

The political dimension of agricultural markets information: views from within China

Marie-Hélène Schwoob (IDDRI)

BETTER AGRICULTURAL DATA: FOR WHAT?

A public statistical system providing accurate data on Chinese agricultural markets is necessary both for China to monitor the efficiency of its agricultural support and to improve the governance of global food security.

FAILINGS IN THE CHINESE STATISTICAL SYSTEM

The Chinese current statistical system faces important failings that prevent it from gathering accurate data, which severely affects both public and private players. The causes for these failings are rooted in the cadres evaluation scheme, in the level of decentralization of the government, in the fragmentation of agricultural production and in corruption issues linked to the national reserves system.

MAKING DATA PUBLIC?

A key question that remains, beyond the one of accuracy, is the one of information displaying. It is currently unlikely that the Chinese government make a number of figures available to the public, for reasons linked to political stability within the government, where views differ among administrations.

INVOLVEMENT IN THE WORLD AGRICULTURAL ORDER

The inevitable increase in the country's reliance on global markets makes the new leadership willing to become more involved internationally. The desire to improve the agricultural markets information system domestically, the diversity of views within the government and the increasing need to be heard in international forums hold out the hope that the situation evolves.

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Schwoob, M.-H. (2015). The political dimension of agricultural markets information: views from within China, *Working Papers* N°07/15, IDDRI, Paris, France, 26 p.



This research was funded by the French Government as part of the “Investissements d’avenir” programme under the reference ANR-10-LABX-01.



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ISSN 2258-7071

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SUMMARY

The idea that accuracy and transparency of information is a desirable goal to achieve on international markets is neither new, nor unique to agricultural markets. However, the food price crisis of 2007-2008 and the fact that global food prices remained high and volatile even after the crisis prove that progress still needs to be achieved. Agricultural market information system (AMIS) has great potential for the improvement of the transparency of world agricultural markets, but a number of obstacles prevent the system from reaching its full potential. Among these are the lack of reliable data and the reluctance of a number of countries to share information.

As this paper wishes to demonstrate, there can be various reasons for the persistence of these obstacles. By analysing the example of China, the article shows that in this particular case, at least two

reasons lie behind the lack of data and sharing. The first reason is linked to the fact that accurate agricultural market information is particularly challenging to collect—something for which solutions are not easy to implement and do not entirely lie in the hands of the central government. The second reason is that it is not necessarily in the interest of public authorities to ensure the transparency of information linked to agricultural and food markets. Governments are fragmented and while some administrations can gain from the public availability of information, others suffer from the dissemination of accurate figures on agricultural markets. Drawing on a review of the literature as well as on general and specific fieldwork, this paper investigates these questions by exploring the case of China from within, a country for which food security and agricultural issues represent a major challenge.

1. INTRODUCTION: INFORMATION, A CRITICAL ELEMENT FOR FOOD SECURITY

1.1. Worldwide food security: a global stake at hand

Seven years after the food price crisis of 2007-2008, agricultural and food security issues are still to be addressed, both in developing and in developed countries. The question of how to provide food, at a decent price, to 9 billion people by 2050, is a matter of intense debates. Although food security was already placed high on the global agenda at the beginning of the 2000s,¹ the dramatic rise in global food prices in 2007-2008 and the crisis it triggered stimulated an unprecedented wave of international responses trying to address the issue. After the crisis, international organisations redoubled their efforts to push national governments to put agriculture back on their political agenda.² Institutional innovations emerged as well, as an attempt to build stronger international organisations, better equipped to propose solutions to tackle worldwide food insecurity.³

Along with the issue of supply, the food price crisis put on the table another fundamental challenge:

the one of food price volatility. Even after the crisis, global food prices remained high and volatile and price spikes kept on occurring (FAO *et al.*, 2011). In 2011, the G20 summit in Paris focused on this particular issue. Discussions led to the agreement of the G20 Agriculture Ministers on an “Action Plan on Food Price Volatility and Agriculture”, which officially launched the Agricultural Market Information System (AMIS). The rationale of this system lies in the fact that the lack of availability of reliable and up-to-date information on crop supply, demand, stocks and export induce hasty and uncoordinated policy responses that exacerbate a situation (AMIS, 2011) caused by other factors.⁴ The AMIS, by improving the transparency of information linked to food markets (crop supply, demand, stocks and exports), aims to reduce the incidence and magnitude of panic-driven price surges.

The idea that transparency is a desirable goal to achieve on international markets is neither new, nor unique to agricultural markets.⁵ There has long been a broad consensus among economists that transparency enhances the efficiency of markets—whereas, on the opposite, asymmetry of information only benefits a few players. The first global efforts to improve international cooperation on food markets information started as early as the beginning of the 20th century: in June 1905, just a few years after the wheat crises of the 1880s

1. The first of the eight Millenium Development Goals was to “eradicate extreme poverty and hunger”.

2. The 2008 World Bank report placed agriculture at the center of the development agenda and called for greater investment in agriculture in developing countries.

3. In 2008, the High-Level Task Force (HLTF) on the Global Food Security Crisis was created, with the aim of “promoting a comprehensive and unified response to the challenge of achieving global food security”. The Committee on World Food Security, on its side, engaged in an important reform process in 2009 (among others, by creating the High Level Panel of Experts), with the aim of improving and strengthening its role in the creation of international non-binding norms.

4. Such as decline in growth of agricultural production, decline in grain stocks, changes in demand and higher energy prices (Mittal, 2009).

5. “In June 2012, the IEA, IEF and OPEC responded to a request from the G20 Finance Ministers to continue work on gas and coal market transparency. The IOs jointly submitted a report entitled ‘Increasing Transparency in International Gas and Coal Markets’, which provided recommendations to the G20 Finance Ministers on several fronts.” (Practical Recommendations for Increasing Transparency in International Gas and Coal Markets Report by IEA, IEF and OPEC to G20 Finance Ministers, May 2013).

and 1890s, the International Institute of Agriculture was created as an attempt to tackle the new challenges brought by the globalisation of food trade. The aim of the Institute, at that time, was to “collect, study, and publish as promptly as possible statistical, technical, or economic information concerning farming [...], the commerce in agricultural products, and the prices prevailing in the various markets” (Convention of the IIA, 1905, Art. 4). At the beginning of the 1930s, the mission to collect and disseminate statistical information on the food security situation of a range of countries was taken over by the Health Division of the League of Nations (Shaw, 2007: 6). The task is now carried out mostly by the Food and Agriculture Organization of the United Nations (FAO), which develops methods and standards for food and agriculture statistics, provides technical assistance services and disseminates data.

In spite of international organisations’ efforts, progress still needs to be achieved. Today, as the depletion of natural resources, the increase in global food demand and the globalisation of trade keep on making the challenge of food security more daunting, the improvement of the efficiency of world agricultural markets has become even more crucial. For international organisations and a growing number of countries, transparency has become a necessary step to improve both global governance (Holzner and Holzner, 2006: 343) and access to global public goods (Eigen and Eigen-Zucchi, 2003).

AMIS has great potential for the improvement of the transparency of world agricultural markets. However, obstacles remain that prevent the system from reaching its full potential. Among the obstacles is the strong reluctance of a number of countries to fully engage in the initiative. The lack of reliable data on Chinese agricultural markets, in particular, jeopardises the system, as the country’s agricultural output is the largest in the world and as the sheer size of the population and rising income make the food demand grow rapidly—two reasons for which China also holds the largest grain reserves worldwide. Nevertheless, the growing challenges that the Chinese agricultural policy currently faces makes the improvement of its agriculture statistical system a desirable goal even at the national level.

1.2. Growing challenges in China call for better information systems

Considering the current food and agricultural situation of the country, it is undoubtable that it would be in the interest of the government to be able to

rely on a sound statistical system providing accurate data on agricultural markets. In China, as in the rest of the world, information on agricultural markets is indeed a crucial tool to design efficient agricultural policies and to assess their performance, and current agriculture-related issues are particularly topical and urgent. On one side, the evolution of food diets, which are becoming richer in meat, dairy products and cooking oil, drives a rise in grain demand.⁶ On the other side, resources needed for agricultural production—water and land, in particular—which were already scarce,⁷ are shrinking and deteriorating in the course of rapid urbanisation, industrialisation and climate change. The inability to answer the growing grain demand forced the country to raise its imports in a significant way over the past few years. The agricultural trade balance became negative in 2004 and the deficit has kept on growing since.

The rising cost of the agricultural trade deficit could theoretically be easily compensated by the country’s high trade surplus. In 2012, the balance of trade was indeed of more than 181 billion euros, up by almost 60% from 2011, as exports to the US and Europe recovered (DG-Trade of the European Commission, 2014). Despite China’s massive trade surplus, the worsening of the agricultural trade balance is of great concern to the government, which attaches considerable importance to maintaining a high rate of food self-sufficiency. The history of China has indeed been marked by numerous episodes of famine caused by natural disasters that regularly hit the territory⁸ and often provoked social unrest (Zha and Zhang, 2013). Food shortage was not a phenomenon confined to dynastic China, as the 20th century was in turn marked by episodes of famine, the Great Famine of the Great Leap Forward being the last one of the series and the most dramatic as well.⁹ As Lillian Li sums it up, “no other civilisation has had such a continuous

6. The rise in soybean demand is particularly impressive. The demand for maize started following a similar trend a few years ago. Both soybean and maize are expected to meet the rising feed demand emerging from a booming industrialized livestock sector.
7. China has only about 7 per cent of the world’s arable land. National water resources are relatively scarce as well, as the renewable internal freshwater per capita was about 2,093 cubic meters in 2011, or only one third of the world average (World Bank Database).
8. According to Bu and Bruins (2006), more than 3,000 famines struck Imperial China; A survey conducted by John Buck shows that before 1920, peasants had experienced no less than three episodes of famine (about ten month-long) in average in their lives (Smil, 1995).
9. According to estimates, the Great Famine would have resulted in the death of between 20 million (Aird, 1982) and 45 million people (Dikötter, 2010).

tradition of thinking about famine, and no other nation's modern history has been so influenced by hunger and famine" (Li, 2007: 2).

