DEVELOPMENTS AND EMERGING PROBLEMS IN THE CHINESE GRAIN ECONOMY[1]

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Abstract

There have been changes in the Chinese grain economy in recent years which have significant ramifications for China's domestic and international grain demand and supply. This paper surveys some of the major changes in the Chinese grain economy since 1990 and points out current difficulties and emerging problems in the reforms of the Chinese grain economy. Areas to which research attention should be directed are discussed.

Key words: grain economy; China; reform.

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1. INTRODUCTION

China is the most populous country in the world and her population alone accounts for about one fifth of the total world population. Feeding such a huge population has been a preoccupation of the Chinese government. Since 1953, soon after the Communist government came to power, highly centralised planned methods were used to manage the country's grain economy with the unified grain procurement and sale system implemented for several decades. This rigid planned method pla¸ed an important role in ensuring an adequate food supply for the people of the country (except during some extreme times, e.g., 1960-62). However, it also caused many problems and in particular it did not encourage greater grain production.

From 1979 when the economic reform started in rural China, the government made some changes to its grain marketing policies. Some important ones were (1) the reopening of the free grain market; (2) farmers being allowed to sell their surplus grain in the free market after fulfilling the government quota; (3) the increase in the procurement price with big margins; and (4) farmers being allowed some autonomy to make their own production decisions. These changes along with the rural economic reforms offered the farmers with incentives to work the land harder which consequently allowed China to enjoy good grain harvests several years in a row during 1979-84. Grain production increased steadily, reaching 407 million tonnes in 1984 with per capita grain output being 390 kilograms.

In 1985, in view of the abundant grain the country had ever had, plus the so-called "difficulties in selling, transporting, and storing grains", the government made further changes to the unified grain procurement and sale system. Most important of all was the abolition of the unified grain procurement system which was replaced by the "contractual procurement system". A major feature of this system is that farmers were "persuaded" to sign contracts to sell a certain amount of grain to the state at a state-set procurement price. For most farmers, the implementation of the new scheme meant that selling more grain to the government would, when compared with the previous year, result in less revenue being received. Consequently, grain production dropped sharply to 379 million tonnes that year and remained stagnant until 1989. By 1989, production had only marginally surpassed the record level of 1984. However, the per capita grain output was only 362 kilograms and was 28 kilograms lower than that of 1984.

In addition to the problem of low grain production, there were other problems in the grain economy which had become more and more acute. These included problems in the marketing and consumption areas. Some of the major ones are briefly addressed below. When there was more grain, the so-called "difficulty in selling grain" occurred but while there was less grain, regional blockades occurred and various grain-trading participants vied with each other to buy grains. On the consumption side, because there was no increase in the grain sale price even though the procurement price had been raised

significantly since the late 1970s, the sale price became lower than the procurement price and the subsidy to grain consumers increased substantially and quickly from 1979. However, the government left the sale price of grain to the non-agricultural population untouched for many years in order to maintain social stability. By 1989 the total annual subsidy on grain consumption was more than 34 billion Chinese yuan. The steadily increasing state subsidy on grain consumption became increasingly unaffordable.[2]

It was held that these problems in the grain economy had dragged the overall national economic reforms of the country and should be resolved urgently (Bai 1990; Hu 1991). Consequently, to overcome these problems, the Chinese government has since 1990 made some vigorous changes to its grain economy. These changes may have significant ramifications not only for China's domestic but also international grain demand and supply. Therefore, it is important to understand what changes have taken place in the reforms of the Chinese grain economy. Such an understanding may lead to the identification of important areas for further research on the Chinese grain economy.

In this paper, we survey the reforms in the Chinese grain economy since 1990. Based on this, we point out the difficulties and emerging problems in the process of the reforms. We then identify areas to which research attention should be directed.

2. DEVELOPMENTS IN THE CHINESE GRAIN ECONOMY SINCE 1990

Some important changes to the Chinese grain economy since 1990 are presented in the three categories of grain production, marketing and consumption. The placement of a change under any of these categories is judged on how close a change is to an area and can be somewhat arbitrary.

2.1 Changes Related to Grain Production

A steady increase in domestic production is of crucial importance for grain security in China, given the pressure of population growth. The Chinese government had been worried about the stagnation of grain production since 1985 and had tried hard to bring China's grain production out of the stagnation. As we know, grain production of a country is affected by many factors and one way to group these factors is to place them into two categories: natural and social. Natural factors are largely beyond human beings' control and their effects on grain production can only be modified to a limited extent. The effects of many social factors, however, can be very variable. In the late 1980s, some of the social factors which were believed to have significantly affected China's grain production included: relatively low grain prices, a rapid increase in input prices, lack of a support

[2] For a more detailed discussion on various aspects of the Chinese grain economy prior to 1990, see Zhou (1993, Chapter 2).

mechanism for grain producers, and reduced investment in grain production. Correspondingly, some significant changes were made to these areas.

Increase in grain procurement prices

Grain price itself is an important indicator but not the only one for farmers' production decisions. After the fulfilment of basic obligations (i.e., home consumption, seed and feed requirements, government quotas), whether a farm will commit resources for more grain production is largely dependent upon (1) whether a profit can be earned; and (2) the income ratio between grain production and other possible economic activities. It is widely held that, since 1985, not only were the relative returns from grain and non-grain production not in favour of grain production, but also the absolute grain price was low (Cheng 1990; He 1990; Liu 1990). Even worse, during this period, input prices have increased rapidly. Very often grain farmers could earn little profit but suffer from a loss from their grain production. It was reported that, in some areas, the more grain one produced, the more the loss (Wu 1992; Deng 1993). Under these circumstances, one would not be surprised that grain production would be stagnant.

