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Food security in China in the beginning of the 21st century

1. Introduction

Food security is one of dimensions of economic security, vital to economic and social development. It is especially interesting in case of a country such as China, which is a fast developing economy with a big populace and a specific political system, aiming at becoming an important part of the global system. Thus, the situation in China and the decisions taken to ensure food security can have a great influence on the global situation. Basic research questions concerning the topic of food security in China in the beginning of the 21st century are: what is food security and how is it measured?, what is the food security situation in the world and what influences this situation?, what is the food security situation in China? What are the main problems and how are they solved?

Thus, the first part of the paper considers the problem of defining food security and scientists' current attitude towards defining and measuring the level of food security. The second part presents an overview of the current food security determinants and trends in the world as well as the current situation in this field. This is the background for the third part, which tackles the problem of food security in China, including current situation, the main challenges and the means taken to ensure this security.

2. Food security – an overview

The concept of food security originated in the mid-1970s during the time of a global food crisis. The initial focus of attention was primarily on food supply problems. This included assuring the availability and to some degree price stability of basic foodstuffs at the international and national level. Food security was then considered as a situation when enough food is available for the citizens of a country in general. It was during this time that the issues of famine, hunger and food crisis were also being widely discussed, which led to redefinition of food security. There was one more important factor for modifying the views on food

security; evidence that the Green Revolution did not lead to significant reductions in poverty and levels of malnutrition although it was successful in raising crops. These problems were recognized as the result of a lack of effective demand (FAO 2003, p. 26).

In the 1990s a complex definition was adopted by FAO, which was refined again at the beginning of the 2000s. According to FAO, food security is a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life. Food security can be achieved at the individual, household, national, regional and global levels (FAO 1996, FAO 2001). Food insecurity exists when people do not have adequate physical, social or economic access to food as defined above.

This describes a situation when not only enough food is available but also food that has enough calories and can ensure a healthy and nutritional diet, which means food safety and nutritional composition are important too. Another factor critical to food security is the distribution of the available food. The term of food preferences refers to the fact that foods should be socially and culturally acceptable and consistent with religious and ethical values (Pinstrup-Andersen 2009). Furthermore, a set of non-food factors such as sanitary conditions, water quality, health care and education have an influence on food security as they influence the way in which food is utilised.

When discussing food security at different levels, different approaches to its role and measurement can be taken. For instance when talking about national and global levels of food security, the most vital question is if there is enough food available. Here the measurement is based on the supply side. If food security is to be a measure of household or individual welfare, it has to address access which means demand side is important and distribution of food is also concerned. Food security that is achieved at one of these levels does not mean that it is also assured at any other level. Even at the level of a food-secure household there may exist such a distribution of food that not all the members have access to enough food of proper quality to meet their nutritional needs.

When talking about food security at a national level, the term of national food sovereignty can be used. This means a country is able to ensure its citizens enough food either with domestic production or with imports. Moreover, the food should be of proper quality and nutritional value, which are also connected to food safety. Fulfilling all of these requirements concerns not only agricultural issues but also poverty and developmental problems within countries. Thus, many aspects on different levels of national and global economies must be taken into consideration when discussing food security. The broad concept of food and nutrition security contains three kinds of concerns. Firstly, interlocking local food and nutrition security concerns. Secondly, basic

services, technology, assets and rights and thirdly, overarching major concerns at the global level. The first group includes agricultural production, safe water and sanitation, childcare, health and disease control, consumption quantity and quality, markets and infrastructure, employment and income as well as food aid and entitlement. The second group includes education and health services, appropriate technology, research and application, asset distribution, land and other rights, food and other subsidies as well as credit and finance. The third group is about world trade, human rights, climate change, globalization, international migration, money, debt and debt servicing, energy supply and costs, water resources, population growth, environmentally sustainable development, human security poverty alleviation and mainstreaming women and gender concerns.

