



Overview of Food Security

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Introduction

Global climate change, frequent natural disasters and increasing cost of oil have severely affected agricultural production. These affect farmers' desire to sustain farming business directly. For the long term perspective, this volatility drastically affects global agri-business at a much more complex level such as: the level of food production which supports both domestic and export, the balance of demand-supply and the stability of market. For the developing countries, the growing economy and increasing income level will drive the structural and demand change of food consumption, and improve the quality demand of food. All these add more pressure to the food demand-supply balance globally. Food security has become a critical subject for many. The Food and Agriculture Organization of the United Nations (FAO), World Food Programme (WFP), The World Bank, International Monetary Fund (IMF), and International Food Policy Research Institute (IFPRI) have openly urged governments to address this critical issue and to come up with solutions before it is too late.

In the past few years, the price of grains has been escalated internationally. Many countries have set controls (taxation and quota) for grain exportation in order to stabilize and sustain their internal needs. These forms of control obviously add pressure for Taiwan, which imports many different types of grains. To ensure Taiwan has sufficient food supply and at a reasonable cost, food security has become a critical agricultural policy objective.

During January 2011, a conference entitled 'Nation-wide Agriculture and Land' was organized by the Council of Agriculture. Among the 12 unanimous recognized subjects, three were related to food security:

- a) Increase the rate of self-sufficiency and ensure food supply;
- b) Outline internationally conformed direct payment measures and guide the agricultural structural change;
- c) Expand the nurturing of premium land, secure required resources, strengthen management mechanism of agricultural land and maintain operational environment of premium agri-business.

Several months later, in May 2011, a summit was called to address the 'Nation-wide Food Security', and participants from industry experts, government officers, and scholars drafted the outline of practical strategies and measures for Taiwan to address the issue of food security.

The change of food self-sufficiency of Taiwan

Food is the source of energy for humans. It is the most basic vital element to maintain lives, and create stability in practically, all its aspects: political; economic and social. Food self-sufficiency is an index to measure food security which is a condition related to the ongoing availability of food, it is a ratio between supply and demand for a specific time frame. This ratio can be used to measure agricultural production condition of a nation. For example: maintaining a stable inventory level of food, means that a low rate of self-sufficiency reflects a total quantity of food consisting of a lower agricultural production volume and a higher imported food volume.

Based on the data, annual report of Food Supply and Demand from COA, two “weights” have been added for the rate calculations, these weights provide different insights into Taiwan’s food self-sufficiency.

- Using calories as the weight to calculate the self-sufficiency rate, the rate for combined foods has declined from 1985 56.1% to 1995 37.3%, to 2005 30.2% which reached the bottom level of the whole period, then slightly increased to 2010 31.3%
- Using pricing as weight to calculate the self-sufficiency rate, the rate for combined foods has declined from 1985 88.0% to 1995 84.9%, to 2005 74.0%, then to 2010 67.9%

Table 1: Food self-sufficiency rate of Taiwan

	<i>Unit: %</i>	
Year	Calories weighted	Price weighted
1985	56.1	88.0
1990	43.1	88.2
1995	37.3	84.9
2000	35.4	79.7
2005	30.2	74.0
2010	31.3	67.9

Source: Annual report of food supply and demand

In the past two decades, regardless of weight for calculating the trend of food self-sufficiency, the rate has declined. However, examining the trends closely, the difference can be identified at different time frames between the two weighted calculated self-sufficiency rates in the past two decades. For example: during the late 1980s, the calories weighted rate has declined significantly, but the price weighted rate did not change much, this was caused by the changes of pricing for domestic and imported foods. For the past ten years, the calories weighted rate has declined gradually, but the price weighted rate had declined sharply. This was caused by the increasing cost of imported foods which negatively influenced the calculation of self-sufficiency rate. Calculation of calories weighted self-sufficiency rate can be influenced by structural change of agricultural production and food consumption and cannot be influenced by pricing changes.

Fig. 1 below shows the change of food self-sufficiency rate for Taiwan since 1985. For the past two decades, both lines ‘calories as a weight’ and ‘pricing as weight’ show a declining trend. The declining trend was influenced by the rapid economic development and increase of income, both domestically and globally.