To encourage farmers to produce more grain, the procurement prices have been increased several times in recent years.[3] In March 1989, the Minister of Commerce, Hu Ping, announced that the contractual procurement price was to be increased by 18% (Chen 1989). Although such an increase did not fully bridge the gap between the procurement and market prices, nor balance the income ratio from grain production and non-grain business, most grain producers benefited to some degree and grain production in 1989 increased and for the first time exceeded its 1984 level. Several other major procurement price increases are: April 1992 (an average price increase percentage of mixed major crops is not available. The actual price increase by crops can be found in State Price Bureau and The Ministry of Commerce 1992, e.g., for every 50 kilograms, the price increment is wheat by 6 yuan; japonica rice by 5 yuan; indica rice by 3 yuan; and corn by 3 yuan); June 1994 (40%).

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[3] In China, three prices have important impact on farmers' income. They are: (1) government procurement price for quotas to the government, (2) negotiated price when the government buys grains from farmers outside the quota, and (3) market price. The government procures grains from farmers by assigning each a quota at a set price. The majority of grain producers are required to deliver a significant part of their surplus grain to the state to fulfil their quota and the amount of surplus grain they can trade in the market is relatively low (see Zhou 1993, Chapter 7). If the procurement prices are acceptable to them, they will be encouraged to produce more grain to fulfil the government quota and to sell the rest in the market for a much higher market price. In addition, a higher procurement price leads to a higher market price, resulting in more income for the farmers.

Modifications in subsidy methods to grain producers

High or low grain prices without consideration of costs have little meaning to the producers. What is important is that under a given grain price, after deducting all costs, they can still earn some profit. Over the past several decades, the use of commercial inputs has increased significantly in Chinese agriculture. Nowadays, farmers' agricultural operation is heavily dependent upon inputs from outside farms. Therefore the price level of farming inputs affects farmers' income greatly.

In 1985, accompanying the changes to the grain procurement system, a large portion of inputs was supplied to farmers at negotiated prices (Agricultural inputs used to be supplied to farmers at government-subsidised prices during the collective farming period). When coupled with the "30-70 ratio price" the farmers could receive for their grain, the level of input prices was felt to be too high (for example, Peng 1986; Guo 1990, p. 16).[4]

To partially compensate for farmers' losses incurred when buying production inputs at higher prices while selling their grain to the government at a low price, a "three-link" scheme was introduced in 1987. The scheme meant that the quantity of grain that the farmer contracted to supply to the government was linked to a down-payment and to the supply of subsidised fertiliser and diesel. The intention was good but mismanagement meant that many of the resources were used by those in charge for their own benefit. In addition, the administrative cost to operate this scheme is very high as it has to deal with millions of farm households.

In early 1988, the State Council issued a circulation requiring local governments to improve the implementation of the scheme. It did not help very much. While grain producers could benefit little from this subsidy measure, they suffered from buying those inputs at higher prices which were not subject to the control of the "three-link" scheme. In view of the problems in the input market and complaints from farmers, the government in late 1988 decided that the supply of several major inputs would be monopolised by the government.

However, some agents for the monopoly supply of the inputs still made use of these inputs for their own benefits. For example, they may supply a large quantity of these inputs to their relatives or connections who then sell them at much higher price at critical points of crop production (Hu, Ji, and Zhang 1990; Huang and Zhong 1990).

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[4] Following the implementation of the contractual procurement system, a new 30-70 ratio procurement price was set which was 30% on the old quota price and 70% on the old above-quota price. This 30-70 ratio was based on the fact that in 1984 the above-quota procurement already accounted for 70% of the total government purchases. Therefore, the weighed average price in 1985 would be kept at the previous level. This meant that, if farmers sold exactly the same quantity of grain to the state in 1985 as in 1984, they would earn the same as in 1984 regardless of inflation. However, if they sold more grain to the state, they would receive less revenue because of a drop in the marginal price of 10%. This new price system, therefore, did not encourage farmers to grow more grain to sell to the government.

Given the fact that the benefits of the "three-link" scheme do not all fall into farmers' hands, further changes were made in early 1993. That is, instead of supplying the farmers with inputs at subsidised prices, a difference between the government subsidised price and the market price for those inputs under the "three-link" scheme (i.e., fertiliser and diesel) is paid to farmers when they deliver their grains to the government. Both the central government and local governments contribute to covering the "difference" with the payment standard set by the former. The latter are allowed to make a contribution higher than the standard set by the central government for them. The prices of these inputs are then to be determined by the market.

In principle, the farmers should have obtained the subsidy provided by the government. Unfortunately, in some regions, this was not the case. Often the subsidy funds for covering the price difference are not secured. On the other hand, due to various reasons and partly because of the high inflation rate in the country, the prices of inputs in the market have gone too high thus discouraging their use. This situation remained little changed in 1994.

Implementation of a ceiling price on agricultural inputs

Because of the very high input price which discourages their use, in 1993, ceiling prices were introduced for several major agricultural inputs. Due to the lack of management measures in the market and, in some cases, market surveillance staff lacking career ethics, there have been cases where these ceiling prices are broken.

Introduction of a grain support price

Before 1984, there was no need for a minimum support price because (1) the bulk of farmers' surplus grain was procured by the government, and (2) the market price could not be lower than the procurement price whenever the free market was allowed. In 1985, the government tried to introduce more free market mechanisms into grain marketing. Owing to consecutive good harvests in the previous years, there was more grain available in the market and thus there was a concern that market prices might drop too much. The government introduced a support price which was equal to the old unified procurement price, aimed at protecting producers' interests. The government promised to buy whatever quantity was offered by farmers at the old unified procurement price if the market price dropped below it.

However, the scheme was really inoperative, even in 1985, because the old unified procurement price was so low that the market price could hardly drop below it. The adoption of the old unified procurement price as the minimum support price in 1985 was not based on a comprehensive consideration of the situation. It was largely based on policy makers' over-optimistic projection of grain production in light of the good harvests

over the past several years. Since 1985, there had been little serious attempt to work out a more realistic support price. On the other hand, grain supply had become short, and there was little chance for the market grain price to drop below a support price.

