

# Unravelling China's Food Security Puzzle, 1979–2008

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## Abstract

This article studies Chinese central government policies in relation to food market building and food security between 1979 and 2008. It investigates major changes in the state's grain purchase pricing, urban subsidized food sales and the state monopoly over rural-to-urban food circulation that were effected in an attempt to ensure both food availability and accessibility under fiscal constraint. By observing the gradual transition from state monopoly to the market, this article traces the mechanisms which enabled the Chinese government to both establish a monopsony by generating artificial price signals for farmers to generate food output, and act as a monopolistic seller by providing subsidized low-priced food to urban consumers in order to fulfil its goal of low-cost industrialization. Thus, China's food security largely hinged on the government's budget to subsidize the price gap. The Chinese government juggled between food security and fiscal affordability to formulate a food budget that would neither excessively impact food security nor cause a crisis to government finance. China's food security puzzle was eventually worked out in the mid-2000s with the boosting of national income, which enhanced the population's access to food and eased the central government's food security concerns.

**Keywords:** agricultural reform; food policies; food security; food self-sufficiency; gradualism; transition; grain circulation system; China

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When Mao passed away in 1976, China's food market had already been defunct for three decades owing to the Soviet-style central planning system which exercised strict administrative control over food production and circulation.<sup>1</sup> China's food production was severely distorted as there was little incentive for farmers to grow crops.<sup>2</sup> Deng Xiaoping's 邓小平 post-1979 reforms in the farming sector included the reintroduction of land use rights (for example, the

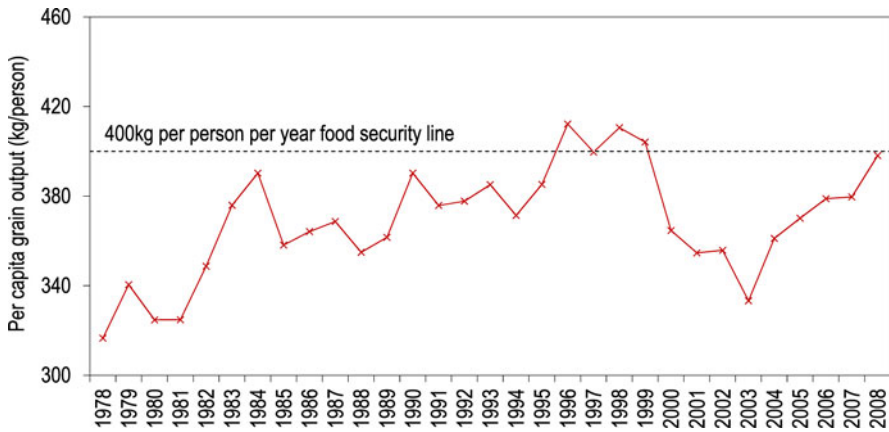
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1 Food market here refers to the rationed food market, which is mainly for wheat and rice staple grain crops.

2 Lin 1990.

Figure 1: Per capita Grain Output in China, 1978–2008



Source:

National Bureau of Statistics 1981–2009.

household responsibility system, hereafter HRS) and production incentives for farmers.<sup>3</sup> However, unlike Russia's shock therapy, changes in this area were very slow to take effect as the state continued to interfere with the newly re-established food market.<sup>4</sup>

To support China's industrialization, the urban food supply was protected and urban food prices were heavily subsidized by the reforming government. The government was the main trader between food producers and food consumers. It performed the role of food monopsonist in the farming sector and monopolist in the urban industrial sector, and largely controlled the food supply from the agricultural to the industrial regions.<sup>5</sup> China's was basically a controlled economy when the reform began in 1978, with the state in reality playing the role of price-setter on both sides of the demand and supply in an effort to ensure China's food security.

The government had to meet the demands of the urban food consumers by procuring food from the rural producers and then selling it on. Both farmers and urban consumers used to rely on government prices to make production decisions. In such a system, the state's monopsony in procuring food and setting prices dictated, to a great extent, farmers' incentive to produce food and thus the country's food availability. At the same time, China's food accessibility

3 McMillan, Whalley and Zhu 1989.

4 Fan, Qimiao, and Nolan 1994.

5 In the wake of the immediate post-1978 reforms, the Chinese government implemented a tiered price structure for the procurement of grain crops – quota price, above-quota price and negotiated procurement price. The quota price was government imposed, with restrictions on the amount that could be purchased at this price. For output beyond the quota amount, the Chinese government offered an above-quota price, which was usually higher than the quota price. For example, in 1979, the above-quota price was 50% more than the quota price. But this policy was soon replaced by the "reverse 30:70 ratio" (*dao san qi*, see below for details).

was shaped by the state's subsidized urban selling price instead of government-free market prices.