However, in the current context of globalised trade, the fear of famines inherited from the past can only partially explain the importance attached by Chinese leaders to national self-sufficiency. Two other reasons underpin the government's willingness to maintain a high rate of food self-sufficiency. The first reason is linked to "realism": it is often stated by officials that it is simply impossible for China to adopt a food strategy relying on imports like Japan,¹⁰ given the demographic weight of the country. This corresponds to the view of a number of experts, according to whom, even if China would import just a small amount of its food demand, it would considerably destabilize global markets (Ni, 2013: 5). The second reason is linked to the willingness of the government to guard the country against international price fluctuations—a view that can only be reinforced by the dramatic consequences the 2007–2008 world food price volatility had on a number of importing countries. Finally, concerns also exist, among part of the government, that food could be used as a weapon by foreign powers—even though China was never the target of any food embargo. This aspect will be further explored later in the paper.

Grain self-sufficiency is at the core of concerns.¹¹ In 1996, the government set up a grain self-sufficiency target of 95%. Even if recent debates led to a more flexible target,¹² grain self-sufficiency is still an essential part of contemporary agricultural policies.

Over the last decade, the evolution of the stakes at hand in terms of food security, but also in terms of rural social stability and economic development pushed the government to reshape its political agenda. In 2004, the Number One Document,¹³ for the first time, emphasised the need to solve the "three rural issues" (rural areas, agriculture, and farmers; also termed as the "*san nong*" issues). Since then, almost all the Number One documents that were published between 2004 and 2015 focused on agricultural and rural development issues. Public expenditures dedicated to *san nong* issues also expanded dramatically in the years

following the promulgation of the 2004 Number One Document—jumping from 432 billion RMB to 1,239 billion RMB between 2007 and 2012.¹⁴ In addition to not being subjected to taxes since 2006, the agricultural sector benefits from a wide range of targeted subsidies aimed at supporting the modernisation of the sector. In order to evaluate with accuracy the efficiency of agricultural policies—of which the cost of implementation keeps on growing—these need to rely on an efficient agricultural markets information system for national monitoring. At first sight, it seems that this need is in line with the international agenda pushing for the development of sound national information systems. From this follows the question: why might the Chinese government's interest not be aligned with the development of AMIS?

First, as we will see in the following part of this article, the current public statistical system faces important failings linked to the cadres evaluation system, the level of decentralization of the government, the fragmentation of agricultural production and corruption issues in the administration of public reserves. In addition, even having data in hands—either completely accurate or not—does not mean that the government would be keen on making them available to the public. The issue of transparency, which will be detailed in the third part of this article, remains key to a number of people within the government—but, as we will see, not necessarily to all of them. Drawing on a review of the literature as well as on general¹⁵ and specific¹⁶ fieldwork, this paper investigates the questions of accuracy and transparency of information on agricultural markets in China.

10. Japan imports around 60 per cent of its caloric need.

11. The Chinese translation for food security is "粮食安全" (*liangshi anquan*), literally "grain security".

12. These debates will be further explored in the last part of the paper.

13. The Number One Document is the first document issued by the State Council and the Central Committee of the Communist Party at the beginning of each year. It usually concentrates on an issue, which is considered of fundamental importance by the central government.

14. 财政部, 财政支持“三农”情况 Caizhengbu, caizheng zhichi “sannong” qingkuang [Ministry of Finance, Financial support situation for the three rural issues] http://www.mof.gov.cn/zhuantihuigu/czjbqk1/czzc/201405/t20140507_1076149.html.

15. Almost 200 interviews were conducted between 2011 and 2014 in the framework of a PhD thesis on China's agricultural modernisation (with 50 scholars, 15 central-level officials, 22 foreign agencies and international organisation agents; with 14 local-level officials, 27 farmer-workers, 10 NGO agents and 48 enterprises managers in Beijing, Jiangxi, Shandong, Ningxia, Shanghai, Hunan, Anhui and Jiangsu).

16. Complementary interviews were conducted on the specific topic on agricultural markets information systems in November 2014, for the purpose of this article. Over 20 interviews were conducted in Beijing with scholars, central-level officials, foreign agencies and international organisation agents and market players.

2. THE FAILINGS OF THE PUBLIC STATISTICAL SYSTEM

2.1. The challenge of producing accurate data on food production and consumption

Three major administrative agencies are in charge of collecting information on agricultural production and food consumption in China: the National Bureau of Statistics, the Ministry of Agriculture, and the State Administration of Grain—a ministerial-level agency under the National Development and Reform Commission.

The Ministry of Agriculture and the State Administration of Grain have local bureaus under their jurisdiction at each level of the administration: i) provinces, municipalities and autonomous regions; ii) prefectures; iii) districts and counties; and iv) townships (Figure 1). Agricultural, grain and other bureaus of the township level are requested to report on a quarterly basis agricultural production and other figures to the county level bureaus, which shall in turn convey information to higher level authorities, up to the central departments of the Ministry of Agriculture and of the State Administration of Grain. These figures, among other things, include information on the situation of local households, on land use, on production means and on the commercialisation of agricultural products.

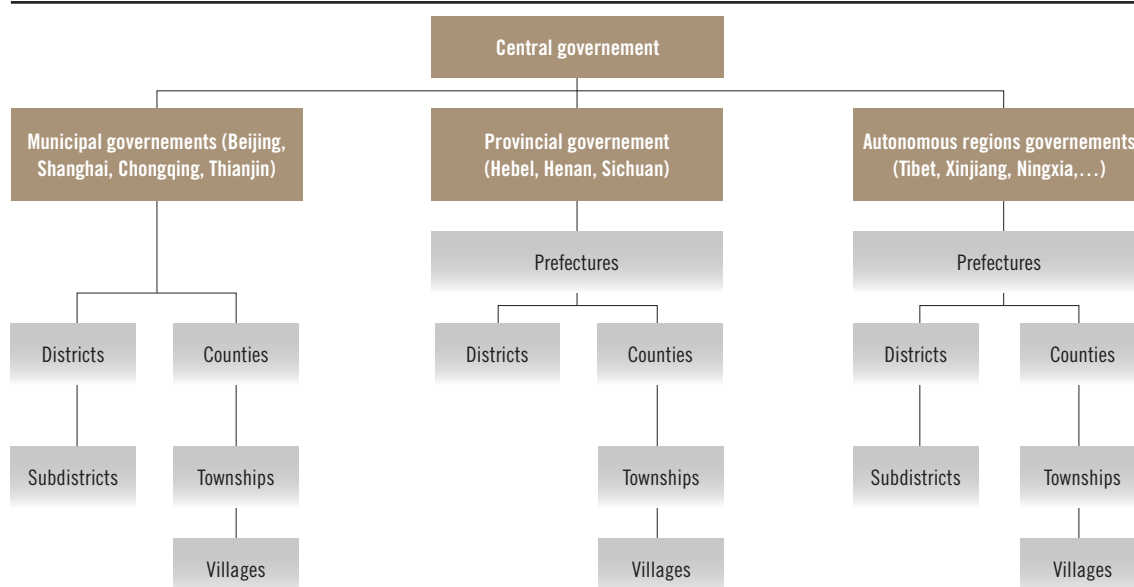
In addition to this first channel of information, the National Bureau of Statistics manages rural and urban survey teams based in each province. Each year, rural survey teams randomly select about 60,000 rural households, from whom they collect data on yield and output for the production of major crops. Data are aggregated at the national level and adjusted according to the figures of the agricultural census—one was conducted in 1996 and the other in 2006—and to the changes of production areas that can be observed with satellite imagery.

Official **production data** are released based on the common assessment of the three institutions—the National Bureau of Statistics, the Ministry of Agriculture, and the State Administration of Grain—in two major documents: the China Statistical Yearbook (中国统计年鉴 *zhongguo tongji nianjian*), published by the National Bureau of Statistics; and the China Agricultural Yearbook (中国农业年鉴 *zhongguo nongye nianjian*), published by the Ministry of Agriculture.¹⁷

For the collection of **food consumption figures**, the National Bureau of Statistics mainly relies on the work of urban and rural survey teams, which, in addition to the 60,000 sampled rural

17. Other documents are published as well, such as the China Grain Yearbook (中国粮食年鉴 *zhongguo liangshi nianjian*) or the China Report on Grain Development (中国粮食发展报告 *zhongguo liangshi fazhan baogao*) published by the State Administration of Grain. Local government sometimes publish reports as well.

Figure 1. Administrative divisions of the Chinese government



households aforementioned, yearly survey about 30,000 urban households. According to the rules, sample households are requested to report their income, expenditures and volumes of consumption of a certain number of commodities. Each year, the National Bureau of Statistics is supposed to replace one third of its samples. The information collected by survey teams is annually published in the China Household Survey Yearbook (中国住户调查年鉴 *zhongguo zhuhu diaocha nianjian*).

2.1.1. The adverse effects of the cadres evaluation system

The conveying of information through the reporting by local bureaus—among which a number are working under the Ministry of Agriculture and under the State Administration of Grain—raises a number of issues. Not only do local bureaus provide data for reports on the agricultural sector, but they are also evaluated according to these figures. The Chinese government attaches fundamental importance to grain self-sufficiency. As a consequence, responsibility systems were established to check whether local policies complied with central guidelines. The “governor’s grain bag responsibility system”, implemented in 1995, requests provincial governors to balance grain supply and demand within their province—in particular, by supporting grain production in rural areas within their area of jurisdiction. In addition to this system, grain production targets are set every five years by the central government in Five-Year Plans. According to these Five-Year targets, local grain bureaus establish grain production targets on a yearly basis, in order to make sure to keep a steady increase in grain production year-on-year.

