

# The national food economic security mechanism research

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**Abstract** - Who controls the food, who control the human. Different dynasties of China follows the kingdom to people for this, the food is what matters to the people, food to Ann first "value. Three contradictions in the food of the most outstanding performance: one is, the production is not stable and relatively stable demand contradiction; The second is, seasonal production and perennial demand contradiction; The third is, small-scale production and big market contradictions. Three contradictions of the objective existence, determines the characteristics of the weak grain. Especially in the background of the market, the food weak characteristic be amplified, and formed a "web effect". Because food supply price elasticity is greater than the demand price elasticity, and farmers' price information exists hysteresis quality, this is a kind of time information asymmetry, so, food production and price is always fluctuating and fluctuation range is bigger and bigger, like a radiation type of the web. Food cyclical fluctuation feature is apparent, and food production is not only natural reproduction and economic reproduction process. As public products, food irreplaceable, food security is the irreplaceable property requirements.

Food safety is the basis of national economic security, the western countries provide us some revelation, China's grain macro-control mechanism goal seven levels, seven big target, this paper mainly studies the food economic security system, mechanism and system.

**Keywords** - Grain Economy Macroeconomic Regulation and Control Mechanism; Economic Security; Economic Security

## 1. Introduction

China's grain macro-control mechanism is to follow the food economic law, with the national food security as the foundation, the food economy structure adjustment as power, based on production and supply balance, trade and consumption balance, price and social grain total cost balance, grain reserves and the retaining rate balance four as the key point, establish and perfect the food security is the core of the production, processing, trade, reserve, consumption for control system, perfect the government macroeconomic regulation and control of the market, protect the food producers and consumers' vital interests, early warning and solving the international and domestic food crisis and risk, maintain food markets continue to stability and promote national economic security of food.

Grain macro-control operation mechanism is the regulation of the target, the main body of the control, regulation and control tools and control system composed of four parts. Grain macro-control operation mechanism is the direct subsidy, price support, income security, infrastructure and public service five policy formation.

Grain macro-control system to regulate the construction of China's grain market order, and improve

the efficiency of grain circulation, ensure food supply, achieve food security and promote the coordinated development of the economy and society has a very important role. The market mechanism is to promote the efficient allocation of resources mechanism, but the lack of necessary to control the simple market regulation is caused extremely easily grain supply and demand fluctuation and the market is not stable, thus affecting food security. To ensure food security and social harmony and stability, in pay attention to the role of market mechanism, and at the same time try to construct the grain macro-control system, and the effect to the international market competition.

Grain problem involves groups of different interests, different interest groups have different goals. Certain mechanism can only solve some of the most basic goal, could not satisfy all the goals. China's grain macro-control mechanism basic goal seven levels, seven big goals: the first level of target is food economic security; The second level is the goal of the grain market; The third level is the goal of food stability; The fourth level goal is to minimize the government financial burden. The fifth level of objective is to protect the farmer benefit, and the sixth level goal is to food industry development; and the seventh level of target is the effective operating of the grain enterprises.

Market regulation food prices is the objective requirement of the economic law, according to the general principles of economics, commodity price is determined by the market supply and demand the power of the two aspects of the decision. When supply exceeds demand, prices; On the other hand, when the supply falls short of demand, prices; when supply and demand balance between two aspects, then formed the equilibrium price. Food price decision cannot escape the general rules. When the food supply or demand change, food prices will change.

Food security is the national grain macroeconomic regulation and control mechanism of the foundation, according to the food safety system of pure public goods attribute, the government in ensuring food safety responsibility is divided into crisis management responsibility and conventional control responsibility, food safety crisis management, the government should take full responsibility for the conventional control on the basis of market regulation, the timely intervention. The government food crisis management the main obligation is to deal with serious natural disasters, war, international blockade and epidemic disease, rumors and very events caused grain market excessive fluctuation or buying a food safety problem of emergency disposal responsibility.

Grain macro-control policy in any country, agriculture and macroeconomic policy has an important position. The international food types of macroeconomic regulation and control in general can be divided into three kinds: in total amount control and income support for features, with high protection by national characteristics and acquisition based management type. The United States, Europe, Japan and other countries and regions in the implementation of price support, direct subsidies, reserve regulation, legal protection, trade promotion, information service and other food in the macroeconomic regulation and control policy has accumulated rich experience, regulation and control mechanism comprehensively, mature, control means is complete, effective, to perfect China's grain macro-control policy has certain reference significance.