The general impression is that China's mighty party-state, with all the resources it controlled, was fully capable of ensuring the nation's food security. In reality, China's food security was not entirely secure in the reform era. Between 1979 and 1995, China's domestic food output had grown almost at the same rate as population growth. Although per capita grain output stayed above the 400 kilogrammes per person per year food security line, from 1999 to 2003 it experienced a sharp downturn pressure (Figure 1), which led to severe per capita food stock fluctuations.

Fiscal constraint has been cited as a factor behind these food fluctuations.<sup>6</sup> There is a complementarity between a country's food budget and its food security: a larger budget allows a higher procurement price and a lower subsidized selling price, resulting in more food stocks and higher food consumption. Assuming all farmers and urban consumers were rational and made decisions in accordance with their expected farming revenue and food consumption, it was up to the central government to identify the right pricing scheme for both rural food procurement and urban food sales. However, getting these two prices correct is highly dependent on the government's fiscal conditions.

There are three possible food security scenarios. The first is one where strict food controls are implemented and the state pays farmers a meagre price for their grain in order to support low-cost industrialization; however, this may discourage food productivity. The second scenario is where the food sector is liberalized and the market re-introduced. Market prices incentivize farmers to produce more if demand is high but may have a negative impact on food consumption and lead to demands for higher wages if prices stay high. This then escalates the cost of industrialization. The third is a half-way house scenario, one that is between state monopoly and a complete functional market. In this scenario, the government acts both as a monopsonistic buyer, paying a better price to farmers to guarantee food supply, and as a monopolistic provider of subsidized low-priced food to urban workers. However, the third scenario could prove to be a strain on the government budget since food is sold below its procurement price. The sustainability of this half-way house approach largely depends on the strength of government finance, presenting a trade-off puzzle between government finance and national food security. This third scenario was the case for China.

This study is inspired by scholars who link China's agricultural development to policy factors.<sup>7</sup> Such an approach commonly assesses food policies with output data, referring to some key inputs such as seed varieties and chemical fertilizers,<sup>8</sup> farm machinery and irrigation;<sup>9</sup> however, unlike physical inputs, policy-led food

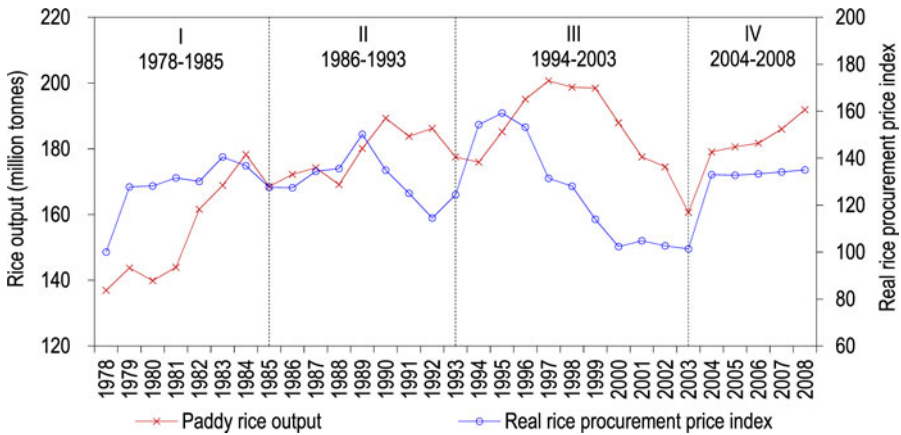
6 Du, Jane, and Deng 2017.

7 See, e.g., Du, Rensheng 2005; Perkins 1988; Sicular 1992; Ash 1988.

8 Lin 1991; Fan, Shenggen 2000.

9 Yao and Liu 1998.

Figure 2: China's Rice Production Cycles and Real Purchase Price Change



Source:

National Bureau of Statistics 1981–2009.