The fulfilment of agricultural production targets can play a significant role in the promotion of local cadres, who are evaluated by the administrative level just above their own. The manipulation of statistics as a way to please officials of higher levels and as a way to gain political credit is neither new, nor specific to the agricultural sector. This phenomenon is so widespread that it has produced a maxim: “numbers produce officials, officials make statistics” (数字出官, 官出数字 *shuzi chu guan, guan chu shuzi*), which basically means that officials get promoted by over-reporting their achievements and under-reporting their failures (Cai, 2000).

According to interviews conducted in local areas, it is a common practice for local officials not only to inflate the figures reported to higher authorities, but also to understate them. For instance, during years of particularly good harvests, it is common that local cadres underestimate harvest figures, in

order to be able to report a stable yield growth the following year, even in the event of a bad harvest.

The manipulation of statistics is not always performed by the lowest levels of the government. Manipulation can also be orchestrated by officials of higher levels, who are also subjected to targets and evaluated according to the achievements of the cadres under them. According to Cai Yongshun, the strong personal interest that higher levels have in orchestrating the manipulation of statistics or in protecting lower levels for doing so was one of the main reasons for the failure of the attempt of the new Statistical Law to improve the quality of statistics at the end of the 1990s. As the author argues: “[Local officials] launched strong propaganda to show their determination to follow the state’s call but took little action. [...] In fact, they were reluctant to discover fake statistics because this would raise doubts about their own achievements. [...] It has also been reported that honest officials have been unfairly treated because they failed to manipulate statistics as required by their supervisors” (Cai, 2000). Statistics, in China, are heavily politicized, which is the first explanatory factor for the overestimation of production figures in general—and of agricultural production figures in particular.

2.1.2. Political leeway within fragmented public authorities

The second major challenge the public statistical system has to face also deals with the way the administration operates. The Chinese government is indeed very decentralised, which greatly complicates the process of collecting data. Post-Maoist decentralisation reforms indeed gave considerable power to local governments. The fiscal system, in particular, underwent important changes that greatly contributed to the vertical fragmentation of the political authority. Whereas during the Maoist era, local governments were not granted with any decision-making power in terms of public expenditures, the 1980s saw the establishment of three different types of revenues: central-fixed revenues, local-fixed revenues and shared revenues. At first, local bureaus were the sole institutional entities responsible for collecting taxes, but the fiscal stress resulting from the rapid shrinking of central revenues after the reform pushed the central government to restore its control over the system. In 1994, national tax bureaus were established as well as clear shares for national and local revenues. In spite of these recentralisation attempts, the share of revenues collected by local governments as well as their share in government spending—two figures commonly used to evaluate the degree of decentralization of countries—kept

on rising after the 1994 reform. The share of expenditures of local governments was almost 75% in 2005 (compared to 19.6% in developing economies and 32% in OECD countries), whereas their share in the national revenue was 48% (compared to 19.6% in developing economies and 32% in OECD countries) (Shen *et al.*, 2012:3).

In addition to these “statistical indicators” of decentralisation, it is clear that the terms in which policies are formulated at the central level give great interpretation power to local governments. Administrative units are organised according to a hierarchy ranging from the most central institutions—such as ministries and ministerial-level administrations—to the most local bodies—provinces, municipalities and autonomous regions; prefectures; districts and counties; towns; and villages (Figure 1). In the course of the policy-making process, highest governmental institutions take the most general decisions, which are then progressively detailed among their descent in the lowest ranks of administrative bodies (Schwoob, 2015).

Fragmentation does not only occur between central and local level authorities, and can also be observed at the scale of local governments, where the authority is “fragmented and disjointed” both among the different levels of the administration (块, *kuai*: “areas”) and among the different competences and functions (条, *tiao*: “branches”) (Lieberthal and Lampton, 1992). As a consequence, policy implementation is both sequentially and geographically fragmented, multiplying overlaps in responsibilities. The existence of parallel reporting systems is regularly blamed, as the following quote illustrates: “Duplicative reporting systems in different agencies create uncertainty for market analysts. [...] NBS [National Bureau of Statistics] and MOA [Ministry of Agriculture] have parallel reporting systems and surveys. Some villages are covered by both agencies’ surveys, while others are not. Greater interagency cooperation and reconciliation of differing estimates among agencies would improve the reliability of China’s statistics” (Gale, 2002). Although this quote is an extract from an article that was written at the beginning of the 2000s, interviews conducted with experts and market players in November 2014 for the purpose of this paper demonstrated that the multiplicity of information sources was still a major issue.

The decentralisation and fragmentation of the administration greatly complicates the harmonisation of data at the national level. According to Desrosières, the mixing of surveys and registers necessitates to establish standards, conformity assessment procedures and technical regulations including nomenclatures and definitions of variables

(Desrosières, 2005: 16). In the past, a number of articles blamed the lack of training of officials in charge of collecting data (Holz, 2002) and the use of nonstandard definitions (Gale, 2002). Although much progress has been achieved since these articles were published, interviews with agents of foreign cooperation agencies showed that issues remained on the standardisation of methodology and procedures. For instance, according to the rules of the National Bureau of Statistics, the sample households have to report their expenditures and volumes of consumption of a certain number of commodities, several times a year, using year-round diary methods. Sheets are theoretically collected by local survey teams and entered in the information system at the county level. In order to encourage sample households to correctly report data, local authorities are supposed to give them financial incentives. In reality, sheets are sometimes directly filled by local survey teams themselves, adding uncertainty and variability in the collection methods.

In addition, a number of figures can be particularly difficult to evaluate. For instance, the accuracy of food consumption data at the household level is impeded by the difficulty to estimate the exact volume of commodities that are consumed away from home. Estimates of out of-doors consumption are a matter of guess (Aubert, 2008) and respondents can easily miss some of the commodities—whether meat or grain—that they consume as part of processed food. A recent study mentioned in a paper written by Qiu and van Veen (2014) provides a detailed analysis of Food Away From Home consumption for 2012. According to the study (Bai *et al.*, 2013), the adjusted figures, in urban areas, would have to be increased by 40-45% for meat consumption, by 25-30% for grain consumption and by 30-35% for egg consumption. For rural areas, the estimated increases would be 15-20% for grain, 20-30% for meat and 15-25% for eggs.

According to the rules of the National Bureau of Statistics, survey teams are required to replace sample households regularly. However, in reality, the sampling process is not really transparent and the methods used to renew the samples are not clear and often settled by local bureaus themselves. In particular, there is a concern that the sample households would not be representative and would have long favoured richer households in rural and urban areas (Ma *et al.*, 2004). In addition, sampling methods are not the sole bias of the process, as the issue of “farmers away from home” further complicates the task. Although official figures report food consumption per capita, the data which is collected by survey teams is food consumption per household. Figures are then divided

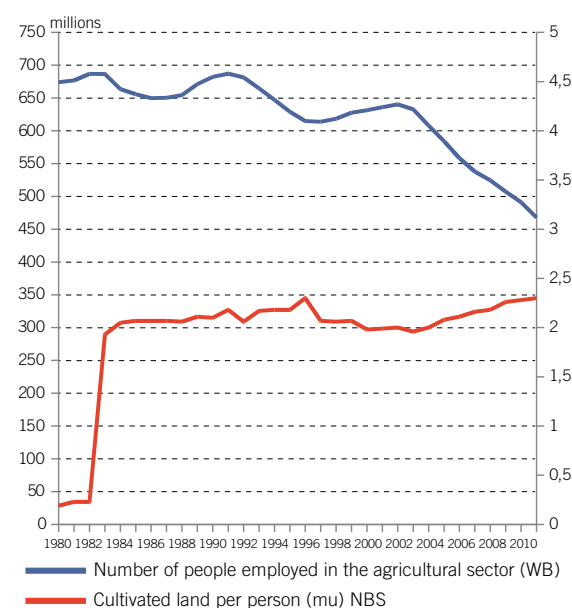
by the number of households' members. However, the number of members of rural households can be particularly difficult to assess with accuracy. Most of the rural dwellers between the age of 18 and 50 are indeed working in cities, at least part of the year. The temporary coming back of migrant farmers in the countryside is generally subjected to agricultural peak seasons and to the "hazards of life" (migrant farmers are increasingly willing to stay permanently in urban areas, but can have no choice but to return to farming in case of dismissal, work accident or retirement). According to the requirements of the statistical system, "household members who stay less than half the year in the household are not counted but, on the other hand, household members who stay more than a half year in the household are assumed to be at home for the whole year" (Qiu and van Veen, 2014). However, given the considerable mobility of contemporary Chinese farmers, this method could hardly evaluate consumption figures with accuracy. The central statistical departments are aware of the complexity of the task and of the resulting necessity to define methodology and standards to overcome this complexity, but bump into the geographical fragmentation of the political system to implement a common methodological frame.

2.1.3. Collecting information at microscale

In addition to the fragmentation of public authorities, the statistical system also has to face the microscale of the agricultural sector. With over 1.3 billion people living on more than 9.5 million square kilometres, the task of collecting data is extremely challenging. Getting crop production figures is particularly challenging, given that farmland is extremely fragmented. The abolishment of the People's Communes at the end of the 1970s led to a redistribution of land to farmers in small plots of less than one hectare. China is indeed poor in land resources, as less than 15% of the territory is suitable for farming. In addition, at the beginning of the 1980s, there were almost 800 million people living in rural areas. During the years following decollectivisation, the country experienced unprecedented urbanisation, both in terms of scale and pace.¹⁸ The massive rural-urban migrations could have freed the agricultural sector from labour surplus and allowed farmers staying in the countryside to cultivate bigger farms, as it happened in other countries. However, data show

that the fall in the number of farmers employed by the agricultural sector was not followed by any growth in the size of cultivated land per capita, which remained stable after a jump at the beginning of the 1980s caused by the implementation of the Household Responsibility System¹⁹ (Figure 2).

Figure 2. Cultivated land per capita and number of people employed by the agricultural sector



Source: Calculations by the author with data from the Chinese National Bureau of Statistics (NBS) and from the World Bank (WB).