The 1989 and 1990 harvests were good thanks to the increase in the procurement prices. From 1990 onwards till early 1993, the grain market all over the country was sluggish. Farmers again suffered from "difficulties in selling grain". In some areas, market prices dropped below the government contractual procurement prices. To protect farmers' interests, a new minimum support price policy was implemented in 1990. According to it, the government promised to purchase all grains offered by farmers at no lower than the announced support price whether the grains were offered to sell immediately after harvest or at a later time. To facilitate this operation, the government decided to establish a special national grain reserve scheme to absorb the extra grains bought under the support price. However, due to limited purchasing funds, limited storage capacity and some other problems, the actual implementation was somewhat dampened (Chen 1991). Nonetheless, this helped farmers to a certain extent.

The central government decides the support prices for different varieties of grains and then passes them on to local provincial governments. The latter are allowed to make their own support prices which can be higher than but no lower than those determined by the central government and they are responsible for announcing these support prices to their farmers.

Related to the above, the central government in early 1993 attempted to establish "grain risk funds" which may be used for the operation of grain procurement at the support price. Both central government and provincial governments would establish their "grain risk funds". In practice, the source of the funds has often been a problem.

Increase in investment to grain production sector

As a result of the economic reforms in favour of the rural communities, farmers' income increased rapidly during 1979-84. The Total Rural Product of Society per agricultural labourer increased from 592 yuan in 1979 to 1039 yuan in 1984. Thus in the following several years, the government reduced the share of the investment to agriculture in total fiscal budget by about two percentage points (when compared with that of 1981-84. It was about five percentage points lower when compared with that of 1976-80), in the belief that farmers were richer and they should invest more money in their production.[5]

Farmers may invest only when the production of a crop is profitable. With the price policy change in 1985, relative return from grain production and as well farmers' income

[5] No specific data on government investment to grain production are available. Total investment to agriculture is used as a surrogate. Sown area to grain crops accounts for more than 75% of the total sown area in the country.

were reduced. Added to this, in the following several years, the government often did not have sufficient funds to pay the farmers for the grains purchased and instead gave the farmers IOUs (I owe you). Farmers's interest in and ability to investing in grain production were significantly affected (Huang and Zhong 1990). Some local governments, driven by short-term local interest, allocated more funds to, or even diverted agricultural funds for, non-agricultural business of higher returns.

However, some projects of larger-scale, such as large irrigation facility construction, improvement in varieties, agricultural research and extension, may only be carried out with funds from the government. Lack of investment from farmers and from the government adversely affected the development of agricultural infrastructures and contributed negatively to grain production.

In view of the production stagnation since 1985, the government increased its investment in agriculture from the early 1990s. During 1990-93, the share of the expenditure for agriculture out of the total fiscal expenditure increased by about one percentage point compared to 1985-89. Among the agricultural expenditure, the money used for agricultural capital construction increased at a faster rate. This has resulted a rapid increase in the irrigated area: 48.74 million hectares in 1993 as compared to 44.92 million hectares in 1989 (It was 44.97 million hectares in 1978 and was reduced to 44.04 million hectares in 1985, and then gradually increased to the 1989 level. SSB 1994, p. 335). In 1993, special investment funds were particularly allocated to those major grain-producing regions (Anon. 1993a).

2.2 Changes Related to Grain Marketing

Due to the implementation of the planned grain economy, there has been little chance for the Chinese grain market to develop until the mid 1980s. There has also been a lack of grain handling facilities in the country. The lack of a developed grain market and marketing facilities has not only adversely affected grain production but also caused grain handling inefficiency. Since the mid 1980s, as the overall economic reforms deepened in the country, reforms have also taken place to the marketing side with more market mechanism introduced to the grain market.

Increased market mechanism into the grain market

This is reflected by the fact that a multi-channel grain marketing pattern is taking place along with the establishment of grain wholesale markets and the use of futures market in grain transactions while government's monopoly in the marketing of grain has been significantly reduced. These are briefly addressed below.

(1) Non-government grain traders are allowed more opportunity to operate in the grain markets. These include other government non-grain departments (as opposed to

government grain departments who used to monopolise all grain trading businesses), collective or cooperative grain businesses, private grain traders, and even joint ventures. The monopolistic position of the government grain departments is vanishing and those government-owned grain shops have been undergoing rigorous reforms. As a result of the abolition of the unified grain sale system which took place in 1993, government grain shops were required to operate in the market as independent entities to compete with many other grain traders.

(2) **Establishment of grain wholesale markets.** From 1979, local fair markets and primary assembly markets were again allowed to operate. However, their operations are often limited to a local area and can do little to help the grain transactions between regions. To improve the integration of the national grain market and facilitate the grain trade over space, four traditional rice markets were restored in the early 1980s. Then in 1990, the first wholesale grain market ever in the country, Zhengzhou Grain Wholesale Market, was on trial. It is a national-level wholesale market. Since its establishment, more than 20 wholesale markets have been established, with 3 being at the national level (i.e., Zhengzhou, Shanghai, and Tianjin). They facilitate grain trade between regions on a much larger scope. They also lend the government the opportunity to have market grain transactions under its monitoring. These markets also serve to gather and provide market grain information to those concerned.

(3) **Introduction of grain futures markets.** Up to early 1993, there were only spot grain markets in China. Due to the possibility of the unstable grain prices in the market, in order to enable producers to make use of hedging to reduce grain price risks, the government also encouraged the trial of grain futures markets. In May 1993, China's first grain futures market, China Zhengzhou Commodity Exchange, opened, whose predecessor is the Zhengzhou Grain Wholesale Market. The second one, China Shanghai Grain and Cooking Oil Exchange, opened in June 1993. They follow international common management practice and provide price information and forecasts for customers.