Notes:

The real purchase price of rice excludes the same year's consumer price index (CPI) value and is based on an index of 1978 = 100. The rice purchase price index is replaced by the rice production price index from 2001.

market institutions are not easily quantifiable. Therefore, input–output research is habitually used to evaluate how institution–production mechanisms work.<sup>10</sup> The challenge is to ascertain whether input–output analysis can delineate the changing food policy patterns that directly determine China's food security. If affirmative, each output peak, as shown in Figure 2, should be reflective of effective food policy or policies. The issue in focus is in the incoherent way the apparently positive policies behave. This work studies the factors that lead to the incoherence of China's food security policies.

Information for the time series data for food output,<sup>11</sup> the monopsonistic procurement price index, government food subsidies and central government expenditure used in this research was taken from the relevant editions of the *China Statistical Yearbook* and *Finance Yearbook of China*. Policy materials came from documents and decrees passed by the Chinese central government. The observation period is restricted to the period from 1979 to 2008, when

<sup>10</sup> Lin 1992; Ash 1988; 1992.

<sup>11</sup> The reasons for selecting rice as the research focus are twofold. First, rice and wheat are China's major staple food crops. Although the state relaxed its hold over other agricultural products, rice and wheat consistently remained under tight state control during most of the reform period. For the purposes of this article, the general grain price index could lead to inaccurate findings when trying to understand policy-induced price changes. Second, compared with rice, wheat output is relatively small and stable – it accounted for about half of the rice output throughout the reform era (from 44% in 1979 to 59% in 2008). Thus, the rice price index and rice-based policy studies were selected as they were most likely to lead to unbiased findings on China's post-1979 food sector reform.

China's food sector moved gradually from strict administrative control to a market economy.

The research shows that the Chinese government's notion of food security includes the aims of not only maximizing grain output (food availability) but also ensuring a subsidized low-priced urban grain supply (food accessibility), implying a rural-to-urban welfare transfer via the state food monopoly mechanism.<sup>12</sup> When the fiscal budget conflicted with food security, the central government was compelled to ease fiscal pressure by either reducing procurement prices or by partially enabling market functions (by, for example, reducing urban subsidies).<sup>13</sup> It was only through a state monopoly, and not through the market, that rural-to-urban welfare transfer could be achieved. This uncompromising tension between food security and fiscal capacity meant that it was crucial for the Chinese government to identify the appropriate food budget, that is, a budget that would neither excessively depress farmers' incentives and urban consumption, nor create a potential fiscal crisis for the state. When food security was severely threatened by the government's fiscal constraints, China was eventually compelled to rely on the market to provide the state with an exit from the food circulation system.

In the subsequent sections, this article will interpret the dilemma that the Chinese government faces in tackling its national food security issues. The next section reviews the evolution of food policies, while the section following that theorizes the process of food policymaking. Finally, conclusions are presented.

## The Evolution of China's Food Policies

### 1979–1985

After the death of Mao, one of the most important tasks facing the Chinese government was maintaining food security.<sup>14</sup> In 1979, the procurement quota price and the above-quota price of all major grain crops were increased by 20 per cent and a further 50 per cent, respectively.<sup>15</sup> The sharp rise in procurement prices was taken by farmers as a major incentive to increase food production. Together with the implementation of a new land use rights system,<sup>16</sup> the sharp rise in

12 China's food security basket mainly refers to grain crops such as rice, wheat, maize, and some other non-cereal crops (i.e. soybeans). Grain crops have traditionally been crucial to China's food security. Although food expenditure as a share of total living expenditure has decreased since the reforms, rice and wheat are still central to the food security basket. In the following analysis, the discussion on food security mainly refers to the control of rice and wheat. For a more recent definition of food security, see NDRC 2008.

13 For research that focuses on the fiscal budget in reference to China's agricultural reform, see, among others, Lu 2004.

14 For details of food policy evolution, please see Appendix Table 1.

15 The maximum quota price was increased by a further 50% on top of the quota price for the same year, which meant a de facto increase of 80%.