According to the National Bureau of Statistics, the average size of Chinese farms is less than one hectare.²⁰ This figure should be taken with extreme caution. Firstly, data regarding the average size of farms are extremely complicated to collect in China, due to the remoteness of farmers, to the informality of rental markets and to the mobility of the agricultural workforce. In addition, this figure conceals sharp disparities. The size of government-owned farms in North-Eastern China, for instance, can reach several hundred hectares. Having taken into consideration these remarks, it can be asserted that the size of the vast majority of Chinese farms is still extremely small compared to European countries or to the United States.

The reason for the small size of farms lies in a number of constraints that prevent migrant

18. From 1980 to 2010, more than 465 million people were added to urban population. The pace accelerated in the 2000s, with 15-20 million people migrating to cities each year. The trend should continue and the share of urban population should reach 75% in 2050.

19. At the beginning of the 1980s, People's Communes were abolished and the Household Responsibility System enabled rural households to regain the complete control of production choices and farming methods.

20. In 2012, the average size of land owned by rural households engaged in agriculture (农村居民家庭经营耕地面积) was 2.34 mu (0.15 ha). Other data estimate that the average farm size should be closer to 0.5 ha.

farmers to transfer their land to people staying in the countryside. These constraints are rooted in two major institutional systems governing rural areas: the land tenure system and the *hukou* system. Rural land does not belong to farmers, who rent it to village committees. However, in 2006, the Law on Land Contracts in Rural China granted them with rights over their land as if they owned it: since 2006, farmers can sell, exchange and inherit leases. In spite of this reform, permanent transfers of arable land are far from being widespread in rural areas, as the current *hukou* system creates strong institutional obstacles hindering land consolidation. On *hukou* identification documents, two pieces of information (agricultural/non agricultural work and place of residence) prevent rural migrants living in cities from buying home and from having access to social security and retirement pension. In such a scheme, arable land serves as social security. In order to be able to go back to farming in case of sickness, work injury, dismissal or retirement, migrant farmers-workers usually lend their land to family members for free or informally rent it to members of the extended family or to neighbours, sometimes for free (for low quality areas for instance), sometimes in exchange of a percentage of the harvest or in exchange of money. Informal land transfers are widespread in the Chinese countryside. On the opposite, permanent and official land transfers are limited.

Progress has been made to reform the *hukou* and land tenure systems on paper. However, the wish of the central government to reform these systems bumps against the reluctance of provincial and municipal governments—especially in overpopulated cities of Eastern China—who complain that integrating migrant workers in urban social security, health and education systems would have costs they would not be able to bear.²¹

As a consequence, countless small plots of land are still informally rented by a large population of former farmers not living in villages anymore, whether on a temporary or on a permanent basis. This both distorts the picture given by national statistics—where informally rented farmland, sometimes on a long term basis, does not appear—and prevents the emergence of a new population of modern farmers cultivating land as a full time business. In some places, farmers cultivate wider farms, thanks to informal land rental systems, which rapidly developed. In other places, arable land is sub-rented by farmers to entrepreneurs,

who manage to gather large pieces of land and to develop “modern” farming. Finally, in other regions, wide areas are left unfarmed. Because of the variety of situations and the informality of sub-renting markets, the developments of farming structures are difficult to follow and it is almost impossible to assess the actual farm size with accuracy. In addition, the fragmentation of farming structures multiplies transaction costs for local survey teams. The fact that an important share of the food commodities produced by farmers is consumed on the farm adds another degree of complexity to the estimates of accurate food and agriculture figures.

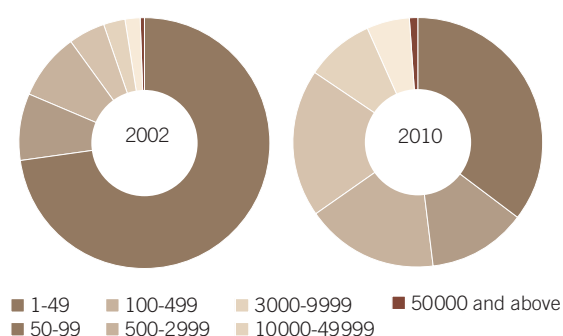
The situation of the livestock sector is slightly different. In the past, the reason for the complexity of data collection used to be linked to the fragmentation of production as well. For instance, until recently, the majority of pork output was produced out of backyard farming: namely, small farmers fattening a few pigs in their backyards. Given the considerable number of small farmers and the variability of their production choices over time, it is easy to understand how challenging the task to collect data on pork production was in the past.

Although pigs are still raised in farmers’ backyards in an important number of places, most of the pork output now comes from commercial farms, as a massive modernisation was successfully conducted in the sector (Figure 3). However, as commercial farms and local governments receive subsidies according to the number of pig heads they report, figures are often inflated.

A number of well-documented analyses have been published on the issue (Ma, Huang and Rozelle, 2004; Aubert, 2008; Bai, Qiu and Huang, 2013). In a paper released in 2008, Claude Aubert argues that the per capita pork consumption figure calculated by using the national output and the size of the population in 2006, 39.6 kg, is highly doubtful, considering that the pork supply per capita in Taiwan²² was only of 39.4 kg in 2005. For the author, even when one takes into account the fact that Taiwan has a greater availability of poultry meat (32 kg against 12 kg on the mainland), it is hard to believe that China, with a rural population of more than 700 million people known for its low meat consumption, “could rival the advanced country of Taiwan in this respect” (Aubert, 2008).

21. The “cost of integration” was recently estimated at 100,000 RMB per capita, investments needed to develop infrastructures (waste, electricity, water, gas, etc.) included (Schwoob, 2013).

22. Unofficially considered to represent the future of mainland China in terms of development.

Figure 3. 2002 and 2010 pork production structure

Source: Yu X. and D. Abler. (2014): "Where Have All the Pigs Gone? Inconsistencies in Pork Statistics in China", *Economic Review*, n°30, p. 469-484.

According to the author, this oddity would be explained by the fact that pork production is highly overestimated. Drawing on estimates on available feed and feed-meat ratio, Aubert concludes that China's meat production would be overestimated by about 30%.

Although the paper was published in 2008, Aubert's conclusions are still valid today. In 2012, the official output figure for pork production was 53,427,000 tons for 1,354 million people. Considering that exports were negligible (66,200 tons), the pork consumption per capita for 2012 would be of approximately 39.4 kg of pork. By comparison, the consumption in Taiwan was only of 37.18 kg per capita.²³

In addition, this figure does not match the data collected by survey teams at the household level. According to these figures, the official consumption of pork was only 21.2 kg in urban areas and 14.4 kg in rural areas. Considering the fact that in 2012, there were 711,820,000 urban dwellers and 642,220,000 people living in rural areas, a simple multiplication gives us only 24,338,552 tons of pork consumed by Chinese citizens, or only half the amount of the official pork output.

2.2. The key issue of grain reserves

Getting accurate data on agricultural production and food consumption would not be sufficient to precisely assess the situation of agricultural markets in China. The country indeed holds the biggest grain reserves worldwide and the public food procurement and storage system constitutes a central part of food security policies. Mostly

targeting grain—although the government also regularly intervenes in markets through the purchasing or selling of other commodities such as pork—the system aims at fulfilling three objectives: guaranteeing a minimum price to farmers, as a way to encourage them to keep on growing grain; guarding the country against major grain shortage, for instance in the event of a natural disaster; protecting Chinese consumers from price increases of basic staple products.

National granaries are filled whenever market prices fall under minimum prices, established in 2004 for wheat and rice and in 2008 for corn.²⁴ These latest are set annually in November by a committee gathering officials from the Ministry of Agriculture, from the State Administration of Grain, from the Ministry of Finance and from Sinograin, the state-owned enterprise (SOE) which manages most of the national grain reserves. An average price is determined according to several criteria, such as the minimum price established for the previous year, the evolution of production costs, the stock levels in major producing areas and the expected levels of production. The "average price" is then adjusted according to the variety and the quality of the grain purchased by state granaries, to the period and to the location of the purchase—the program only targets a few producing provinces.

Table 1. Average minimum prices for major grain crops (2014)

Rice	2700-3100 RMB/ton
Wheat	2330 RMB/ton
Maize	2220-2260 RMB/ton

Whenever the market price at the farm gate falls below the minimum price established by the central government, Sinograin, along with two other SOEs, Cofco and ChinaTex, are requested to buy grain from farmers at the minimum price or above. These massive purchasing programs are supposed to trigger a market response that makes the price of grain rise. In order to be able to purchase grain above market prices, Sinograin, Cofco and ChinaTex benefit from loans of the Agricultural Development Bank as well as from governmental subsidies according to the number of silos they are able to fill with grain.

As they benefit from state subsidies according to the amount of grain they purchase and store as part of the national reserves program, the three SOEs have to report regularly on the level of their

23. Council of Agriculture Executive Yuan ROC (Taiwan) (2012) Food Supply and Utilization Annual Report, http://eng.coa.gov.tw/content_view.php?catid=2501769&hot_new=2501764.

24. For this latest, in the framework of "temporary storage policies" set up in the aftermath of the world food price crisis.

stocks to the State Administration of Grain. However, corruption is rife in the sector. Sinograin, the main SOE in charge of managing the national grain reserves—a mission for which the SOE receives subsidies according to the amount of grain stored—has recently been enmeshed in important corruption affairs and scandals. In November 2011, Qiao Jianjun, then manager of Zhoukou's reserves in Henan province, fled overseas with 50 million USD of embezzled public funds—funds he obtained by inflating grain purchase figures. The investigation that was initiated on the case of Qiao ended up in uncovering misconduct by more than one hundred Sinograin employees. Among the incriminated people, Li Changxuan, then general manager of the Sinograin Henan provincial branch, received a life sentence in 2013 for having received 14 million RMB in bribes.