Grain futures markets are a totally new concept to the Chinese grain economy and still at their toddler's stage. At present, "Zhengzhou price" is closely monitored by many other grain markets in the country. Some 40 newspapers and magazines regularly reprint "Zhengzhou price" and some foreign media and government agents also show great interest in it.

Changes related to grain movements between provinces

There are two important changes. One is the change in the central government policy on grain movements between provinces; the other is the change in the direction of the physical grain movements between provinces.

(1) Grain movements between surplus and deficit provinces used to be strictly controlled by the central government. The central government, however, often has to

provide subsidy on grain movements between provinces. It was also the case that the exporting provinces often ended with providing subsidies to the importing province as a result of implementing the central government's plan which did not encourage greater grain production in those surplus regions. Since 1985 measures have been taken to discourage provinces with a grain deficit from relying too heavily on importing grain and to encourage them to produce as much as possible for themselves. During 1988-92, the central government fixed the subsides to various provincial governments on several expenditure items involved in grain movements between provinces. If the expenditures were higher, the provincial governments were responsible for covering the extra costs.

As the grain economy reforms went further, the control over grain movements between provinces by the central government was reduced from 1993. Grain surplus and deficit regions were required to gradually arrange the grain transactions by their own through signing contracts. To facilitate this, in early 1993, a national grain and cooking oil trading fair was organised and held in Nanjing. Since then grain surplus and deficit regions have been expected to make use of grain wholesale markets in the future to negotiate their grain contracts.[6]

(2) The direction of physical grain movements between regions changed. In the past, surplus grain produced in southern China was transported to northern China while coal was transported from the north to the south. In recent years, this has changed. Both grain and coal are transported from the north to the south. Two major reasons caused this shift. (1) Several southern provinces have become grain-deficit from grain-surplus. Several provinces in central China have become major grain-surplus regions. (2) Demand for feed grain has increased rapidly. Some major feed grain producing provinces are in the north east. Such changes worsen the already acute problems of insufficient transportation capacity.

Attention to the construction of grain handling facilities

There has been a serious lack of grain marketing infrastructures in China. Over the past ten years or so, the shortage of grain storage facilities made it difficult for the government to purchase all the grains delivered by farmers causing the so-called "difficulties in selling and storing grain", while the insufficient transportation capacity caused "difficulties in transporting grain". There is also a lack of marketing facilities in the grain markets. The lack of market infrastructure has been described as the "bottleneck" which greatly constrains further development of grain production. In recent years, the government has allocated funds to the construction of these facilities. Much attention has been paid to increasing the storage capacity. In June 1993, the government obtained a loan of US$ 490

[6] Guo and Li (1994) provide an overview of recent situation of grain movements between regions and an outlook on their future development.

million from the World Bank to be used to improve grain handling facilities (Anon. 1993b).

Establishment of a central grain reserve

China did not seem to have formulated a clear grain reserve policy until 1990 when the State Council promulgated a decision to establish a special national grain reserve system. In the past, although high level government officials, e.g., Mao Ze-Dong, Li Xian-Nian, Chen Yun, had repeatedly emphasised the importance of building up a central grain reserve, the amount of the reserve had been very limited until the advent of the improved grain situation by the early 1980s. Very often when grains were badly needed, the reserve was too little to help or there were almost no reserve stocks (Zhao and Qi 1988, pp. 107, 167; Ministry of Commerce of the PRC, n.d., pp. 457-59).

As more and more market mechanism is introduced into the management of the country's grain economy, the lack of a grain reserve policy has placed the government into a difficult situation in its market operations. When there is more grain, e.g., in the early and late 1980s, the government was not able to absorb the grains from the market in order to protect farmers' interest as there was insufficient storage facilities and there was no clear policy to follow either in order to procure these grains as reserves. When there is a shortage of grain in the market, e.g., in the mid 1980s, the government did not have enough grain from the reserve to depress the market prices (Chen 1991).

To increase its ability to influence the market, the government in 1990 decided to establish a special national grain reserve with the use of the reserved grain to be controlled by the central government. A national Grain Reserve Bureau directly under the State Council was also set which monitors grain reserve operations in the country.

2.3 Changes Related to Grain Consumption

From 1953 when the unified grain sale system was instituted, the government took full responsibility to feed the urban population and some responsibility to feed part of the rural population who engaged in non-grain businesses or who produced grain but not enough for home use. When the procurement price was raised significantly in 1979, there was no increase in the grain sale price. As a result, the sale price became lower than the procurement price and the subsidy to grain consumers increased substantially and quickly from 1979. In 1985, the sale price of grain supplied to rural households with a deficit in grain and to cash crop producers was increased to equal the procurement price. The non-agricultural population was still provided with subsidised grain at the unified grain sale price under the rationing system. In the late 1980s, procurement prices were again increased on several occasions. However, the government left the sale price of grain to the non-agricultural population untouched for many years in order to maintain social stability.

The subsidy on grain consumption increased substantially and came to 47.17 billion yuan in 1990 (including cooking oil). The steadily increasing state subsidy on grain consumption became increasingly unaffordable, eating away about one fifth of fiscal income in 1990 (Hu 1991).

Reducing the supply of the subsidised grain

The government procures grain at the government-set procurement price, which is low, from farmers, and then sell these grain to consumers at a price which is even lower. This encourages the demand for such a subsidised grain. Eventually the grain procured at the procurement price became lower than the demand for the grain at the unified sale price. What the government did was to buy grain in the market at the negotiated price or import from overseas and then sell it to the consumers at the unified sale price. More subsidy had to be provided. Starting from 1988, trials within a local area were allowed by the government in various regions in an attempt to reduce the sale of grain at the unified sale price in order to reduce the subsidy on consumption. The result was less promising largely due to the natural increase in urban population and as well more people attempted to get registered as urban population.

