

Global Food Security: Emerging Economies and Diverging Food Markets

Shida Rastegari Henneberry[ⓐ] and Claudia P. Díaz Carrasco^ᵇ

^ᵃ*Regents Professor, Department of Agricultural Economics, Director of the Master of International Agriculture Program, Humphreys Endowed Chair in International Studies, 139 Agricultural Hall, Oklahoma State University, Stillwater, Oklahoma, 74078, USA.
Phone: 405-744-9712, Email: srh@okstate.edu*

^ᵇ*Graduate Research Assistant, Master of International Agriculture Program, 139 Agricultural Hall, Oklahoma State University, Stillwater, Oklahoma, 74078, USA.*

Abstract

Global food security in the last decade has been a topic around many international agencies, organizations, and governments. Global food security can have a broader or a narrower definition, depending on the source. Nevertheless, most of the authors agree that it has become one of the 21st century's greatest challenges.

This paper addresses global food security in terms of (1) availability, (2) access, (3) utilization, and (4) stability of food. These are the dimensions that Food and Agriculture Organization of the United Nations (FAO) has established for the definition of food security. This paper also gives an overview of the recent Global Food Security Index (GFSI) created by the Economist Intelligence Unit (2013). It is observed that emerging countries play a significant role in global food availability and there is a need for international organizations, governments, academic institutions, private enterprises, and the population itself to work together in order to face the challenge of feeding the world.

Keywords: food security, emerging markets, dimensions of global food security

[ⓐ]Corresponding author

Definition and Metrics of Global Food Security

FAO provides a wide definition of global food security saying that it is a situation that “exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life” (FAO 2006). Under this definition the world will be “food secure” when every person in the world has continuous and sustainable access to enough and nutritious food. The ultimate goal is the eradication of world hunger and undernourishment.

Part of the complexity of measuring and achieving a state of global food security is due to its wide definition and scope. The scope of global food security includes every sector of the economy: agriculture, industry, and even services. Furthermore it encompasses social, environmental, and political dimensions. Throughout the years, there have been several approaches taken by public and private institutions for measuring food security within countries, regions, or even worldwide. The GFSI is one of the most recent tools for the measurement of the state of global food security. It has been created by the Economist Intelligence Unit (2013) and is constructed by 27 indicators (Table 1), which in conjunction, consider the core issues of affordability, availability, and quality of food across a set of 107 developing and developed countries.

Table 1. Indicators within the Global Food Security Index (GFSI)

1. Affordability		2. Quality and Safety		3. Availability	
1.1	Food consumption as a share of household expenditure	2.1	Sufficiency of supply	3.1	Diet diversification
1.2	Proportion of population under the global poverty line	2.1.1	Average food supply	3.2	Nutritional standards
1.3	Gross domestic product per head (PPP)	2.1.2	Dependency on chronic food aid	3.2.1	National dietary guidelines
1.4	Agricultural import tariffs	2.2	Public expenditure on agricultural R&D	3.2.2	National nutrition plan or strategy
1.5	Presence of food safety net programs	2.3	Agricultural infrastructure	3.2.3	Nutrition monitoring and surveillance
1.6	Access to financing for farmers	2.3.1	Existence of adequate crop storage facilities	3.3	Micronutrient availability
		2.3.2	Road infrastructure	3.3.1	Dietary availability of vitamin A
		2.3.3	Port infrastructure	3.3.2	Dietary availability of animal iron
		2.4	Volatility of agricultural production	3.3.3	Dietary availability of vegetal iron
		2.5	Political stability risk	3.4	Protein quality
		2.6	Corruption	3.5	Food Safety
		2.7	Urban absorption capacity	3.5.1	Agency to ensure the safety and health of food
				3.5.2	Percentage of population with access to potable water
				3.5.3	Presence of formal grocery sector

Source. <http://foodsecurityindex.eiu.com/Index>

The overall score for the GFSI is calculated from a simple weighted average of the evaluated indicators within the above mentioned three categories (affordability, availability, and quality of food), and scaled from 0-100, where 100 equals the most favorable (Economist 2013). On the GFSI calculated for the year 2013, North American countries are on the top, led by the United States, with a score of 86.8. In contrast, the Sub-Saharan African countries are markedly at the bottom of the index with an average of 32.9. Seventy percent of the 28 Sub-Saharan African countries are in the lowest quartile of the GFSI and only twenty nine percent are landlocked.