Figure 4. “High temperatures and strong wind caused the fire” (on the left: “Inspection team”); This comic was published after a fire at a granary in Heilongjiang in June 2013 destroyed nearly 20,000 tons of corn.



Source: China's Corn Price Support Problem (November 29, 2014), Dim Sums <http://dimsums.blogspot.fr/2014/11/chinas-corn-price-support-problem.html>

Over the past two years, the massive anti-corruption campaign launched by Xi Jinping has increasingly targeted SOEs. Sinograin is no exception. The rise in anti-corruption investigations had an unexpected effect on grain reserves: the increase in the number of fires. Part of the explanation for the increase in fires lies in the fact that growing volumes of corn are being stored in temporary reserves made of straw. Market prices, over the past few years, have indeed remained lower than the minimum prices established by the government. As a consequence, Sinograin had to conduct massive grain purchase and has been unable to keep up with the pace and to build enough hard-wall storage facilities.²⁵ However, a number of inter-

viewees gave another explanation: part of the fires would be human-induced and would aim at hiding the exact figures of the volumes of grain stored by the three SOEs. A researcher investigating the grain sector gave an interesting anecdote about this issue: “Under the era of imperial China, each time an emperor wanted to inventory his jewels, there was a fire in the Treasury. It is now the same for grain.”²⁶ This matter is also denounced by Chinese media, as showed in the comic below.

In addition, substantial doubt exists as to the quality of the grain stored in national reserves. According to the requirements of the government, Sinograin is supposed to replace one third of its reserves each year. In reality, grain can be stored for way longer periods of time. In addition, storage conditions are not always adequate. According to Wang Zhimin, a professor at China Agricultural University, cited by an article of the China Daily, about one third of China's stored grain “is expired or in poor condition and more than 20 million tons of grain is wasted every year” (Zhao and Zhong, 2014). The twofold issue of grain reserves, which is both quantitative and qualitative, is another hurdle on the way towards a more proficient public statistical system.

3. THE RISKS OF DISPLAYING INFORMATION

Over the past few decades, a series of reforms has been implemented with the aim of improving the quality and accuracy of national statistics. In 1983, the National Statistics Law was introduced, as an attempt to limit the manipulation of data by local governments. The Law was revised in 1996, in order to give a more important role to censuses and sample surveys. The Law was revised again in 2009, increasing the severity of the punishments for statistic manipulation. Progress was also made on the standardisation of procedures and methods.²⁷

However, the institutional issue linked to the evaluation of local cadres according to their ability to reach production targets set by year plans did not disappear and is not likely to fade in the near future. The importance of surveys and samples has been continuously rising over the past few years, as a solution to counterbalance the manipulation of data by local cadres. However, surveys are

26. Interview, Beijing, November 2014.

27. In 1993, the government officially adopted the United Nations System of National Accounting and started reporting according to this system from 1995. Laws were also regularly issued in the 1990s and in the 2000s to codify the calculation of data.

25. It is usually estimated that Sinograin lacks at least one to two million tons of additional storage facilities.

extremely costly. Conducting regular surveys at the scale of China is simply not feasible, considering that for the 2006 national census, around 7 million census people had to be mobilized throughout the whole country.²⁸ Likewise, expanding self-reporting to all farmers is barely an option under the present circumstances—given the current education level of farmers (including language spoken and reading, writing and numeracy skills), the small scale of farms (that would increase transaction costs in a tremendous way) and the mobility of farmers.

The inaccuracy of agricultural market information is greatly detrimental both to private and public players, who have to develop alternative strategies to overcome the issue. However, it is in the interest of neither private players nor public authorities to display information publicly. The reasons why private actors do not want to share their knowledge on agricultural markets are quite understandable. Asymmetry of information enables agricultural commodity traders to make good deals by knowing before others the reality of markets. In addition, asymmetrical information creates barriers to entry for newcomers, reinforcing the market power of existing firms. As a consequence, market players are eager to create and maintain asymmetry of information—a strategy that is not uniquely implemented in countries with important failings in their public statistical systems.

However, it is quite unclear why public authorities, of which the primary function is to provide a suitable business environment to market players and which suffer from the inaccuracy of information as well, would be unenthusiastic on displaying accurate information. For instance, historically, the Chinese government has kept secret the information on public food stocks. Data on the reserves of grain, soybean, cotton, other major field crops and even livestock commodities such as pork are not publicly available and are considered as state secrets.²⁹ In addition, although a number of experts and research centres could adjust production and consumption figures (see 3.3.), the government is reluctant to display adjusted data to the public. Two reasons can be put forward to explain this reluctance: the wish to avoid administrative turmoil and the desire to maintain a political consensus on the national strategy of food self-sufficiency.

3.1. Avoiding administrative turmoil

The publication of adjusted figures for agricultural markets would have two consequences. Firstly, in the case adjusted figures would significantly differ from official figures published in the past, this would mean that officials from local statistical bureaus and from local agricultural and grain bureaus were unable to perform their reporting tasks correctly, questioning the reliability of higher level officials working at the National Bureau of Statistics, at the Ministry of Agriculture and at the State Administration of Grain.

In addition, in the event of a publication of lower production figures, both local and central officials from the Ministry of Agriculture and from the State Administration of Grain would be accused of having been unable to perform their tasks related to agricultural development and would face the risk of being sanctioned by higher authorities.

On the side of grain reserves, various reasons can explain the reluctance of the government to disclose information. Among these reasons is the one linked to the strong issues that exist in terms of corruption. A number of managers of local reserves have declared inflated volumes in the past, as a way to receive more subsidies from the state—the scandal of Zhoukou's reserves is not an isolated one. In addition, the quality of the grain stored in the reserves is highly doubtful. As a consequence, even the central state does not have accurate figures of the amount of *usable* grain reserves and it is clear that a thorough investigation would affect not only Sinograin's employees, but also a number of cadres working inside public administrations.

In sum, publishing adjusted data would be equivalent to accusing a range of administrations and would require the central government to conduct investigations to find and punish the guilty parties—a task that is currently not in the interest of anyone. As a consequence, although central administrations suffer from the inaccuracy of statistics on agricultural production, it is not necessarily in their interest to change the system, as every change brings along risks of political turmoil.

3.2. Maintaining a political consensus on the national security stake of food self-sufficiency

The reluctance of the government to disclose information on grain reserves is also linked to the fact that a number of officials fear the reaction of markets, especially in the event of a publication of low stock figures. However, all the signs

28. Communiqué on Major Data of the Second National Agricultural Census of China (No.1) http://www.stats.gov.cn/english/NewsEvents/200802/t20080226_25993.html

29. According to most of the estimates, reserves would be between 100 and 200 million tons of grain (Yang, Qiu, Huang and Rozelle, 2008), among which would be stored 110 million tons of wheat, 60 million tons of rice and 40 million tons of corn.

seem to indicate that the amount of grain stored in public reserves is currently very high. The price gap between domestic minimum prices and international market prices has forced Sinograin to purchase grain massively over the past few years, leading the SOE to repeatedly ask for additional subsidies to build new storage facilities. Nevertheless, the fact that Sinograin has been actively replenishing stocks does not necessarily mean that the country is insulated from food insecurity issues. The grain self-sufficiency rate indeed greatly depends on the commodity that one focuses on. According to the figures given by market players, the amount of the grain reserves would be around 200 million tons: 110 million tons of wheat, 60 million tons of rice, and 40 million tons of maize. Wheat and rice consumption has been relatively stable over the past few years, making the country capable of being self-sufficient for 11 months for wheat and for 4 months for rice—provided that above-mentioned figures are accurate. However, considering the rapid growth of maize consumption, maize reserves would allow the country to be self-sufficient for only 2 months.

Apart from these concerns on potentially low maize reserves—it is useful to recall, at this point, that maize is considered by the Chinese authorities as a “principal grain” (主粮 *zhuliang*) but not as a basic staple product such as wheat or rice—there is potentially no reason why the Chinese government would like to keep the amounts of grain reserves secret, especially when recent policies have been continuously emphasizing the necessity to increase the role of the market in the grain sector.

In fact, the entire range of questions relating to the national food security strategy was subjected to vivid debates within the central government. Over the past few years, for instance, there has been much discussion about the capacity and the necessity for the country to maintain grain self-sufficiency at all costs. Since 1996 and until recently, China was supposed to maintain a 95% rate of grain self-sufficiency. Grain, at that time, included not only cereals, but also tubers and peas. Researchers recently started calling for the abandonment of soybean in the self-sufficiency target. For instance, Zhang Xiaoshan, a researcher at the Institute of Rural Development, in an article published on Aisixiang, argued that China had no other choice but to give up on certain extensive and low-productive crops such as soybean, in order to concentrate on the supply of basic staple grain (弃油保粮 *qiyoubao liang*, “give up on oil to protect cereals”) (Zhang, 2012). According to its calculations, if China wanted to be food self-sufficient, the country would have to cultivate 2.1 billion mu³⁰—above the actual

level of cultivated land—hardly feasible given the rapid pace of urbanisation and desertification. For the author, China is poor in natural resources (land and water in particular) and as a consequence, China has to take benefit of foreign resources to spare its own. A number of other scholars—among whom Chen Jie, a researcher at the Research Centre in Rural Economy of the Ministry of Agriculture (Chen, 2012)—reached similar conclusions and argued in favour of more flexible grain production targets to protect China’s environment and resources.

Since these articles were published, the self-sufficiency target became more flexible. Soybean is now excluded from the national self-sufficiency target. In addition, the new target fixed by the prime Minister at the 2013 People’s Congress requires the country to maintain a self-sufficiency rate of 90% for rice, wheat and maize in the short and middle term—by 2015—and 80% in the long term—by 2025.