Domestically, the food consumption and demand structure have been changed quietly under the rapid economic development due to the changing of lifestyles, the rising of consumption standards, and the changing preferences of food demand; at the same time, the domestic farming land has been shrinking, decline of farming activities, and the slow response to farming production based on changes in food consumption.

Globally, with free trade, fast economic growth and globalization, administration has expanded agricultural import which also modified the consumption and demand market structure.

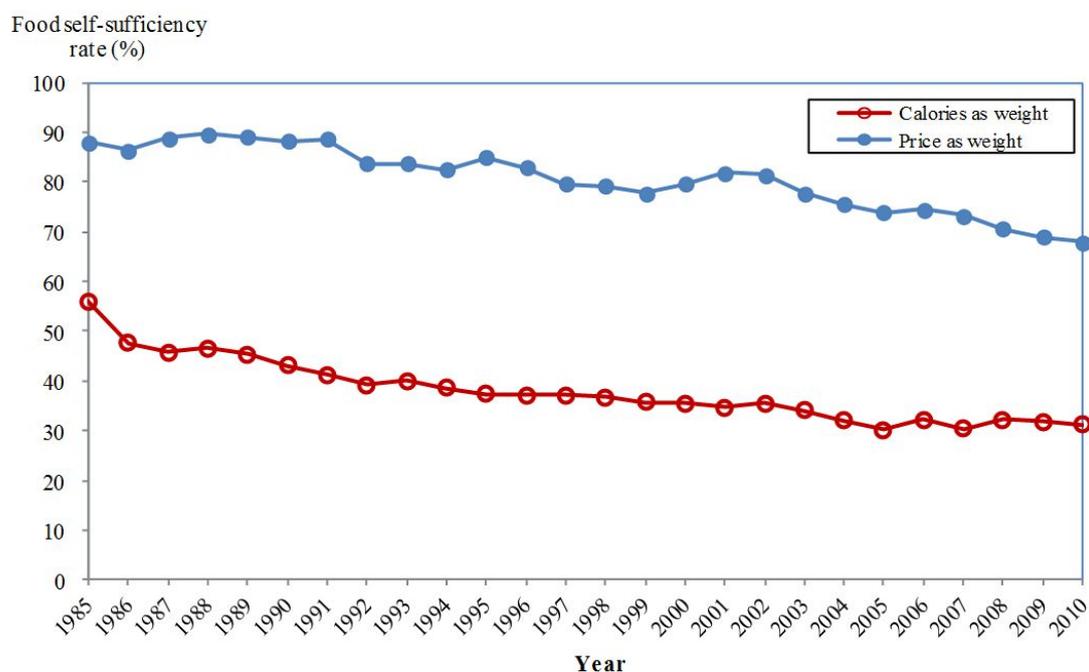


Fig. 1 The change of food self-sufficiency rate of Taiwan

Structural change of food consumption in Taiwan

The most significant influence factor amongst the many influence factors, which drove the structural change of food consumption, and subsequently influenced the declining of food self-sufficiency rate, is the food preference change, particularly the westernized food preference. Based on the following data in Fig. 2, compiled from annual report of Food Supply and Demand published by COA, the structural changes in the past two decades can be easily traced:

- a. The available foods for consumers, at per consumer and per year basis, 1985 was 537 kg, which gradually increased to 2000, then reduced to 2010 570 kg.
- b. Grains consumption changed from 1985 110 kg to 2010 89 kg, at the same time rice has decreased from 80 kg to 48 kg.
- c. Meat consumption changed from 1985 56 kg to 2010 77kg.
- d. Dairy products consumption changed from 1985 8 kg to 2010 23kg.

e. Oil products consumption changed from 1985 15 kg to 2010 23 kg. Rice has been a key agricultural product in Taiwan, but consumption has declined; consumption of meat, dairy and oil products have increased, and importation has been the key source of these foods. Both have negatively influenced Taiwan's food self-sufficiency rate.