Changes in the unified grain sale price

In May 1991, the unified grain sale price was increased in order to reduce government's subsidy on grain consumption. After the increase, the sale price was still lower than the government grain procurement price and the subsidy was reduced only marginally from 47.17 billion yuan in 1990 to 46.76 billion yuan. In April 1992, the sale price was further increased to equal the procurement price. Total subsidy on grain consumption was reduced from 46.76 billion yuan in 1991 to 34.61 billion yuan in 1992, a reduction of 12.15 billion yuan.

The abolition of the unified grain sale system

By about mid 1993, in over 95% of the country, the unified grain sale system was abolished, which had been implemented for 40 years from 1953, leaving the consumers to buy grain for their consumption from the market at the market prices. As a result the subsidy was further reduced to 18.49 billion yuan in 1993.[7]

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[7] Although the ration system was abolished, the government still procures grain through both quota and market purchases. This grain is used for central reserves and other government purposes and sold through government-owned shops at the market prices. Given that the cost of grain is equal to the sum of the purchase price, the procurement incidentals and the distribution incidentals, if the price at which the grain is sold is lower than its cost, the government subsidy on grain consumption equals the cost of grain less the

This old grain distribution system did not have a means test on those covered and therefore has no targeting of the poor. People of all income levels relied on government subsidised grain so long as they were entitled to it. The termination of this system greatly reduced the consumption subsidy to the many non-poor people but it also affected food security of the poor.

Changes in people's food structure

Other important changes related to the consumption side, due to consumers' increased disposable income, include (1) an increased demand for finer quality of grains, in particular, japonica rice is more favoured than indica rice; (2) the trend to consume more coarse grain for health consideration; and (3) an increased demand for processed or partially processed food.

3. DIFFICULTIES AND EMERGING PROBLEMS

The Chinese government has made great effort to reform its grain economy during the past four years as indicated by those major developments and changes outlined in the above section. Some major achievements are: (1) movement towards a protective policy to encourage a greater and stable grain production through increases in grain procurement prices, the use of minimum support price, and control of input market; (2) the formation of a central grain reserve policy and the establishment of a central grain reserve which will prove to be very useful when managed properly in increasing the government's ability to regulate the grain market; (3) development of the grain market and the construction of grain marketing infrastructures, e.g., the allowance of different participants in the market, the establishment of wholesale markets, the trial of futures markets, and the increased storage capacity; and (4) removal of the untargeted grain distribution system which has significantly reduced the government's burden to look after those non-poor population. These will undoubtedly help the Chinese government to shift away from the previous highly centralised planned grain economy to a market-oriented grain economy, thereby achieving more efficiency.

However, despite these significant progress in the reforms of the Chinese grain economy, there are also difficulties and emerging problems. Some major ones are identified below.

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revenue from sales. Thus the subsidy can be roughly calculated as follows.

Subsidy on a quantity of grain (Q) = Q × (procurement price + procurement incidentals + distribution incidentals) - Q × sale price

The increase in the sale price in recent years was not able to cover all the cost of grain. Part of the procurement and distribution incidentals are not fully covered and are still borne by the government.

Stable increase in domestic grain production

China's population increases by more than 15 million a year and thus there is a consistent increased demand for grain. How to keep up the total supply to meet the total demand of grain has been and will continue to be the difficult task for the Chinese government.

There are two sources of grain supply: domestic grain production and import of grain from international market. If grain could be imported into China without any restriction, the supply of grain might not be a big problem as any shortage of the total supply caused by low domestic grain production could be met by grain import. However, this is not the case. China has been cautious in using the international market as a source of the supply to its domestic market and has never relied on it and only tends to use it as a supplementary source for its domestic supply. This policy has been again recently repeatedly stressed by government officials and many researchers (see, for example, Tian 1990, Bei 1992,).[8]

Given this policy setting, China then must try to maintain a stable increase in its domestic grain production. The experience in recent years has shown that this can be very difficult because the overall economic environment is not in favour of grain production and does not encourage farmers to produce more grain. Low relative economic returns from grain production, unstable and high input prices, lack of investment in land improvement and irrigation projects, lack of agricultural research and extension, are all the problems which will potentially make the stable increase in grain production difficult.

The above shows that the increase in total quantity of domestic supply is of utmost importance to China. Contrary to this, the government in 1992 made a policy to encourage crop structural adjustments which essentially discouraged the production of some grain crops of lower quality but higher yield, e.g., some HYV and indica rice varieties. There has been a tendency in recent years for areas sown to such varieties of grain have been reduced. Farmers shifted their resources to more demanded varieties but often of lower yield.[9] However, given that there is limited agricultural resource and the increase in total

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[8] Garnaut and Ma (1992) in their Grain in China promote that China would benefit from internationalising her grain economy. The Chinese view about the use of the international grain market, however, places much uncertainty on whether and to what extent China would internationalise her grain economy, unless certain radical changes take place. In fact, the extent to which China may open her grain trade to the world is importantly determined by perceptions of the rest of the world's preparedness to do business with China as pointed out by, for example, Garnaut and Ma (1992, pp. 126-133) and Tyers and Anderson (1992, p. 294).

[9] The demand for these grains of lower quality was low because the government maintained the price difference of grains of different qualities too small. This encouraged people to demand more grains of higher quality. Consequently, there was the problem that farmers had difficulty in selling grains of such varieties and received low prices; and the government also had a large amount of such grains in storage which was difficult to sell.

quantity is still of priority in China, moving away from higher yield varieties (though lower quality) to better quality varieties (but lower yield) as a policy needs to be seriously reviewed. The government may need to work out policy measures to encourage increased areas sown to those higher yield varieties which will contribute to the increase in total domestic grain supply. The government may purchase them to supply to the poor at subsidised prices.

The implementation of the minimum support price policy

The formulation of a minimum support price policy is a wise step towards promoting the China's grain production. However, its proper implementation is more important. The decision of the support price level is critical to the success of this policy. At present, there is a lack of appropriate calculation of this price. There are also problems in its implementation on many occasions. For example, sometimes the protective purchase is restricted by the lack of funds or storage facilities.