Taking into consideration all these aspects, various indicators can be used to assess the status of food security. They are not only the amount of food crops, prices and citizens' income but also market and transportation indicators, per capita food consumption and nutritional intake, malnutrition of the youngest children, medical care, drinking water, sanitation and education status indicators as well as the occurrence of natural disasters.

3. Food security as a global affair

Food security has recently become a topic of rising concern, especially after the last financial crisis when food prices rose sharply in 2008/2009 and 2010/2011. In 2008 prices rose to peaks that led to strikes and riots, while in many developing countries the occurrence of malnutrition and hunger increased. Some of the Third World's leading producers curtailed or suspended exports of rice. Since then some of the countries, especially those that do not own not much arable land, intensified their efforts to secure land on long leases in Africa and South-East Asia to produce food for their people. Among these countries were the United Arab Emirates, South Korea and China. Some of the leases were connected with investments made by companies from the countries leasing the land. Many of these investments concerned research in the development of agribusiness. In the world there are 7 billion people to feed. Although average yields are rising by 1.3% each year, which should improve the state of nourishment in the world, the pace of demand is growing even more, especially in the developing countries where the population is increasing at the fastest pace.

The space that could be used for growing plants necessary for alimentation is used to raise crops for producing fuels that are mainly used in the developed countries, which care for their environment and are trying to diversify their sources of energy. What is more, some plants that could be used as food are used as a material to produce fuels or energy too. Agricultural land per capita is constantly declining.

This is partly due to expanding cities that take up more and more fertile land for building new roads, houses and factories. The problem is not only the place taken but also the pollution of water, soil and air caused by cities and industries. It may be influencing the quality and nutritional value of crops that are also polluted or even make it impossible to use land or water for raising any crops. Another challenge for food security is degradation, erosion and desertification of agricultural lands and declining water supplies. Thus resources that can be used to produce food for growing populations are declining.

Better and better economic development of the world societies is also strongly influencing the world's food security. Population growth and urbanization have resulted in a considerable expansion of world food trade. People living in cities do not produce food products on their own. Thus a chain of transport and distribution of food from different parts of a country and from abroad must be developed. What is more, patterns of consumption are changing simultaneously to the changes in the level of income and the economic growth of societies. People tend to eat more and better as basic products such as grains, which used to be the basis of people's nutrition, account for less in their diet. People eat more meat and oil products and thus more resources are needed to produce food. To produce meat of some energetic value more arable land is needed than to produce grains of the same value. This way the same amount of land feeds less people. When global trade is taken into account, it often means that in some countries where food is produced there also may exist under nutrition. People's incomes are not enough to buy food, and the food is produced for and exported to wealthy countries whose citizens' incomes are much higher. Moreover, in the developed societies more processed food is consumed. Preparing such food also needs more resources and often influences negatively on the nutritional value of its ingredients, which is the problem of the developed countries' societies.

These trends led to the development of large multinational food corporations specializing in food production and distribution in many parts of the world, often offering products that are highly standardized. Growth of these corporations resulted in the increased commercialization and control of the food chain. Another important trend is the emergence of the fast food industry and supermarket chains (often cooperating with large multinational food corporations). Food security was especially widely discussed in the years 2008/2009 and 2010/2011. During those times some serious natural disasters were noted, especially in the developing countries, which highly influenced the decrease of global food production and the increase of food prices (Figure 2). These problems were intensified by the global financial crisis. It caused investors, wanting to diversify their portfolios, to move from stocks and shares to raw materials (including crops) which resulted in even higher food prices on the global market. Food price volatility also became higher as food became subject to speculation.

