cereals and beverages, spirits and vinegar, than it obtained. The loss of competitiveness of some products could also have climatic reasons, for example, the frequent floods and landslides cause damage to the crops of cereals. In 2015, China reached a revealed comparative advantage especially in the exports of the products of animal origin, gin, edible vegetables and certain roots and tubers, lac, gums, resins and other vegetable saps and extracts and the preparations of meat. However, the trade in some of these products was subject to higher state control and regulation (the export of the products of animal origin) or state trading (on the import side - grain, vegetable oil, sugar and tobacco; on the export side – tea, rice, corn and soybean). In this way, the results of the RCA index, and the competitiveness of these products can be influenced by the fact that the government supports or protects them. Thus, it is not possible to unambiguously confirm the hypothesis that the trade liberalisation supports the export competitiveness of a country in those commodities in which it achieves comparative advantages. While China gradually decreased the tariff barriers applied to agricultural imports in compliance with the WTO commitments, the non-tariff measures in some of their “grey” shape occur in China all the time, although the WTO was notified about them in compliance with the WTO rules. Removing especially the state trading in the agricultural sector would mean further progress in China’s commitments in the WTO.

With respect to the current position of China in the world economy, it will be important to monitor the further development of the Chinese economy in compliance with achieving its social and economic development targets included in China’s 13th Five-Year Plan (2016–2020) and the National Nutrition Plan (2017–2030). They will influence the production and consumption of agricultural products of the Chinese inhabitants. Because the almost 1.4 billion Chinese are one of the most important consumers and players in the world commodity markets, these domestic matters will also have implications for the world agricultural trade, they will influence the demand and supply in the world as well as the prices of food and agricultural raw materials. As it was confirmed, China is now the leading world agricultural importer and exporter. In the future, the increasing water scarcity, the pollution of water and air, but also the ageing Chinese population can have a negative impact on China’s agricultural production, and it can support the increase of the prices of agricultural products in the world market.

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