Market regulation

At present, the markets in China, to a great extent, lack order. In some cases, there is a lack of regulation, rules, acts to govern the behaviour of the market participants; while in other cases, some traders just choose to ignore any market rule they should follow. Some market surveillance personnel do not have career ethics and may have, for private interests, contributed to the market messy situation.

The lack of order in the inputs market have caused the input prices to be very unstable and too high as indicated in the previous section. Despite various efforts, it seems that the government still has not found any better solution to tackle the problems in the input market. This market should be properly regulated by the government because otherwise it adversely affects farmers ability to apply these inputs thus affecting grain production.

Transactions outside grain wholesale markets are another problem. According to Professor Wu Shuo, an economist of the Ministry of Domestic Trade who actively promoted the establishment of grain wholesale markets, this is a serious problem at present. Some buyers and sellers come to the markets and make use of them to find sellers or buyers and after they have made a deal they leave the market and may proceed to transactions in hotels or restaurants (Wu, S. personal interview, 18 January 1994). By doing so, they can avoid any charges they have to pay to the market administration. However, the government loses the opportunity to accurately monitor the market. Furthermore, this often leads unethical activities between the buyers and sellers, e.g., bribery. If there was an auditing process during which any transactions without an authorised seal of a market administration are not accepted, such problems would be avoided.

Market infrastructures

Despite the fact that much attention has been paid to the construction of marketing facilities, they are still far from being sufficient to handle those surplus grains efficiently and are widely recognised as the "bottleneck" which to a large extent constrain the development of grain production and efficient marketing of grains. Government's grain procurement operation was often limited due to lack of grain storage facilities as pointed out in the previous section. It was quite often that, in the market, transactions are limited by the capacity of transportation (Bai 1991). There is a great urgency to construct more storage facilities, transport capacity, and as well marketing facilities in the markets, e.g., telecommunication facilities.

Grain price fluctuations in the market

When the unified grain sale system was abolished around mid 1993, there was a lack of mechanisms which could be used to regulate the market fluctuations should they take place. Added to this, those previous government grain shops had to now operate for their own economic interests, it became difficult for the government to use them to regulate the market.

From October 1993, the grain price in the market increased sharply with the situation aggravated by panic buying. The government mobilised various resources to cope with this price surge, including placing a ceiling price on grain traded in the free market. The grain price was brought under control by about early December of the year with heavy administrative intervention.[10] Compared to that of 1992, the grain price increase in 1993 was 27.7% (State Statistical Bureau 1994). In the first half of 1994, there were price fluctuations in some areas. However, from July 1994, the grain price in the market again rose quickly all over the country. Statistics based on 35 major cities show that grain price increased by about 34% in July 1994 compared to the same period in 1993 (Anon 1994a). During 1992-94, data show that the prices of two staple foodgrains, rice and wheat flour, have gone up surprisingly quickly. From 1992 to 1994, the price for japonica rice of first grade were 1.00 yuan, 1.60 yuan, and 2.60 yuan respectively per kilogram and the price for fine wheat flour of second grade were 0.96 yuan, 1.20 yuan, and 1.84 yuan respectively per kilogram. In 1994, compared to the same period in 1993, rice price increased by about 63% and wheat flour price increased by about 53% (Cheng 1994).

Price increase or decrease within a certain scope is a normal phenomenon in the free market situation. Price surges of such magnitude in the Chinese grain market cannot leave

[10] For a more detailed picture about the grain price increase incident, see, Anon. 1994a; Anon. 1994b; Bao 1994; Jiao 1994; Shen 1994; and Wu 1994.

consumers and government undisturbed. It is imperative to smooth the grain market and bring it under consistent government control.[11]

Food security of the poor

Food security of the poor people, mainly in the urban areas, has been affected by the complete elimination of the government grain distribution system. They are now not insulated from rising prices in the market. Because the establishment of a Chinese social security system is at its initial stages and it has not become developed and cannot yet look after the urban poor, the termination of the ration system would affect the food consumption of the poor.

By pointing out the above, it is not being said that the Chinese government should not reform its grain distribution system to reduce the subsidy. What is being brought out is that China might have tried to reduce the food subsidies through proper targeting without removing the distribution system completely. China needs to maintain a sort of government-administered grain distribution system through which subsidised grains are provided to the poor only.[12]

In the above some major difficulties and problems in the reforms of the Chinese grain economy have been identified. It may be appreciated that some of those difficulties and problems are evolved in the past and remained to be solved and some are emerging ones

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[11] Grain producers welcomed the market price increase in late 1993. During the visit of one of the authors to rural Jiangsu in late 1993, he held discussions with farmers and learnt that farmers were happy with the price increase but were disappointed with the ceiling price imposed by the government soon after the price increase in the market. The ceiling price for japonica rice of first grade was 1.60 yuan per kilogram and the farmers argued that it might not be enough even if this price doubled (In fact, by late 1994, japonica rice of first grade increased to 2.60 yuan per kilogram as mentioned earlier). It is widely held in China that the overall grain price has been low and it is most likely that the market grain price is below the market equilibrium price. This is because the government procurement price has been too low which might have affected the level of the market price. As such, the increase in the market grain price is a necessary correction of the low price over the past several decades and further increase is probably needed to enable the producers to obtain a normal profit from their grain production. However, the low grain price was evolved over a long time period and cannot be corrected overnight. Although a rapid price increase in grain in a short time span is desirable to farmers, it is not desirable as far as the whole society is concerned since this may upset the grain economy reforms, cause the instability of the society and thus affect the overall economic development of the country.