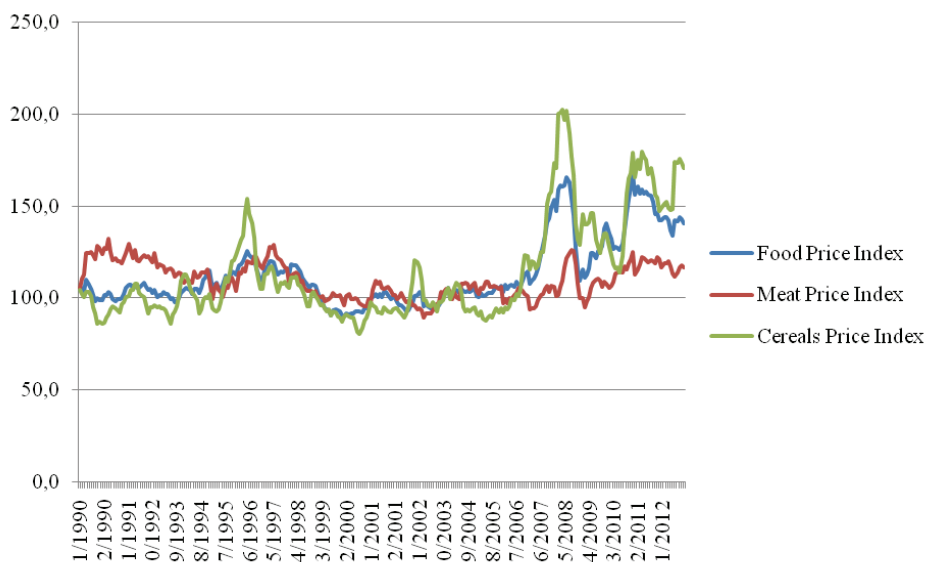


Figure 2. FAO Food Price Index (Monthly Real Price Indices; 2002-2004=100)

Source: FAO Food Price Index. URL: http://www.fao.org/fileadmin/templates/worldfood/Reports_and_docs/Food_price_indices_data_deflated.xls. [accessed December 8, 2012].

Although the state of global food security is getting better when all the countries are taken into consideration as a whole, in most of these countries food security is still not ensured on the national level. In the years 2010-2012 there were almost 870 million people chronically undernourished which accounts for more than 12% of the world population. The vast majority of undernourished people live in developing countries. Although the number and the share of undernourished people has decreased since 1990-1992 (from 1 billion people, which accounted for 18.6% of world population), especially in developing regions (from 23.2% undernourished to 14.9%) (FAO 2012, 8-10), there is still much to do to ensure food security for all.

4. Food security in China

When it comes to food security issues in China, it can be considered as quite a special country whose food security is increasingly linked to global food security. With its population of 1.3 billion China is a country that can significantly influence the situation of the global food market and even the global economy in case it has any serious food security problems. Although China's land area is 9.6 million square kilometres, the arable land is concentrated in the southeast of the country and stands for barely 10% of the global arable land. This has to feed

22% of the world population. Currently, there are only slightly more than 900 square meters of arable land per inhabitant, which is less than 40% of the global average (Ye et al. 2010). China is also characterized by geographic and climate differentiation.

Taking into account GDP per capita, China is still chasing the richest. However, country's GDP in 2011 was USD 7.3 trillion (according to World Bank data) which gave the country the second position in the world and confirmed its role of an economic superpower arising in the global system. The country faces two major challenges: eliminating hunger and meeting the dietary aspirations of an increasingly affluent population. The first one is rather characteristic for developing countries and the second one for the developed nations. This also shows that China is a mixture of these two kinds of development, especially depending on the region.

China is a large producer, consumer and trader of food. In 2010-2011 its global shares in food production were significant. According to FAO, China accounted for 29% of global rice production, 21% of global maize production, 17.6% of global wheat production and 12.7% of global oil production. When it comes to China's shares of selected global crops imports, they were 52% of oil crops, 6% of maize, 4% of rice and 2% of wheat.