These measures did not ease the debates and discussions on which strategy the country should adopt to ensure national food security. Opposed to the new camp of environmentally-friendly officials and researchers, who recently started expressing concerns about the preservation of domestic resources—even if such a preservation would mean increasing the country’s reliance on foreign trade—another part of the government wishes to maintain grain self-sufficiency at all costs. The People’s Liberation Army is perhaps among the most active opponents to the institutions and officials arguing in favour of more flexible self-sufficiency targets. In August 2013, a major-general of the PLA and Deputy Secretary-General of China’s National Security Forum, Peng Guangqian, published an op-ed denouncing that genetically modified organisms (GMOs) were part of a military strategy perpetuated by the United States against China.³¹ Following the publication of Peng Guangqian’s article, the News Office of the Ministry of Agriculture published an interview of an expert from the GMO security committee, answering the concerns expressed by the major-general and trying to reassure the population.³² In fact, the majority of officials are pro-GMO, especially within the MOA and

30. 15 mu = 1 hectare.

31. “Since the establishment of the PRC, it has already been proved that enemies could not use military force to conquer us. However, with this kind of subtle bacteriological weapon in the cards, we could lose our vigilance.” [新中国成立以来，事实已经证明任何敌人都不可用武力征服我们。然而，那种杀人不见血的生物武器则有可能使我们丧失警惕。] (Peng, 2013)

32. “GM and non-GM food are similarly safe”, News Office of the Ministry of Agriculture, 31/08/2013 « 转基因食品与非转基因食品具有同样的安全性 », 农业部新闻办公室 http://www.moa.gov.cn/zwllm/zwdt/201308/t20130831_3592472.htm.

within scientific research centres.³³ However, taking position against the commercialization of GM food³⁴ can be a way of being able to reject imports coming from the US,³⁵ a useful non-tariff trade barrier limiting imports in order to protect domestic production capacities. This example sheds light on two things. Firstly, the articles published by PLA officials demonstrate that a number of high-level officials believe in conspiracy theories and use this rhetoric in their discourses—whether this rhetoric truly aims at alerting the population about foreign conspiracy or serves other purposes—contributing to the reluctance of the government to make information available to foreign powers. The other thing this example reveals is that in spite of recent debates, food self-sufficiency still constitutes the core of the national food security strategy. Along with this idea lies the belief that global food markets are unlikely to help the country answer its food demand and that the government needs to maintain a food security strategy that puts priority on addressing domestic issues—a task that is already quite challenging. Although recent debates made the situation evolve a bit, the general idea is still to maintain a political consensus on the national food security strategy, which means keeping continuity with past policies.

3.3. Parapublic actors swept up in similar logics

A number of administrative and academic research centres dedicate efforts to the adjustment of food production and consumption figures. The Development Research Centre (DRC) under the State Council is perhaps the most well-known research centre within the Chinese government—the Ministry of Agriculture and the State Administration of Grain rely on the analyses of these administrative and academic research centres to adjust agricultural policies. Over the past few years, the DRC has been actively focusing on rural and agricultural issues and even established a dedicated institute to conduct research on these questions in 2011: the China Institute for Rural Studies. The institute is now hosted by Tsinghua University in Beijing but maintains strong links with the DRC.

33. In 2011, a professor from the China Agricultural University gathered 60 signatures in a petition urging the government to authorize the commercialization of GM crops.

34. The commercial cultivation of GM food crops is still unauthorized in China, except from a few varieties of papaya, tomato and pepper.

35. In November 2014, China rejected several cargos of GM corn coming from the US, after testing found strains of GM corn not yet approved for import.

Box 1. Institutions directly under the State Administration of Grain

- Academy of Science and Technology

Since the system reform of science and technology, the Academy of Science and Technology is the only non-profit research institution of grain industry at the national level. It is mainly responsible for the fundamental and nonprofit research on the development and application of technologies in grain storage, security, distribution and comprehensive utilisation of grain resources.

- China National Grain and Oils Information Center

China National Grain and Oils Information Center provides market information of the grain and oils market for the sake of managing grain macro-control and national grain distribution. It mainly takes charge of monitoring, analysing and predicting domestic and international grain markets; building, developing and maintaining the computer network.

- Standards and Quality Center

- China Grain Research and Training Center

China Grain Research and Training Center is mainly responsible for: research on economic theories, policies and development strategies of the grain industry; participation in research on distribution reform, corporation management, and relevant laws, regulations and policies; research and analyses of the development of grain industry; organisation of training programs for the SAG and the whole sector; and organisation of academic exchanges and also assessments on scientific and technological results.

- Development and Exchange Center

- China Grain Economy Magazine

China Grain Economy Magazine is one of the leading trade magazines. It is composed of editorial department, advertisement department, comprehensive department, and network department. It is responsible for editing, publishing, circulation and dealing with relevant businesses.

- China National Association of Grain Sector

- Chinese Grain Economics Association

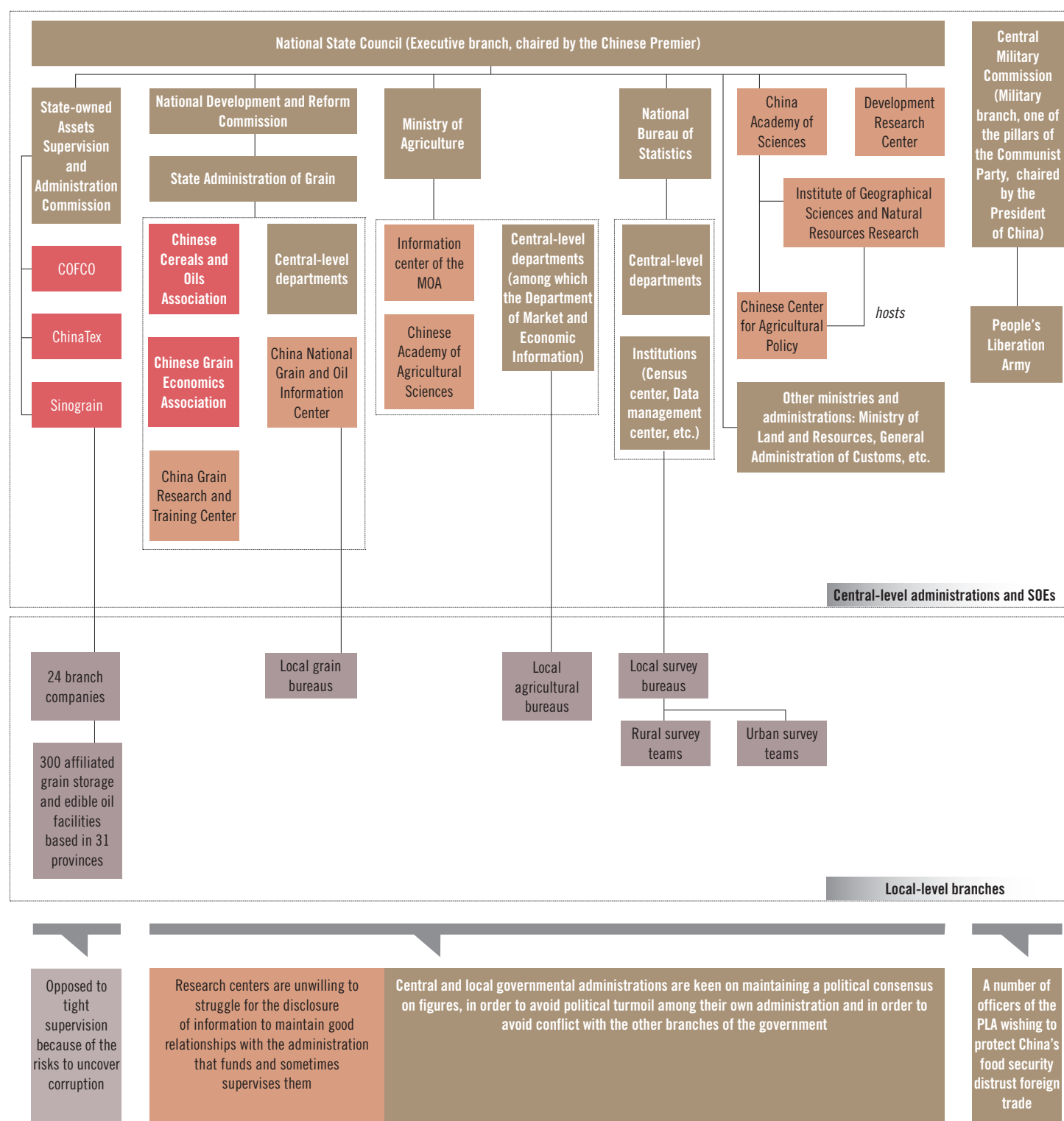
Chinese Grain Economics Association is an academic institute that is responsible for organising experts and scholars to study basic rules of grain distribution and fundamental links between grain production, distribution and consumption, and grain economic research.

- Chinese Cereals and Oils Association

Chinese Cereals and Oils Association is a member of China Association for Science and Technology (CAST). It is a national scientific and technical organisation of cereals and oils industry. It is responsible for organising academic exchanges and research on storage, processing comprehensive utilisation and loss stopping of grain and oils products. It also organises experts to assess scientific projects and research.

The Development Research Centre is far from being the sole research centre working under the central government. The China National Grain and Oils Information Centre, for instance, works directly under the State Administration of Grain. It aims at providing information on grain production as well as forecasts to a variety of players, whether public or private. Among the eight other institutions directly under the State Administration of

Figure 5. Main public and parapublic players and interests in the sharing of information



Grain, no less than five are dedicated to research or information (see Box 1).