[12] It is noted that, in 1994, ceiling prices were often imposed which were usually 30% lower than market prices, and in some cities, rations of various kinds were used. This would help the poor to a certain extent. However, two points need to be brought out. (1) An assistance scheme targeting the poor needs to be done on a continual, not on an *ad hoc* basis. It should be available to the poor at all time not only when irregular circumstances occur in the market. (2) Targeting must be introduced. Otherwise, either farmers' interest would be hurt and thus price distortion would be remained by the artificially depressed prices (government's ceiling price in the market) or government subsidy on grain consumption would again escalate (untargeted ration).

to be tackled. After all, the most burning problem for the Chinese government at present probably is how to manage and control market fluctuations with more economic instruments That is, when there is less grain ano the price is too high, how to depress the market price in order to protect the consumers's interest; when there is more grain and the price is too low, how to carry out protective purchase in order to protect the producers' interests so that the grain production of the next year will not be affected. This is a rather challenging issue for the Chinese government due to the fact that the planned economy had been used for several decades and that the government had suddenly placed itself in such a new market situation. The Chinese government lacks experience and administrative infrastructures to handle the fluctuations in the grain market. It will take some time for the Chinese government to explore various methods which suit the Chinese situation.

4. AREAS WHICH DESERVE ATTENTION FOR FURTHER RESEARCH

Research efforts are needed to look into various areas of the reforms of the Chinese grain economy. The findings of such research may be of important value not only for the Chinese government to carry out its grain economy reforms, but also for many other concerned parties, in particular those grain exporting nations, to be better informed of the reforms of the Chinese grain economy and their possible ramifications on China's domestic grain production, supply and demand, and as well on the supply and demand of grains in the international market.

In this part ideas about the research areas where attention may be given and the issues which need to be examined are shared and presented.

The determination of the minimum support price

If a government intends to avoid grain production fluctuations other than those caused by natural factors and maintain a stable supply of grain from domestic production, the implementation of a minimum support price which is remunerative is probably most effective and essential. To practise the minimum support price policy successfully, the determination of the level of this price is most critical. If it is set too low, it cannot protect farmers' interest. If too high, too much money will be needed to carry out this operation. So far there has been a lack of conscientious calculation of the minimum support price used by the Chinese government. In 1993 when the State Council decided to establish a minimum support price scheme, the minimum support price was set to be no lower than the contractual procurement price. This lacks justification. Research is needed to work out a minimum support price determination system suitable for China's situation which incorporates key factors in the calculation of this price such as changes in the costs and demand and supply.

Impact of government investment on grain production

Grain production is a reflection of the comprehensive production ability of a nation. This ability is determined by a number of factors such as, the availability of irrigation, breeds and their improvement, the farming system, the level of inputs applications, and farmers' education. The strengthening of many of these areas need investment from the government. It is not realistic to expect farmers to invest money in some large scale projects such as irrigation construction, agricultural research and extension, innovation of new farming methods. The share of government expenditure for agricultural investment out of total fiscal expenditure has remained relatively low since 1985 and has only marginally increased since 1990. It needs to be investigated what impact the low agricultural investment has had on grain production since 1985 and what the future impact can be if this low level investment persists. A comparison can be made with the situation before the 1985 period when the level of agricultural investment was relatively high.

Impact of the government procurement price on the market price

It is widely held in China that the grain price has been low and it is most likely that the market grain price is below the equilibrium price. This is because the government procurement price has been too low which might have affected the level of the market price. However, there has been a lack of empirical studies to vigorously test this allegation. It needs to be empirically verified if this is the case and to what extent the existence of the procurement price has depressed the market price.

On the other hand, in recent years the procurement price has been raised frequently and to a large extent (see the discussion in Section 2). With these changes, has the depression the procurement price has on the market price, if any, been reduced and to what extent? The answers to these questions will have important policy implications. For example, if it is found that the procurement price is still too low and depresses the market price, then its further increase is needed to ensure the grain producers returns. If it is at a reasonable level, then its further increase beyond normal extent (e.g., 30% or 40% in a year) may not be justified, which would drive the market price too high, making the consumers pay more.

The importance of the grain price in the whole price system

Over the past several decades, it has been held that the grain price is the basis of the prices of all other commodities. The reasoning behind this belief is as follows. Everyone has to eat grain every day. If the price of grain is increased then the labour cost is to be increased. Consequently the costs and thus prices of other commodities will be increased due to the increase in the labour cost. As such any increase in the price of grain must be

cautious. Otherwise there would be a repeated price increase among all commodities causing the prices of the society out of control. This view has been so predominant and remained almost unchallenged in China. Due to the rapid price increases since late 1993, this view has been even held firmer, and mentioned in many publications discussing grain issues, to name a few, Anon. (1994); Li, Li, and Yin (1994); Ren (1994).

It is true that changes in grain price is likely to have impact on other commodities. In a society in which the share of non-agricultural economy is so small, such an impact may be more significant. However, in a society in which the non-agricultural economy is overwhelmingly large, then, whether it is true that grain price is the basis of the price of all other commodities needs to be validated.

Such a belief is largely based on the labour theory of value. It ignores the supply and demand force in the market. However, to verify whether or not grain price is the basis of the price of all other commodities in China's today's situation where more market mechanism has been introduced into her economy, vigorous empirical research is urgently needed. Its findings will be of important policy formulation value. If there is strong evidence to support this belief, then any grain price adjustment needs to be taken with caution. Otherwise, using this argument to keep grain price artificially low or unchanged may go against farmers' interest and in turn discourage grain production which is against the government's wish.