China's shares of global food consumption were also high. In 2007 the country accounted for almost 50% of global vegetable consumption, 29% of rice consumption and 26% of meat consumption. Other significant foodstuffs were also wheat, cereals, fruits and oil crops. In each case China accounted for almost 20% of global consumption this year, according to FAO. There are numerous factors influencing the food security level in China and many challenges for the country. One of them is a huge, continuously growing population that needs to be fed. Another factor may be the shifting demographics, which will influence the economic situation of the country as well as the structures of and ageing society. This may result in the distribution of income and thus food security.

It is characteristic for China that simultaneously strong economic growth and serious diet changes can be observed. Chinese eat more dairy, meat and vegetables and less grains, which used to be the basis of their diet. Economic growth also results in fast urbanization and industrialization. Cities and factories, developing especially in the southeast take the most precious arable land which cannot be used for raising crops anymore. What is more, pollution of soil, water and air is increasing, disabling food production or seriously damaging food quality. The trend mentioned is also influencing rising rural labour shortages and costs as rural workers move to the cities to look for better jobs.

What is more, China is vulnerable to natural disasters such as droughts, floods, dry-hot winds, typhoons, hail or freezing temperatures. Between 1996-2007 more than 30% of the total sown areas were influenced by such disasters, causing serious losses in crops. In 2011 the Yangtze River basin summer drought

was so serious that it affected global rice production and in 2008 and 2011 severe winters in northern China affected global wheat production and prices.

In spite of fast economic growth and raising incomes, China is still vulnerable to high food inflation. In 2008, 170 million Chinese people lived below the poverty line, which stood for 13% of China's population. 130 million Chinese people were undernourished, which stood for 10% of the population. There were numerous policies introduced to cope with the challenges of food security in China, which intensified during the economic crisis. They aimed at growth in agricultural productivity, growth in daily per capita calorie consumption and increasing grain self-sufficiency at the national and local levels (grain production quota). Price volatility was countered by introducing floor prices and a state grain reserve policy (but the estimated cost of carrying reserves were 20% of the commodity prices on the world market) and the state grain reserve policy was strengthened. The policies resulted in the growth of per capita food output, rural income, food expenditure, physical access to food (better organization of transportation and markets), quantity and quality of products consumed and nutritional intake. In addition the health care quality, sanitation quality and education levels increased, which resulted in better food utilization (Xiao and Nie 2009, p. 11-25).

During the economic crisis the government set prices for cereals as well as increased export duties for certain foods. These measures, together with an increase in the minimum support prices for different kinds of rice and the agricultural input subsidies introduced, improved the situation in China's domestic market. China became self-sufficient when it comes to the production of rice, wheat and corn. There were also investments in agriculture, increasing by 20% each year from 2007 to 2009.

It is worth mentioning the Chinese overseas direct investments in agriculture and agribusiness that take place in different countries. Between 2006-2013 USD 3.5 billion were invested in Africa (of total USD 67 billion invested by Chinese companies abroad). These investments were connected to securing (leasing) arable land for China as well as providing Chinese experts for technical assistance, training African agricultural technicians and setting up technology centres (Vidal 2012). Investments also took place in developed countries such as USA, Canada, Australia and New Zealand where they were mainly connected to research and development, biotechnology or supply chains in the area of agribusiness.

5. Conclusion

Ensuring food security remains a vital problem in today's world as it influences the economic and social development of nations. The rapidly increasing demand for food crops, which are also used for fuel, expanding cities as well as degradation, erosion and desertification of agricultural land and declining water supplies

are challenges for global food security. Population growth and urbanization resulted in a considerable expansion of global food trade and large multinational corporations that are active on global markets influenced the commercialization and control of the food chain. Patterns of consumption are also changing in such a way that more crops are needed to meet the food demand. Notably, during the financial crisis high food prices and price volatility were a significant problem. It can be stated that, balancing different means, China has been caring for its food security quite well. It has been achieved on the national level and steps are also being undertaken to ensure food security in China on the regional levels and to ensure food security on different levels in the future as well.

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