## 2. Methodology

Grain problem involves groups of different interests, different interest groups have different goals. China's grain macro-control mechanism basic goal seven levels, seven big goal: the first level of target is food economic security; The second level is the goal of the grain market; The third level is the goal of food stability; The fourth level goal is to minimize the government financial burden. The fifth level of objective is to protect the farmer benefit, The sixth level goal is to food industry development; The seventh level of target is the effective operating of the grain enterprises.

### 2.1. The world's major national grain macro-control mechanism to our enlightenment

Grain macroeconomic regulation and control mechanism of the core is to perfect the macroeconomic

regulation and control mechanism. By price support policy, protect domestic food producers benefit. Implementation of appropriate government financial subsidies, and promote the coordinated development of grain production and circulation.

The food trade protection policy, maintain the stability of the domestic grain market. Using legislation, to ensure that food the realization of the macroeconomic regulation and control policy.

### 2.2. The difficulty of macroeconomic regulation and control mechanism is to establish the macroeconomic regulation and control mode

China's grain macro-control mechanism must be built on the basis of market allocation of resources, improve the market price formation mechanism.

For Chinese grain macro-control policy must be proceeding from China's actual conditions, give full consideration to protect grain farmers interests and to ensure the national food security, and correctly deal with the relationship between the well-off society and rural.

China's grain macroeconomic regulation and control policy implementation, must adapt to the country's financial status, give consideration to the interests of all the interests of the subject.

### 2.3. Macroeconomic regulation and control mechanism is the focus of the formation of food pricing mechanism

Market pricing mechanism. The government pricing mechanism as a whole. The macroeconomic regulation and control pricing mechanism.

### 2.4. Macroeconomic regulation and control mechanism of the end-result is the national food security. Realize farmers get rich, gap in relation to the success or failure of modernization.

## 3. The food price formation mechanism

### 3.1. The formation of the food prices to the market as the basis

Under the condition of market economy, this is the objective requirement of the rules of market economy; Market regulation food prices can promote grain production technology progress. Market regulation food prices, price fluctuates up and down, to regulate the market supply and demand to relative balance of supply and demand.

### 3.2. Market regulation food prices is helpful to guide the production, planting structure adjustment. Market regulation food prices to guide consumption, avoid the waste of resources

Will trade compliance index, grain price index, food

quality level index, grain reserve quantity index, food consumption level index, food production index, grain logistics index, food safety level index as monitoring and

control indicators, establish and improve China's grain price belt system. See figure 1.

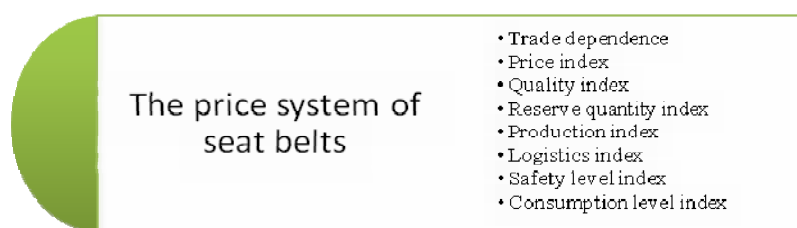


Fig. 1 Food prices seat belt system

### 3.3. To establish risk prevention mechanism of grain circulation

The food trade safety problem is an objective existence, as trade compliance degree rise, food

insecurity, a higher level. Food trade unsafe problem exists, force us to make agricultural products trade policy, must from the place of the international environment start, set up effective risk prevention mechanism. See figure 2.

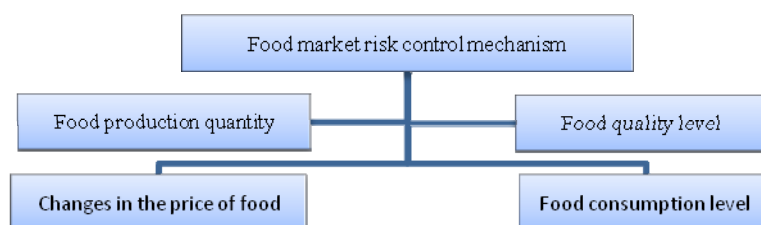


Fig. 2 Food trade risk prevention mechanism

## 4. Results

### 4.1. Food security mechanism is the core of the grain macro-control mechanism

#### 4.1.1. Population and grain relationship

As a kind of resources are scarce, its price will rise, inhibit its demand, prices lead to develop this resource technology progress, finally some resources supply and demand balance.