Not only may its findings offer important policy implications, but it may also add arguments to the usefulness of different economic theories. An economic theory which can better explain economic phenomenon should be regarded as more useful.[13]

The determination of the quantity of the central grain reserve

The quantity to be reserved should be carefully determined. If not sufficient, the reserve may be of a limited help when needed; if too much, the cost can be too high causing waste. The grain reserve quantity in China is highly confidential. However, whether this quantity was carefully calculated cannot be known either. One of the authors held discussions on the issue of reserve quantity determination with several government officials and scholars in Beijing in early 1994. Except for the official who is in charge of the grain reserve at the Grain Reserve Bureau of the Ministry of Domestic Trade, all

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[13] Dr Guang-Hua Wan of the Department of Agricultural Economics of the University of Sydney is very interested in this topic. Any one who is interested in this issue may wish to contact him for further discussion. Zhou (1994a) presents some preliminary results of an attempt to tackle this issue, which is one of the research projects assigned by the Ministry of Agriculture. He claims that the impact of the grain price on the general retailing price level is very obvious and thus concludes that it is very necessary for the government to pay particular attention to the grain price. Interestingly, the same author in another article claims that the impact of the grain price on the general retailing price level is very limited and thus it is totally unnecessary to be too much concerned with grain price fluctuations (Zhou 1994b).

believed that there was a lack of rigorous calculation and debate on the quantity to be reserved. Careful studies are needed to work on the optimal quantity to be reserved and as well the optimal quantity of operational stocks.

The location of the central grain reserves

The location of the central warehouses should be rationalised. Their location should be conducive to the handling of the procured grains while also conducive to the dispatch of the grains to the markets when needed. Research needs to be carried out to determine the optimal location of the central warehouses. Research attention should be also given to the determination of the size of a warehouse in a location.

Research on the development of the Chinese grain markets and changes in their prices

As more market mechanisms are introduced into the Chinese grain economy and its grain markets get developed, more information can be extracted from the changes in the grain market and the changes in the grain prices. A close monitoring of these changes is useful not only for the Chinese government but also for those grain-exporting countries such as Australia, because a small change in the Chinese grain market by the Chinese standard can have significant impact on the grain trade in the international market. For example, Australia's annual rice production is about one million tonnes and 80-90% of that is exported. However, the total quantity traded in the international rice market is only 14-16 million tonnes a year. China's rice production (milled) is about 120-140 million tonnes and if it increases its rice export by only 1 percent it will produce a huge impact on the international rice market and it may affect Australia's rice export significantly as well. The research into the data available from those major grain wholesale markets and futures markets may provide useful information for decision making for concerned bodies both in and outside China.

Changes in the patterns of the regional grain trade

With the south-east coastal provinces becoming major grain-deficit areas, it is likely that they may import grains from overseas if the grain is short overall in the country and the cost of importing grain from northern provinces become too high. They have the economic ability to do so as they are relatively economically developed. This can provide opportunities for grain-exporting countries. However, whether grain can be imported by provinces at large quantity is crucially affected by the direction of the reforms of China's foreign trade policy.

If China re-enters the GATT, modifications in its foreign trade policy may make the grain import by provinces easier. However, the failure to reach an agreement about the restoration of China's signatory country status in the GATT in the 1994 last round negotiation held in late 1994 in Geneva has made the direction of China's foreign trade policy unclear and complicated. Nevertheless, attention should still be given to the changes in the grain output and changes in demand (by total quantity and also by varieties) at the provincial level and thus to determine the export and import potential of various provinces and possible movements of grains within the country.

Research on China's transportation capacity

A topic, which is closely related to the above one, is the study on the transportation capacity of China. Transportation indirectly affects the development of grain production but directly affects grain trade between regions. A careful study on the present transportation capacity and its future development and how this has and will affect the grain trade between regions is very important. If the "neck" continues to be small, even if there is plenty of grain in the "bottle" (northern provinces), the grain cannot be easily "poured" out into the south. This will affect the way the grain demand is met in the southern provinces.

Integration of grain markets

As a result that provinces have been largely required to be responsible for their grain import or export (between provinces) since 1993 and the unified grain sale system was removed in mid 1993, the grain market has become more "free" and restrictions on grain movements between regions have greatly reduced. In principle, this should have increased the integration of grain markets within the country. Whether this is the case needs to be empirically tested. If yes, what would be the implications for China's grain production and marketing and for the international grain markets? If not, why not? what factors impede the integration of the markets between regions? Research on the integration of the grain market may be carried out by grain varieties, and first at within region level and then between regions at the national level.

Research on China's food consumption

As a result of the economic development in China, people's disposable income has increased in both urban and rural areas. It is often reported that this has led the consumers to shifting away from lower quality of grains to finer quality grains, to increasing demand for some minor grain crops for health reasons, and to consuming more processed food. It is therefore useful to find out the characteristics of the food consumption in the present

China in urban and rural areas respectively. Information on price and income elasticities of food demand will provide valuable information for policy decisions in various areas such as food demand projection and food-processing industry development.

There are notable differences in food consumption preferences between regions, it is most desirable that food consumption research is carried out on a regional basis.

Supply and demand of feed grain

It has been noted in various research that China's demand for feed grain is increasing and high, and some have claimed that any grain shortage in the future will not be food grain but feed grain (Garnaut and Ma 1992, pp. 71-77; Lu and Liu 1993, pp. 13-27, 171-200). As such, research into the supply and demand of feed grain in China becomes an important area. Efforts are needed in this area to examine the current and future situation of feed grain supply and demand and China's ability to meet the demand.

Food security of the poor

Research is required to examine the impact on the urban poor as a result of the removal of the ration system and to investigate the food consumption status of the rural poor in China. Such research should assist the Chinese government to provide food security to both the urban and rural poor.

5. SUMMARY

In this paper a vigorous survey of those major developments in the reforms of the Chinese grain economy since 1990 has been conducted. Discussion has also focused on the present difficulties and emerging problems in the Chinese grain economy reforms. Based on these, some areas to which research attention should be directed were identified.

China's grain economy and its development is important not only to China but also to the rest of the world. Any significant changes in the Chinese grain economy will ultimately have impact on the international grain market through which both grain-importing or exporting countries are affected. Therefore it is important to notice the developments in the Chinese grain economy and this is especially so for those grain exporting countries such as Australia.

It is hoped that this paper will serve to provide useful information to those who are interested in the Chinese grain economy whilst stimulating research efforts into this area in Australia. The authors will be more than pleased if anyone is interested in having further discussions on any aspects of the paper or even embarking on some collaborative research.

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