The Ministry of Agriculture enjoys the services provided by the research centres directly under its jurisdiction as well, such as the Chinese Academy of Agricultural Sciences. In addition to research conducted by the centres directly under the Ministry of Agriculture or under the State Administration of Grain, officials of the central government regularly call on the expertise of scholars from various Chinese academic research centres or even from foreign or international organisations.³⁶

To sum up the above, wide ranges of parapublic actors dedicate efforts to develop alternative methods to adjust official figures. However, these efforts do not necessarily mean that administrative and academic research centres wish to disclose information to the public. If it was quite unclear why public authorities would be unenthusiastic on displaying accurate information, it is even more peculiar to observe that parapublic actors such as research centres or even international organisations are swept up in similar logics. It is common for academic research centres to publish analyses of the issues of the Chinese statistical system. Experts from the Chinese Centre for Agricultural Policy, for instance, regularly express their views on the inaccuracy of food production and consumption figures.³⁷ For a number of research centres working directly under central government administrations or ministries however, it is sometimes more difficult to publish critical analyses of the situation, as the following quote from a research fellow working in a centre directly under the State Council demonstrates: “There are two kinds of research institutes in China. The first kind is institutes like mine, where researchers cannot make political comments or critics on the situation but simply analyse the situation and make reports to describe it. The other kind is institutes like the CCAP, where researchers can publish papers with political recommendations.”³⁸

However, neither the research institutes directly under central institutions nor the “more independent” research centres have the power to really make the situation evolve. In addition, it is not necessarily in their interest to struggle for the

improvement of the public statistical system, as research centres need to maintain good relationships with their main source of funding: public authorities. Publishing articles criticising the system in English and in international reviews is so far the best option scholars can choose to legitimate their work without jeopardising the conditions of their research—especially in the current context where the new leadership wishes to encompass universities to keep a tighter grip on “ideological rectitude”.

It is perhaps even more difficult for international and foreign organisations to put pressure on governmental or research administrations they work with. The activities they conduct in China are usually limited by the size of local representation offices. When they do have the staff to do their own local surveys (such as the USDA or IFPRI), this method can sometimes bump against the reluctance of local players to share information, especially in case of tense diplomatic situations. In 2014, the US-China diplomatic situation in the agricultural sector deteriorated with the arrest of Chinese accused of stealing GMOs,³⁹ the reject of GM corn coming from the United States by Chinese customs⁴⁰ and, possibly, the publication by the USDA of bad forecasts for the 2013 wheat harvest.⁴¹ As a consequence, it became much more difficult for survey teams to have access to information in local areas. For obvious diplomatic reasons, international organisations need the support of public administrations, the main consequence being that it is usually best for them to keep a low profile. It is not our intent to say that cooperation projects do not exist between China and foreign representation offices. On the opposite, Chinese authorities are quite eager to cooperate and to learn from statistical experts from abroad (the reluctance to cooperate sometimes comes from foreign partners themselves), as long as cooperation projects do not involve producing statistical information different from official statistics and making them available to the public.

36. At a seminar organized in Beijing in November 2014, a presentation given by the China National Grain and Oils Information Centre cited forecasts extracted from a USDA report.

37. Huangang Qiu and Huang Jikun are presented as CCAP research fellows on the paper of Qiu and van Veen (2014). In 2004, Huang Jikun had already published a paper on the inaccuracies of China agricultural statistics (Ma, Huang and Rozelle, 2004).

38. Interview, Beijing, November 2014.

39. In December 2013 and again in July 2014 (Bunge, J. “U.S. Arrests Second Chinese Citizen in Seed-Theft Case”, *Wall Street Journal*, July 2nd, 2014 <http://www.wsj.com/articles/u-s-arrests-second-chinese-citizen-in-seed-theft-case-1404338788>; Cronin Fisk, M. “Six Chinese Accused of Stealing Genetically Modified Corn” *Bloomberg*, December 20th, 2013. <http://www.bloomberg.com/news/2013-12-19/six-chinese-accused-of-stealing-genetically-modified-corn-1-.html>).

40. “China rejects more U.S. corn due to GMO as state sales approach” *Reuters*, March 25th, 2014 <http://www.reuters.com/article/2014/03/25/china-corn-usa-idUSL4NoMMoKY20140325>.

41. USDA (2013) *GAIN Report*, N°13029 http://gain.fas.usda.gov/Recent%20GAIN%20Publications/Grain%20and%20Feed%20Update_Beijing_China%20-%20Peoples%20Republic%20of_6-28-2013.pdf

3.4. Market players unwilling to share the fruits of their routine efforts

Industrial players operating on grain markets such as mills or other food and feed processing companies, whether public or private and of all sizes, greatly suffer from the lack of accurate figures on supply and demand. Each player resorts to its own methods to adjust official data. Among these methods, four were usually mentioned by the interviewees.

The first method is to analyse balance sheets, as illustrated in an article of Qiu and van Veen, where the authors compare the production, net imports, food use and feed use figures for the three main grain commodities—rice, wheat and maize. According to their analysis of 2012 supply and demand balance sheets, the gap, they label “other use”, would have reached 36 million tons for rice (25% of the total use), 43 million tons for wheat (35% of the total use) and 43 million tons for maize (20% of the total use) (Table 2).

For these three types of grain, “other use” can include a variety of uses, among which seed and waste. However, according to Qiu and van Veen, seed and waste usually consume about 5% of the total grain output and, as a consequence, could not explain the gap that they observed on balance sheets—which is five times larger for rice, six times larger for wheat and four times larger for maize. Even if one comes up with a larger estimate of waste and losses between farm gates and households,⁴² this type of “other use” could only partly explain the gap between grain output and consumption figures. Even when adding the processing of grain neither for food nor for feed⁴³—for instance, for the production of starch for paper mills, pharmaceutical and cosmetic industries or building materials—the gap between production and consumption figures still seems very large. The net stock increase still needs to be added to the above-mentioned “other types” to finally fill the gap between grain production and grain consumption figures. By checking the coherence of supply and demand figures, one can make adjustments and check the validity of a certain number of assumptions. However, the number of lines in supply and demand sheets multiplies the number

of assumptions one can make, making the method insufficient to tackle the issue.

The second method used by market players to adjust official data is based on lineups. Ship lineups, which are usually sold by cargo and vessels services companies in charge of supervising the loading and unloading of ships, provide information on the volumes of a certain number of commodities loaded and unloaded in ports as well as the port of origin or destination. They enable market players to crosscheck the information provided by customs and are usually more detailed. These reports, however, are not entirely reliable either, for a number of reasons including ships’ change of destination along the way.

The third method commonly used by market players and consulting companies is based on local surveys. Most of the large companies regularly send teams to the field to survey farmers, local traders, processing companies and local governments, even though the method is quite costly and could only inform stakeholders on the situation of a particular sector in a specific area of the territory.

The last method that players usually rely on to overcome the discrepancy of public statistics is satellite imagery. Satellite imagery is quite commonly used worldwide—the USDA, for instance, relies on this technology to assess production levels in a number of countries. However, this method is not a silver bullet either in the case of China. Given the current fragmentation of arable land and the very small size of farms, the task is considerable, as in the end, data provided by satellite imagery needs to be processed by human eyes, considerably limiting the possibilities of the technology.

Even if each one of them has its own limits, when combined together, these methods enable market players to have a better idea of the state of agricultural markets. Since the grain sector was liberalised in 2004, the intent is to progressively let the market play its role and to decrease the role played by state grain companies. Over the past three years, minimum prices for rice, wheat and maize have indeed risen by 15% to 20% annually, while, at the same time, grain prices on international markets have remained low. As a consequence, Sinograin is increasingly forced to purchase grain massively, resulting in considerable costs for the government. In order to limit the unbearable rise in the expenditures allocated to the grain procurement and storage program, the government decided to limit the purchase by establishing purchase quotas in 2014.⁴⁴ On the middle and long terms,

42. According to some estimates, grain losses in post-harvest handling, storage, processing and distribution can be considerable, reaching respectively 4-6 per cent, 5-7-8.6 per cent, 2.2-3.3 per cent and 1-1.5 per cent (Liu, 2014).

43. In France, less than 5 per cent of the wheat harvest and less than 8 per cent of the maize harvest are transformed into non-food starch (<http://www.passioncereales.fr/dossier-thematique/la-fili%C3%A8re-amidon>).

44. “Purchases for the temporary reserve will no longer be open-ended. [...] Reportedly, COFCO will be allowed to purchase up to 12 mmt and Chinatex up to 2 mmt.

Table 2. Supply-demand balances for grains, 2000-2012 (in 1000 ton)

	2005	2006	2007	2008	2009	2010	2011	2012
Rice								
Production	126,412	127,203	130,224	134,327	136,572	137,033	140,701	142,965
Net imports	-164	-523	-870	-640	-429	-232	80	2,090
Total available	126,248	126,680	129,354	133,687	136,143	136,801	140,781	145,055
Food*	101,733	101,002	99,654	103,948	98,925	97,403	94,747	93,851
Feed	12,600	13,095	13,510	13,836	14,582	14,386	14,648	14,857
Other use	11,915	12,582	16,189	15,902	22,636	25,011	31,385	36,347
Total use	126,248	126,680	129,354	133,687	136,143	136,801	140,781	145,055
Wheat								
Production	97,445	108,466	109,298	112,464	115,115	115,181	117,401	120,580
Net imports	2,939	-896	-2,971	-83	896	953	932	3,701
Total available	100,384	107,570	106,327	112,381	116,011	116,134	118,333	124,281
Food*	78,830	77,049	75,736	77,943	74,809	73,667	71,428	70,315
Feed	8,000	9,138	9,327	9,531	10,116	10,149	10,474	10,852
Other use	13,554	21,383	21,263	24,907	31,086	32,318	36,431	43,114
Total use	100,384	107,570	106,327	112,381	116,011	116,134	118,333	124,281
Maize								
Production	139,365	151,603	152,300	165,914	163,974	177,245	192,781	208,190
Net imports	-8,640	-3,035	-4,885	-220	-45	1,440	1,614	4,951
Total available	130,725	148,568	147,415	165,694	163,929	178,685	194,395	213,141
Food*	13,066	12,922	12,424	11,852	10,776	10,898	10,865	10,777
Feed	109,000	122,258	124,817	134,371	137,824	144,041	148,410	159,234
Other use	8,660	13,388	10,175	19,471	15,328	23,746	35,120	43,130
Total use	130,725	148,568	147,415	165,694	163,929	178,685	194,395	213,141

*Adjusted data taking into account the underestimation of household consumption

Source: Qiu, H., van Veen, W. (2014) "Matching China's agricultural supply and demand data", Paper for special session ASSA-CES, Philadelphia

minimum prices are likely to be replaced by target prices directly compensating producers and not state companies anymore,⁴⁵ affecting the monopoly of Sinograin. However, it is not sure whether the reshuffling of the cards will have positive or negative effects on the displaying of information on agricultural markets in general—as private actors, who spend a great amount of effort and money in the improvement of public information, are unlikely to share the fruits of their research if not required to—and on food reserves in particular—as asymmetry of information can grant them with an advantage over their competitors.