The ups and downs of the food prices has its own rules: endogenous, relevance than effect. The rise in the cost of food production, the market natural endogenous price, Soybean prices, causing wheat, corn, rice prices rise associated; The comparison of the grain benefits rise, farmers have no enthusiasm, comparative benefits, farmers will not grain; Grain supply and demand have relevance once China's grain supplies, the world resources abundant not where. Food is the requisite of the life, the price elasticity is small, the food if prices, people to their demand will not be reduced a lot, if price cut, people to their demand does not increase much. Food is the social base price, even the price of food.

#### 4.1.2. Population, cultivated land and grain does not balance between

With the urbanization way, raise people birth of child rearing cost and opportunity cost, restrain population growth; With the urbanization way concentrated population, enterprise, market, infrastructure, etc., to

reduce the development of dispersion caused by the waste land, to save the more land. Due to the transfer of surplus labor force, the agricultural labor productivity, improve agricultural scale management, agricultural production is greatly increased.

#### 4.1.3. Countries, regions and region between talent resources are different

Many people and little land country, avoid less land and scarce disadvantage, will land allocation to a higher income industries and departments, give full play to the advantage of cheap labor and production, labor intensive products; To many people less countries, is to avoid labor and less expensive disadvantage, large-scale use of land, grain output, more than the less disadvantages in exchange transfer into advantages; In international trade, many people and little land country with labor intensive sex products for food products import export, less many countries agricultural products in their own country for the production of the high cost of labor force, the two sides of the products in international trade have been interest.

#### 4.1.4. International food resources and food security

Food security is the most basic index per person a day life need 1 kg of grain. The world food market is not China reliable granary, each year 1.3 billion people need to consume 490 million tons of food a year, the world grain market total supply only for 236 million tons. The world food market is perfectly competitive markets, with

export for it countries government subsidies of agricultural products, the economy is economical.

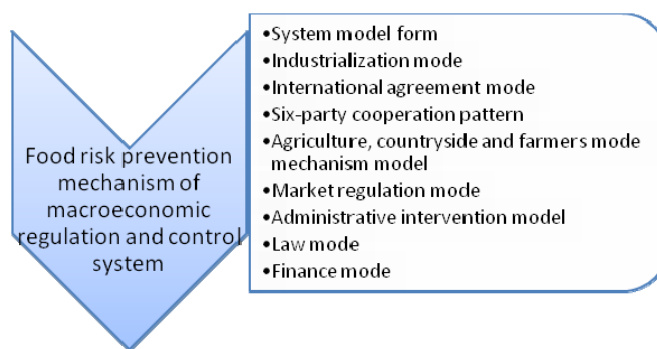
Engel coefficient research tells us: when social per capita reached \$2000, people on food and food spending accounts for the proportion of the total change, already approach is equal to zero, food and food spending relative stability.

## 4.2. Food risk prevention mechanism design

Risk prevention is an important link in the food safety system, the role of the safety system depends on each link synergy. The risk control mechanism to eliminate or reduce the risk and save the day and even turn for good, with minimal loss of efficiency as the premise, formulate strategy, plan, plan, organization system. The pursuit of a certain safety level is the minimum efficiency loss or a certain efficiency loss the maximum safety level. Risk prevention mechanism using economic and legal means, use "six-party cooperation + insurance" mode, the farmers no this boot, reduce administrative intervention. (note: "six party cooperation" refers to financial

institutions, guarantee, feed processing enterprise, livestock breeding station, farmers association (or professional cooperatives) and meat processing the cooperation between enterprises, "insurance" refers to agricultural insurance.

The risk control mechanism should be consistent with the international multilateral agreements, pay attention to influence the food supply and import ability factor control, will trade compliance index, grain price index, food quality level index, grain reserve quantity index, food consumption level index, food production index, grain logistics index, food safety level index as monitoring and control indicators, establish and perfect the system of food prices, seat belt use food security index early warning model, food safety early warning model, food security early warning model, make risk prevention mechanism and food import and export scale, marketing, production, circulation and consumption regulation coordination, market regulation and administrative intervention, and give full play to the coordination of the food safety regulation system service function. See figure 3.