Dimensions of Food Security

As mentioned earlier, food security is a holistic concept that addresses a wide range of dimensions, including availability, access, utilization, and stability of food (FAO 2006). In terms of availability, in order for a country to achieve food security, the total food supply needs to equal its actual food demand, not only in quantitative but also in a qualitative way (variety, nutrient content, and safety). Food supply involves elements such as production, imports, exports, and also changes in national stocks. Similarly, demand involves the amount of food needed to feed, seed, manufacture, and the amount wasted to post harvest loss. Figure 1 shows the world current status of food supply in terms of kilocalories (kcal), per capita, per day. As is shown in this figure, the most food insecure countries are in Central Africa. Although, worldwide, per capita food supply rose from about 2,200 kcal/day in the early 1960s to more than 2,800 kcal/day in 2009, this per capita supply increase alone has not necessarily resulted in a reduction in hunger. This is because food insecurity is often the result of lack of access, poor ability to utilize food, and unstable conditions (FAO 2013).



Figure 1. World Status of Food Supply in kcal/capita/day (Average 1992-201)

Source. <http://faostat.fao.org/site/385/default.aspx>

Regarding food affordability, global food insecurity may not be caused by the unavailability of food, but by insufficient purchasing power, inappropriate distribution, or inadequate use of food

at the household level (FAO 2012). Similarly regarding the stability dimension, the principal constraints to guaranteeing a dietary minimum to everyone at all times rely also on social factors, such as rural-urban migration as well as changes in dietary habits, economic factors, including an increase or a decrease in household income, and environmental factors such as drought, floods, over-production, currency devaluation, etc.

The Role of Emerging Countries in Reducing Global Food Insecurity

Emerging countries have played a significant role in increasing global food availability in the past decade. As they have increased their agricultural production in order to meet their growing demand, fast increases in food supplies in emerging countries have raised concerns regarding social and environmental impacts.

From 2003 to 2012, the share of Brazil, Russia, India, China, and South Africa in the World GDP grew from 9% to 21%. China itself tripled its own contribution from 4% to 12%. Economic growth in these emerging countries in general has been strongly related with agricultural development (World Bank 2013).

Brazil produces most of the food it consumes; however, it imports the commodities in which it has a deficit, including wheat and rice. Brazilian rice imports are projected to increase 26%, to reach 43 kg per capita in 2018. In spite of this, Brazil is the largest world exporter of sugar (48%)¹, ethanol (40%), beef (18%), coffee (30%), and orange juice (39%), as well as the second largest exporter of soy beans (32%) and poultry meat (27%). The significant market share gain of Brazil in global trade of agricultural products is also reflected by the loss of market share by the U.S. (Valdes, Vidigal, and Rezende 2009).

Russia, another emerging market, during the 2000s, became a large agricultural importer, especially of meat and processed foods, and a major grain exporter, in reverse of its agricultural production and trade during the Soviet period. Similarly, India is now a net food grain exporter, ranking among the top three rice exporting countries (Gulati, Landes and Ganguly 2009). Nevertheless, it still periodically imports wheat. China is self-sufficient in most major commodities. After three decades of dietary change, consumption of traditional staple grains (wheat and rice) has stagnated (Henneberry and Gale 2009). China remains as an importer of soybeans, palm oil, and cassava beans, and is a leading exporter of garlic (FAO-STAT 2013).

South Africa's major imported commodity in 2012 was rice. The South African government plans to become one of the top 10 export producers of high-value agricultural products, such as wines, indigenous rooibos, and honey bush teas (GCIS 2013).

Despite the many commonalities between the BRICS countries, these countries have very different economic structures. Thus, in order to maintain their economic growth, governments, private industries, and firms need to foresee the transformation of BRICS in terms of the investments needed in infrastructure, education, and training.

1. Figures in parentheses reflect global market shares.

Conclusions

Food security is everyone's business. Therefore, analysis must include criteria from all relevant stakeholders; such as the international organizations, governments, academic institutions, the society, and the private sector.