16 In order to change the collective food production model of the central planning system, the government, in its Document No. 75 of 1980, sought to popularize a new land use rights system, the HRS. CCPC 1980.

procurement price strengthened the early agricultural reform: 1979–1984 saw successive bumper harvests, with increased rice output of 30.18 per cent and wheat output of 63.10 per cent above the 1978 level.<sup>17</sup>

However, with the rapid growth in food output and the substantial increase in the procurement price another problem began to emerge – that of the state's fiscal affordability. Document No. 1 of 1985 reveals the government's concern about how to further fund the food circulation system and foot all costs after bumper harvests.<sup>18</sup> Owing both to the continuous bumper harvests and the resultant fiscal burden, the government began to replace the former unified grain purchase policy (*tong pai gou* 统派购) with one of contractual procurement (*hetong dinggou* 合同订购), while at the same time encouraging the growth of the food market economy<sup>19</sup> and reducing the food procurement price using the “reverse 30:70 ratio.”<sup>20</sup> As a result, the 1986 real rice procurement price dipped by 6.88 per cent compared with that of 1984, while the wheat price fell by 10.33 per cent.

The food purchase pricing mechanism underwent two significant changes within just six years after the initial reform: the rapid increase in the state procurement price in 1979 and the introduction of the reverse 30:70 ratio in 1985. These rapid changes within such a short period generated output fluctuations and resulted in a significant post-1985 slowdown in food output.

### 1985–1993

Owing to the slow (negative at times) growth in food output in the mid-1980s, the state introduced a series of price incentive policies and linked food contractual procurement to the provision of lower quota-price chemical fertilizers (*pingjia huafei* 平价化肥), diesel oil and the grain procurement deposit in order to guarantee food supply.<sup>21</sup>

At the end of the 1980s, food output started to recover from the post-1985 slowdown in response to the increased procurement price and physical inputs. Taking the 1988 rice output level as the baseline, China's rice output in 1989 increased by 6.52 per cent and a further 5.44 per cent in 1990. Two years of

17 Compared with that of 1978, the real rice price rose by 36.79% in 1984 alone (64.02% in nominal terms). The real grain purchase price increase is calculated from the grain price and CPI given in National Bureau of Statistics 1981–2009.

18 State Council 1985.

19 “Xuehui zai shangpin jingji de dahaili youyong” (Learn to swim in the ocean of the commodity economy), *Renmin ribao*, 25 March 1985.

20 The term “reverse 30:70 ratio” indicates that the new contractual grain purchase price consisted of 30% of purchases being made at the quota price and 70% at above-quota price (50% higher than that year's quota price from 1979) based on the preceding year's price level. In the Chinese Communist Party Central Committee's (CCPCC) Document No. 1 (1985), the state also promised to purchase above-contract grain at a protected price (*baohu jia*) equal to the preceding year's quota price, which meant the 1985 above-contract grain purchase price was lowered to the quota price of 1984. See CCPCC 1985.

21 CCPCC 1988.

rapid growth brought China two unprecedented bumper grain harvests. In 1990, both rice and wheat outputs had reached a post-1949 peak.<sup>22</sup>

The successive grain harvests and large urban food subsidies<sup>23</sup> squeezed government finance even further.<sup>24</sup> Meanwhile, the deficit arising from the state's food monopoly and the arrears deriving from the heavy fiscal burden resulted in a "financial registration" (*caiwu guazhang* 财务挂帐) situation in the Grain Bureau (GB).<sup>25</sup> In addition to the direct subsidies given to the urban sector, this development shows that the state food monopolistic system – the GB – developed into yet another source of government revenue leakage. By the end of 1991, "the total amount of financial registration of the GB reached 54.50 billion yuan."<sup>26</sup>

To reduce the large fiscal deficits, in March 1992 the central government comprehensively raised the subsidized urban food prices, and relaxed its control over the selling prices of wheat flour, rice and maize, in accordance with a new rule called "purchase and sales at the same price" (*gouxiao tongjia* 购销同价).<sup>27</sup> This was basically designed to lessen the state's fiscal deficit by relinquishing the its right to price food, and to greatly reduce direct urban food subsidies.

### 1993–2002

*1993 Grain Reform.* Following Deng Xiaoping's inspection tour of the south in 1992, marketization was reintroduced as the main direction for economic reform. Based on a sound expectation of food security, the 1993 Agricultural Law legally endorsed an agricultural products free market in the food circulation system and went on further to allow non-state-owned enterprises to participate in grain circulation.<sup>28</sup> The government reverted back to acting as gatekeeper. Market-oriented food system reforms were rapidly adopted by all provinces.<sup>29</sup> By the end of 1993, more than 98 per cent of cities and counties in China had liberalized local food markets. The 1993 reform lifted most of the barriers to

22 The 1990 rice output was 189.33 million tonnes, nearly 40% higher than the 1978 level. Wheat output rose to 98.23 million tonnes in 1990, a more than 80% increase compared to 1978.