**Fig. 3** Food risk prevention macroeconomic regulation and control mode of the system and mechanism

## 4.3. Grain macro-control mechanism design

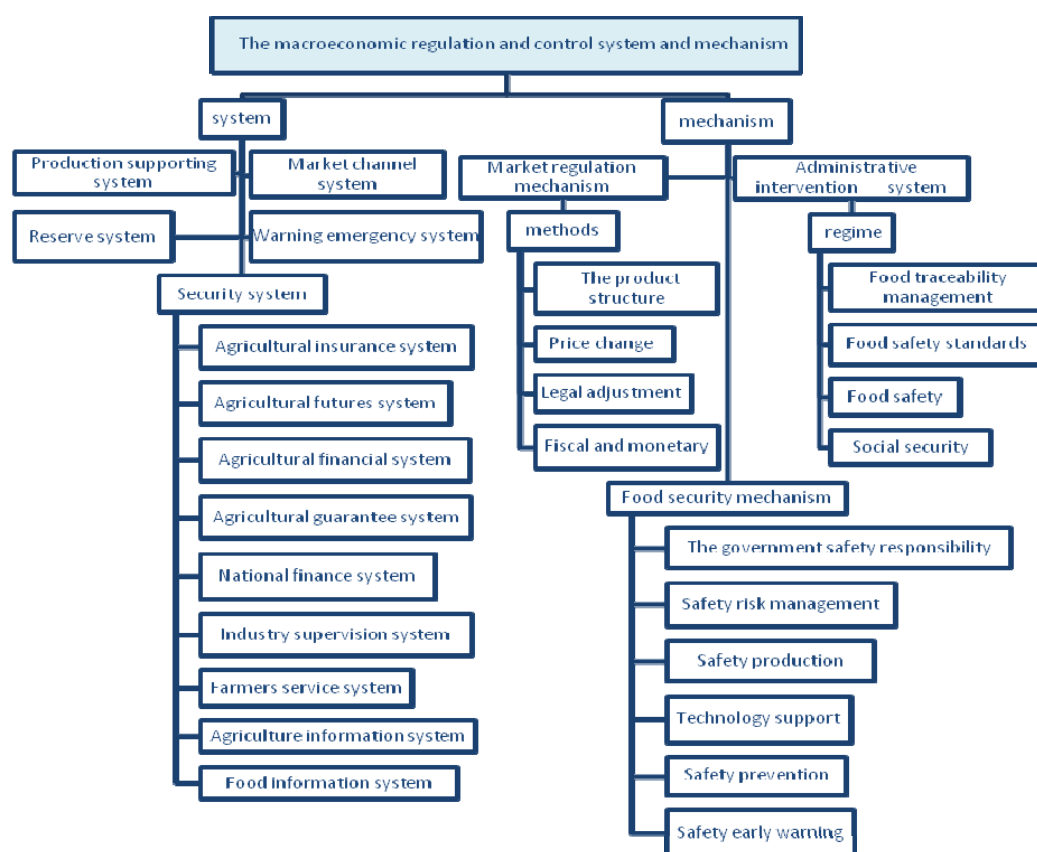


Fig. 4 Grain macro-control system and mechanism of the system, regime

#### 4.4. Food safety regulation mechanism

##### 4.4.1. Government on food safety responsibility mechanism

Governments at all levels responsibility system,

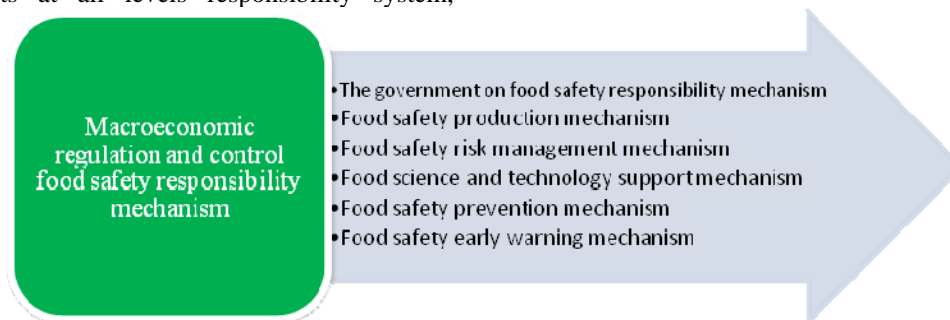


Fig. 5 National macroeconomic regulation and control food safety responsibility mechanism

##### 4.4.2. Food safety risk management mechanism

The internal control system: control the bad environment, risk assessment process, control activities, information communication, monitoring.