Moreover, rather than focusing on poverty alleviation and the diminishment of undernourishment, the achievement of a state of global food security would also mean an increase in households' ability to purchase food, market access improvement, and possibly the redefinition of the food production system. Achievement of global food security would also involve the rupture of the vicious cycle of economic stagnation caused by low labor productivity as a consequence of poor access to food.

In the near future, achieving food security for the world population would require producing the kinds of foods that will ensure nutritional security. With the growth in per capita incomes in certain world regions, the demand for protein-rich foods is expected to increase. By and large, the shares of vegetables, fruits, meat, dairy, and fish in total food expenditure are expected to increase, while shares of grains and other staple crops are expected to decline (FAO 2009). It is important to mention that despite the anticipated food production growth in many countries, their dependence on international trade is expected to strengthen. This is because more open trade and WTO-supported reduction in trade barriers, will encourage specialization and exports according to the comparative advantage of each country.

Some emerging countries, such as China, have undergone significant increases in economic and agricultural growth. However the wealth and their food are unequally distributed. Therefore, economic growth does not always indicate a reduction of poverty and an increase in food security. Food security may be determined by the ability of each country to include the poorest population in the nation's development. This can be achieved by creating the proper infrastructure and providing the poor with new or better income opportunities and/or ways to reduce their financial constraints. Finally, despite the different environments and situations among regions, it can be stated that there is a global commitment to provide adequate, affordable and nutritious food.

References

- Economist Intelligence Unit. 2013. "Global food security index 2013: An annual measure of the state of global food security." Online: <http://foodsecurityindex.eiu.com/Index>. [Accessed September 7, 2013]
- Food and Agriculture Organization of the United Nations (FAO). 2006. "Food Security.*Policy Brief*. 2(June):1-4. Online: ftp://ftp.fao.org/es/ESA/policybriefs/pb_02.pdf. [Accessed September 9, 2013]

- Food and Agriculture Organization of the United Nations (FAO). 2013. "FAO Statistical Yearbook 2013." Online: <http://www.fao.org/docrep/018/i3107e/i3107e.PDF> [Accessed September 9, 2013]
- Food and Agriculture Organization of the United Nations (FAO). 2009. "How to feed the world 2050." Online: http://www.fao.org/fileadmin/templates/wsfs/docs/expert_paper/How_to_Feed_the_World_in_2050.pdf. [Accessed September 30, 2013]
- Food and Agriculture Organization of the United Nations Statistics (FAO-STAT). 2013. "Exports: Commodities by country." Online: <http://faostat.fao.org/site/385/default.aspx>. [Accessed September 30, 2013]
- Food and Agriculture Organization of the United Nations Statistics (FAO-STAT). 2013. "Imports: Commodities by country." Online: <http://faostat.fao.org/site/385/default.aspx>. [Accessed September 30, 2013]
- Food and Agriculture Organization of the United Nations (FAO), WFP, and IFAD. (2012). "The State of Food Insecurity in the World 2012. Economic growth is necessary but not sufficient to accelerate reduction of hunger and malnutrition." Online: <http://www.fao.org/docrep/018/i3434e/i3434e.pdf>. [Accessed September 30, 2013]
- Government Communication and Information System (GCIS). 2013. "South Africa Yearbook 2012/13." <http://www.southafrica.info/business/economy/sectors/agricultural-sector.htm#UjN60cakrpU>. [Accessed September 29, 2013]
- Gulati, A., M.R. Landes, and K. Ganguly. 2009. "Indian Agriculture: Managing Growth with Equity." *Choices* 24(2): 42-46.
- Henneberry, S. and F. Gale. 2009. Markets Adapt to China's Changing Diet. *Choices* 24(2): 32-36.
- Valdes C., I. Vidigal, and M. de Rezende. 2009. Brazil's Changing Food Demand Challenges the Farm Sector. *Choices* 24(2): 52-56
- World Bank. (2013). World development indicators. Online: <http://data.worldbank.org/indicator/NY.GDP.MKTP.CD>. [Accessed September 10, 2013]