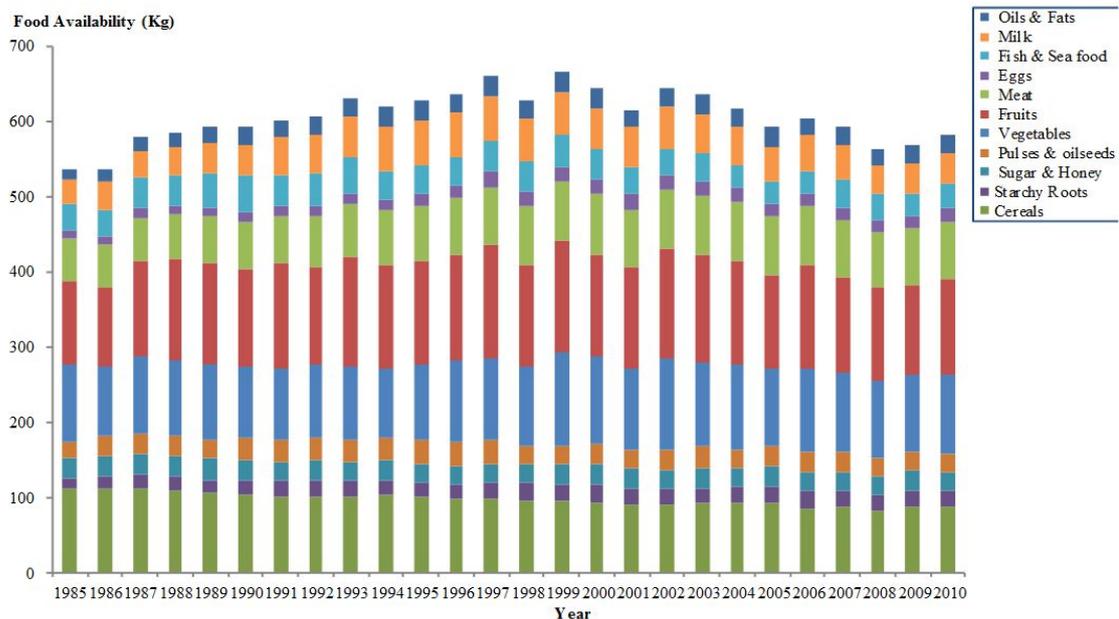


Fig. 2. Food availability of 11 food categories in Taiwan

Food security measures in Taiwan

Taiwan has deployed several measures to stabilize domestic food production, ensure ample supplies and satisfy consumers' needs in the past decades.

A. Domestic production

Key focus centers on the economic support to encourage agricultural production, expansion and effective utilization of land.

- Guarantee prices for rice to encourage stable production
- Utilization between paddy and dry land, rotate crops and contract out to increase production
- Reuse idled land with feed corn, mixed grains, substitute and imported crops to increase production
- Deploy 'Small Land, Big Tenant' to expand operation and increase production

B. Domestic consumption

- Effort to promote rice consumption and educational programs for school children
- R&D on rice and associated products to replace wheat products
- Competition of the top ten premium rice products to promote rice consumption

C. Food safe stock and reservations

- Develop safe stock standards and related measures to ensure safe stock of 3

months consumption needs

- Organize summer vegetables rolling warehouse operation as “first in, first out” program
- Organize food safety and storage operation to handle aftermath of natural disasters; and provide reduced-price lunch for school children at schools

D. Management measures for rice exportation

- April 29, 2008 – control on pricing for rice exports
- 2009 – control on pricing, quantity and quality for rice exports
- August 2010 to December 2010 – control on total quantity of rice exports for 10,000 tons
- November 2010 to June 2011 – control on total quantity of rice exports for 30,000 tons
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Future food security directional policy for Taiwan

The world Food Summits was convened by the Food and Agriculture Organization of the United Nations. The World Food Summit took place in Rome, Italy between 13 and 17 November 1996. This resulted in the adoption of the Rome Declaration on World Food Security in which member countries stated the right of everyone to have access to safe and nutritious food, consistent with the right to adequate food and the fundamental right of everyone to be free from hunger; it also defined food security as ‘*all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life*’; this definition has three important meanings: 1) food availability; 2) food stability and 3) food accessibility. To ensure ample food supplies, there has to be complete storage systems, and risk reduction activities when managing food security. These are inevitable responsibilities of the administration, and an important aspect of ensuring food security.