Risk management: internal bad environment, the goal set, event identification, risk assessment, risk response, control activities, information communication, monitoring.

Methods: risk link analysis, risk response and control, control activities and risk communication, monitoring risk management.

security personnel responsibility, work appraisal system, the scale of administrative management (province, city, county food administration). Food industry association, the intermediary organization construction (instruction, development, self-discipline). Figure 5.

The internal control system construction: the compliance culture construction, financial accounting system standard, effective compliance risk management analysis and evaluation mechanism, ensure the compliance risk management goal the realization, right side training, business inspection and supervision, system construction violations.

##### 4.4.3. Food safety regulation mechanism of production safety mechanism

Establishing agricultural products quality cheap, advocating green organic agricultural production

mechanism.

Development order agriculture, agricultural industrialization development horizontal type, production safety foundation. Agricultural capital operation system construction, farmers into "labor + land + agricultural technology" and

the "social purchase + pin + adjustable + deposit + add + logistics + consumption" of the whole capital operation system. Agricultural products and food production socialization division of labor and appreciation value chain (industrial chain) food economic structure optimization of power.

Food safety regulation mechanism of production safety system index.

Production safety level system: the lowest per capita 400 kilograms of food safety level.

Decentralized system: national grain reserves (safety 17-18%), the provincial food reserves (safety 35%), municipal grain reserves (reserve demand of 17-18%) of the food economic security level.

Cultivated land protection system: the country has the lowest 0.8 mu per arable land;

Food production security system: consumption maintain at 95%;

Food production emergency mechanism: output fluctuation range plus or minus 7% (without reserve half and consumption 7%)

#### **4.4.4. Food safety regulation and control mechanism of the science and technology support mechanism**

In 2011 the "agriculture, countryside and farmers" into the first break of one trillion Yuan, a year-on-year increase of 21.3%. Input in grain production of 498.5 billion, the central government will continue to increase the benefit rich peasants policy dynamics, enhance the comprehensive agricultural production capacity, increase farmers' production and operating income and salary income. Will be built stable growth year after year of agricultural science and technology input mechanism, agricultural science and technology is the focus of the breeding research and extension of agricultural machinery. Improve the technology and equipment level, and improve the contribution of science and technology. Promote the use of new technology to improve the yield level and improve food quality, to promote food industry development, improve the degree of organization of grain production.

The establishment of a national financial almighty science and technology support system: each year food science and technology input spending accounts for the central agricultural and food spending accounts for to 8-10% a year, producing countries to increase food production 5 million tons of food results. Ensure that resist food risk, the central government has the ability to control grain market.

#### **4.4.5. Food safety regulation mechanism of food safety early warning mechanism**

Based on the monitoring of food safety hidden trouble, tracking and quantitative analysis, information

bulletin forecast, set up a food safety problems in the function of the system, the potential food safety problems timely warning, so as to achieve the early prevention and control food safety events, as to minimize loss, change after process to achieve the purpose of warning. Use a small amount of money to prevention, and not spend a lot of money treatment, building an overall system.

#### **4.4.6. Food safety regulation mechanism of food safety prevention mechanism**

Reduce food safety events induced factors, let management team can move dynamic. Master influence food safety related information, and then puts forward the early warning, the establishment of the national level administrative institutions, from the source to prevent the occurrence of food safety. Our country food and drug supervision and administration under the ministry of health, considering a future national food safety commission, permissible but food safety supervision and inspection work, straighten out the agriculture, industry and commerce, business, import and export, food work relationship, function relationship, coordination management, information sharing. National, provincial and municipal bureau is food and enterprise problems and related matters, to provide independent advice, analysis of potential risk all information, supervision and the whole area food and food chain safety condition, forecast emergency risk, tracking rapid response mechanism, stop the risk to the public, to provide the authority within the scope of the all the information. The establishment of a food safety laws and regulations, covers "from the field to the table" the main food chain management.

#### **4.5. Food safety regulation and control mechanism of the management system**

##### **4.5.1. Food safety regulation mechanism of food traceability management system**

The requirements in the food supply chain in a processing centers, to their own product identification, collection processing of raw materials have been identification information, will all information identification in the processing of the products, by the use of a processor or consumers.