4. CONCLUSION AND POTENTIAL DRIVERS OF CHANGE

Information on agricultural markets is of utmost importance both for public and private stakeholders. However, a number of factors prevent governments from making information more accurate. In China, the governmental authorities have to face the defaults of the cadres evaluation system, according to which local officials are evaluated according to their ability to reach agricultural production targets defined in year plans, even though they also have to regularly report on agricultural output figures to statistical bureaus. The cadres evaluation system remains one of the most important steering mechanisms allowing central authorities to control local officials (Heberer and Trappel, 2013; Li, 2005; Edin, 2003; Gao, 2009) and its defaults can neither be counterbalanced by too costly local surveys nor be corrected by the self-reporting of too small farmers. The fragmentation of agricultural structures, the small size of farms, the mobility of farmers and the variability of their choices in terms of crop rotations further complicate the task of collecting information on agricultural

Presumably, Sinograin will be limited to the remaining 26 mmt." ("China Corn Support Price Unchanged", *Dim Sum*, November 14th, 2014 <http://dimsums.blogspot.fr/2014/11/china-corn-support-price-unchanged.html>).

45. Pilot projects are currently being conducted in cotton production in Xinjiang and in soybean production in Heilongjiang. The projects have proven unsatisfactory so far, but it is probable that minimum prices will be replaced with target prices in the grain sector in the middle-term (Interviews, Beijing, November-December 2014).

production. Food consumption is not easier to assess, as food consumed away from home is extremely difficult to evaluate and as rural consumers are increasingly mobile. Finally, the government is also confronted to the inaccuracy of the volumes declared for grain stored in national reserves, as inflated figures enable SOE officials to have access to greater subsidies and as strong issues exist in terms of the quality of reserves.

In addition, a number of factors make the Chinese government reluctant to take effective action to make information available to the public. Firstly, publishing accurate figures on agricultural markets could incriminate a number of officials for not being able to perform their duties. Secondly, as strong debates regularly occur within the government on how to achieve food security, it is in the interest of officials to preserve an image of a unitary whole, for which keeping a *status quo*—among other things, on the transparency of grain reserves and on the ban of commercial GM crops—is a necessary element. In addition, the *status quo* is likely to help the government achieve other goals, such as the establishment of non-trade barriers aimed at protecting Chinese grain farmers and domestic production.

In such a context, one driver can potentially make the situation evolve on a middle- or long-term perspective: the recent strong willingness of high-level officials to make China become more involved in international forums. While in 2007-2008 China had banned exports in order to safeguard its national food security, the context has changed and the government realised that it was impossible to achieve self-sufficiency by relying solely on domestic production. As a consequence, officials increasingly take action to promote cooperation with foreign countries. This opened a whole new realm of possibilities, including not only bilateral cooperation, but also regional and global cooperation. In addition, the Chinese move in international forums is not only part of the strategy to secure food supply on international markets, but is above all part of Xi Jinping's new strategy to increase the role of China in the shaping of the frames of international discussions.⁴⁶

46. "Xi eyes more enabling int'l environment for China's peaceful development", Xi Jinping's address to the central foreign affairs meeting, held on November 28th and 29th, 2014, in Beijing, *Xinhua*, 30/11/2014 http://news.xinhuanet.com/english/china/2014-11/30/c_133822694.htm?utm_source=The+Sinocism+China+Newsletter&utm_campaign=36440936ac-Sinocism11_30_1411_30_2014&utm_medium=email&utm_term=0_171f237867-36440936ac-29578933&mc_cid=36440936ac&mc_eid=5d1fe7c691

Since the country integrated the WTO, agricultural trade has experienced impressive growth. In 2011, the country overtook the United States as the first importer of agricultural products and imports have kept on rising since then, driven by a tremendous rise in grain demand. In order to protect its domestic grain sector, China negotiated import quotas with the WTO. In agricultural commodities other than basic staple grain however, China has significantly relaxed its tariffs over the past few years⁴⁷ and has increasingly been advocating in favour of free trade in international debates.

Table 3. Import quotas for grain and share of SOEs

Variety	Quota (million tons)	SOE share
Wheat	9.64	90%
Maize	7.20	60%
Rice	5.32	50%

Source: USDA. Grain and Feed Annual. GAIN Report Number 14016, February 2014.

The situation of the country and of international food markets has evolved. Today, two factors are likely to threaten the food security of the country, which now depends on international markets for a certain number of commodities: the rise in the food demand of developing countries—potentially leading to an increased competition on global food markets—and the possibility, for food exporting countries, to reduce production or to ban exports. In order to address these threats, the government has been actively working on establishing bilateral and multilateral cooperation projects and is progressively increasing its involvement in international organisations. The development of bilateral agricultural cooperation programs with developing countries⁴⁸ and the rise in the contribution of the country to international emergency aid⁴⁹ have been the most visible and most documented signs of the recent increase in the involvement of the country in global food security issues. In addition, China has been actively working on the establishment of guidelines⁵⁰ and programs at the regional

47. "Import tariffs lowered to boost consumption", *China Daily*, December 18th, 2012 http://www.china.org.cn/business/2012-12/18/content_27444743.htm

48. Ministry of Agriculture, "China, South Africa ink Action Plan on Agricultural Cooperation", December 8th, 2014 http://english.agri.gov.cn/news/dqnf/201412/t20141208_24535.htm; Ministry of Agriculture, "Chief Economist Qian Keming attends Symposium on China-Africa Agricultural Cooperation", November 19th, 2014 http://english.agri.gov.cn/news/dqnf/201411/t20141119_24412.htm

49. In 2005, China became the third largest food donor (<http://www.wfp.org/node/534>).

50. Food security was one of the seven main cooperation sectors on which agreements were met in lead-up to 2014 APEC summit ("Backgrounder: Major

level as well, such as the ASEAN Plus Three's emergency rice reserve—for which China was the highest donor—or the yet-to-be-established Central Asia Food Bank.⁵¹

In addition, the country became more visible in international forums. Over recent years, the government has increased its donations to international organisations involved in the global governance for food security, such as the FAO and the WFP, and plays a gradually more important role in the newly reformed FAO Committee on Food Security. Its greater involvement enables the country to promote South-South cooperation⁵² and to encourage producing countries to take part in the global efforts oriented towards food security. For this latest objective, officials increasingly advocate in favour of the establishment of global governance mechanisms and of international principles such as the right to food. At the World Food summit in 2009, two years before the establishment of the AMIS at the request of the Agriculture Ministers of the G20 in 2011, the then Vice-Premier Hui Liangyu proposed the creation of a food security safeguard system encompassing early warning, emergency relief and regulation functions,⁵³ aimed at rapidly reacting to crises. In the same speech, Hui Liangyu also warned the international community against the threat of an uncontrolled development of biofuels: “The international community should take seriously the long-term implications of the development of the bio-fuel sector and guide it toward sustainability based on the principle of ‘not competing for food with humans and not competing for land with food’. Energy security should by no means come at the cost of food security.”⁵⁴

Over recent years, the Chinese government also started promoting “food rights” in international forums. Li Keqiang's discourse at the FAO in October 2014 clearly states that “food for all is a fundamental human right, upon which all other human rights depend”.⁵⁵

In spite of a clear rise in the country's involvement in international discourses on food security, a number of inconsistencies remain. The Chinese government did not express a clear support of India in its fight in 2014 for the recognition of national food security stakes by the WTO trade facilitation agreement.⁵⁶ In addition, the authorities are still reluctant to shed light on the national agricultural inventories. However, in order to have effects on other countries' agricultural policies, the international strategy of China will have to demonstrate that the government is keen on co-operating on international projects. The desire to improve the agricultural market information system domestically, the diversity of views within the government and the increasing need to be heard in international forums hold out the hope that the situation evolves. ■

agreements reached in lead-up to 2014 APEC summit”, *Xinhua Net* http://news.xinhuanet.com/english/china/2014-11/02/c_133760592.htm).

51. China would recently have proposed to create a Food Bank in Central Asia that would involve Central Asian countries, Russia and China. In addition, in 2013, Li Keqiang would have proposed to Latin American countries the establishment of a multilateral food reserve (Interview with Zhang Hongzhou, RSIS, October 2014).
52. In 2008, China established a 30 million USD trust fund at the FAO to support South-South cooperation in agricultural development – basically, to support technical field missions with Chinese agricultural experts in developing countries. In October 2014, during his visit at the FAO, Li Keqiang announced that China would donate an additional 50 million USD to support the South-South cooperation program of the FAO (FAO (2014) “China pledges \$50 million to FAO in support of South-South cooperation”, October 15th, 2014).
53. “China proposes action plan to eradicate world hunger”, *Xinhua*, November 17th, 2009.
54. “Strengthen Cooperation for Global Food Security”, Address by H.E. Hui Liangyu, Vice Premier of the State Council of the People's Republic of China at the World Food Summit, November 16th, 2009.

55. FAO (2014) “China pledges \$50 million to FAO in support of South-South cooperation”, October 15th, 2014.

56. In July 2014, India refused to ratify the WTO's trade facilitation agreement for food security concerns. The government finally agreed to sign the TFA once its demand to remove constraints on food stockpiling had been accepted, in November, after months of deadlocks.

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