The future policy directions for food security in Taiwan have been based on the outcomes of May 2011, ‘Nation-wide Food Security’ summit. Policies, strategies and proposals have been drafted and implemented to support nationwide food security endeavor.

A. Increase rate of food self-sufficiency

- To ensure Taiwan’s food security, based on the global situation, trade regulation, domestic production condition and consumption structure, the target of 40% food self-sufficiency was established for 2020.
- Maximize land usage for agricultural production to support 40% self-sufficiency rate by revitalizing 14,000 hectares of idle land, promoting specialty crop farming land and premium land, encouraging growing of feed corn, mixed grains, and commercializing and industrializing farming operations.
- Adjust reward system of rotational production, expand crop categories, import substitute crops, and enhance reward for production.
- Develop safe and healthy new agri-products for consumption and replace imported products, deepen consumer education and interactions, share responsibilities of the risk and cost of food self-sufficiency, establish origin of

product label , promote ‘Local Consumption with Local Production’, encourage buy domestic products, increase production of non-genetically modified foods (non GM foods); modify dietary structure for a balanced meal and reduce imported foods.

- B. Develop “boundary-less” safeguard system for food security by managing the sources of food importation, strengthening agricultural investments and cooperation domestically and internationally
- Protect and diversify sources of food importation, seek for replacements of imported foods, provide tax benefits for return of exported foods and imported foods
 - Consider incorporating with government organized foreign assistance plans, foreign agricultural investments, obtaining capital injection and providing loan with low interest rate.
 - Strengthen international cooperation and establish reservation mechanisms for regional food storage in order to achieve “boundary-less” safeguard net for food security.
- C. Establish management system of food security classification and reservation mechanisms, manage inventory
- Establish risk management system to identify food security related issues, develop food security classification system based on its importance, its inventory level, pricing, calories provided and associated solutions when risk is identified.
 - Provide high quality storage systems, manage inventory and safe stock level, and develop mechanisms for civilian storage systems.
 - Promote ‘Food Bank’ charity to support underprivileged citizens.
- D. Increase efficiency of water and land usage, maintain required resources for premium land
- Ensure total hectare of premium land, cross ministry and departmental coordination for land management, establish policies to support land nurturing, farming land requirement incorporation into nationwide land management, classify farming land and protect premium land.
 - Ensure tight control of zoning change of farming land, prioritize maintenance of specialty agricultural zone and premium land, investigate and penalize violation of farming land usage.
 - Prioritize resource allocation for large size farming land, premium land and specialty farming land, establish safe production model for core products, combine industry assistance and farming community rejuvenation, develop superior agricultural operation and living environment.
 - Maintain proper irrigation, increase agricultural reservoirs and facilities, develop state of art irrigation system, and promote effective use of irrigation system.
 - Maintain, monitor and create an alarm system for water quality, promote separation of input/output of water system, enhance control of and soil to ensure product safety.

Conclusion

For the past few years, food prices have been escalating which became an important food security subject for many countries, even without the presence of war. But the fear of food security has heightened. Food self-sufficiency is one of the indices to measure food security, the higher the rate, the higher security. Ensure a high self-sufficiency rate and maintain proper agricultural production which provides opportunity to reduce the unforeseen risks or temporary global food shortage, and stabilize the society by reducing the insecurity of food shortage.

It is one of the agricultural objectives of Taiwan to increase the self-sufficiency rate and security of food. For 2020, the target has been set to have 40% of food self-sufficiency rate for Taiwan. To provide ample food supplies for its citizens and achieve this target, the traditional rice focused policy has been expanded to a holistic strategic approach to address food security and sufficiency. In the future, Taiwan's policy deployment needs to escalate policy reform to increase competitiveness of intensive land-use agricultural production, and promote the demand of domestic products; to develop regulations, establish a holistic safe stock and reservation system, and implement a close monitoring mechanism to ensure food security.

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Date submitted: February 13, 2014

Reviewed, edited and uploaded: February 17, 2014