##### **4.5.2. Food safety regulation mechanism of food safety standard system**

Heavy metals, pesticides, veterinary drug residues, food additives, food transport standard, the standard sales standard. Food labeling system: food producers, food content, storage method. The food recall system: constitute risk products, beverage has listed, immediately take measures to recall. Technical mastery: test equipment and instruments, personnel technical level.

##### **4.5.3. Food safety regulation mechanism of food safety system**

From the field to the table food safety supply chain, the whole process, all objects quality control measures as the core, all aspects of information system control and power according to the tracking as the means, comprehensive use of various means and resources to the fields of green base, food production, processing,

packing, storage, transportation and distribution, the related sales, education, scientific research combined. To form a perfect nuisanceless quality food ltd. is and management system, still should realize economic, social, ecological and harmonious development of science and technology of food safety engineering.

**Tab.1** The whole industry chain food grain macroeconomic regulation control mechanism of economic policies and measures

The equilibrium of supply and demand of food source	Basic farmland, agricultural facilities, financial investment in science and technology, and subsidies, the comprehensive production capacity, production and marketing cooperation, the grain production base, the international competition.
Market system construction	Diversified market main body, market circulation system, food management, service and supervision system, the food market system.
The government macroeconomic regulation and control	Administrative monitoring, early warning system, reserve system and operation mechanism. Reserve stock control system (to be able to control the market demand) food risk fund system, economic scale and risk management measures, food purchasing and selling price intervention system, emergency system, low-income class food supply security.
Food law system construction	The administrative law enforcement level, safety regulations, quality health standard.

#### 4.6. Food safety regulation and control mechanism of the social security system

The support of the food production, food consumption safeguard, the market main body, market system, market structure, market rules, food producers of the social security system, capital and laborer established between balance mechanism, social responsibility and risk sharing aspects of capital raising of responsibility, the elimination of urban and rural system security, registered permanent residence, land system and personal insurance account, employment social security, children education, public service, social welfare.

Low-income families and individuals food shortages, the food security problem comes from the low level of

technology, resources relative shortage, social distribution system, increase the low-income class food supply ability, solve the survival and the problem of food and clothing to promote food security.

## 5. Discussion

Food security mechanism is game theory and social choice theory of comprehensive utilization, if the principal and agent maintain long-term cooperation relations, so, pareto first order optimal risk sharing and incentive can be realized.

Perfect the national food safety regulation mechanism of economic system, see table 2.

**Tab.2** National food security macroeconomic regulation and control system and content

Production supporting system	Cultivated land protection, food production security, food production emergency mechanism, scientific support mechanism, financial all-around support mechanism.
Market channel system	Unified open competition order food market system. Diversification of market. The state-owned grain enterprises leading role. The international grain market share.
Reserve regulation system	The government reserve scale. Improve the structure of grain varieties grown. Grain depot rectification. grain enterprises management system and supporting system. Food safety emergency plan.
Safety warning emergency system	Emergency organization system (functions and powers, obligations). Warning structure system. Food safety information (collection, release, analysis system) change.

## 6. Conclusions

Healthy food economic security the macroeconomic regulation and control methods: price support, according to the market situation of supply and demand for food prices. Direct subsidies to farmers direct subsidies are

the subject of "blue box" and "yellow box" policy subsidies. Reserve adjustment, a country sourcing, through the regulations for effective management and supervision. Legal protection, regulating food management, protect the food producer interest, and promoting the orderly circulation of food. Trade



promotion, the agricultural product export as the focus of the government's support agriculture. Information services, the establishment of a food market information release system. Science and technology education investment, and economic strength to achieve the level of the relative said.

## Acknowledgment

The nature of the food security is that it supply stability and self, it is the existence of the law of value, determine the food itself is not safe. Food security is a super economic category, and the reasons lies in food as an economic category market characteristics, that is a very low price elasticity of demand and supply price elasticity. The basic necessities of food quality decides the low elasticity of demand, grain production of long term nature lead to closed economies in the short term is difficult to increase the quantity supplied, caused the low elasticity of supply. The problem of food security policy nature is to reduce the grain supply and demand price elasticity. According to the national food security long-term planning outline our country food security standard.

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## Vitae



Dr Feng zhiqiang, was born in 1962-10. He obtained a Master of economics degree in economy management in economy department from WUHAN University.

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