23 Since the mid-1980s, policies have been introduced that have increased the nominal grain procurement price several times, leaving the subsidized selling price fixed and unchanged in the urban sector.

24 According to Liu, Zhang and Huo 2004, from 1986 to 1991, the state's "fiscal budget distributed 136.30 billion yuan in subsidies (to the urban sector), mainly for food, cotton and edible oil," accounting for 27.10% of central government expenditure and around 1.27 times the amount paid by the state to the entire agricultural sector during the same period.

25 The GB took out a loan with state-owned banks to deal with annual grain circulation work, and used grain sales revenue and the state grain purchase fund to repay the loan and interest. When losses occurred or the state's grain fund was not repaid in full, the bureau then became insolvent. The remaining debt was called "grain financial registration" (*liangshi caiwu guazhang*).

26 The increased running costs of the bureau were an inevitable result of the deepening market reforms in the industrial and urban sectors. See Liu, Zhang and Huo 2004.

27 State Council 1992.

28 "Zhonghua renmin gongheguo nongye fa" (Agriculture Law of the People's Republic of China), promulgated at the second session of the Ninth Standing Committee of the National People's Congress, 2 July 1993.

29 Guangdong took the lead to sanction free market purchases and sales of provincial grain in April 1992.

China's food market. In particular, private merchants were now permitted to procure grain crops directly from individual farmers.

However, the deregulation of the food market was accompanied by two-digit inflation in the early 1990s, which led to a sharp increase in the urban food selling price during the 1993–1994 period.<sup>30</sup> To maintain urban food accessibility and social stability, the state once again tightened its control of all food matters by (1) appointing provincial governors to take charge of local food circulation;<sup>31</sup> (2) only authorizing state-owned grain enterprises to procure staple food crops from farmers; (3) ensuring that the GB “take tight control of 70 to 80 per cent of commodity grain in circulation ... roughly 90 million tonnes” on the basis of 1993 output;<sup>32</sup> and (4) procuring farmers' excess food output at a “negotiated price” (*xieyi jiage* 协议价格), which was much higher than the state procurement price.<sup>33</sup> In effect, the 1993 move to reintroduce the market was completely abandoned and food circulation again came under state control. The 1994 re-established state monopoly over food circulation led to the further deterioration of the state's fiscal situation.<sup>34</sup>

Along with the 1994 strengthening of regulations, the state raised the food procurement prices in the 1994–1996 period. Compared with 1993, the real rice procurement price increased by 28.01 per cent and 23.14 per cent in 1995 and 1996, respectively. As a result, the 1995–1997 grain output reached a historical peak.<sup>35</sup> The raised procurement price, together with the strengthening of the food circulation system, brought the state not only bumper harvests but also an unprecedentedly large fiscal deficit. Soon thereafter, when fiscal conditions worsened, the urgent need for fiscal security again forced the policymaker to switch its policy emphasis to the sustainability of government finance.

*1998 Grain Reform.* Although the state had continually implemented regulatory policies in an effort to limit the grain deficit, the GB and grain reserve system was still suffering a deficit of 120 billion yuan in 31 May 1998, an amount equivalent to 38.39 per cent of the central government expenditure in that

30 The 1993 and 1994 national food CPI, compared to that of the preceding year, increased by 17.86% and 31.80%, respectively.

31 This is known as the Provincial Governors' Grain Responsibility System (*liangshi shengzhang fuze zhi*, hereafter PGGRS.). Under the PGGRS, the state could delegate relevant grain tasks to provincial governments in order to achieve and balance nationwide grain supplies.

32 From the 1990s, the GB began to assume policy and other commercial functions (Crook 1999). The GB was responsible for carrying out food policy functions assigned by the state via the Ministry of Agriculture, including procuring state orders of grain, and transporting and circulating grain to the urban sector. After the 1994 reform, the GB began to take on some of the responsibility for the national grain reserve. After the reform of the 1990s, the GB's remit was greatly enhanced, and the Ministry of Agriculture was marginalized functionally, making the relationship between the two agencies complex.

33 The negotiated price was previously implemented in the 1985 grain policy, which allowed other grain crops beyond the contract to be sold to the GB. The re-introduction of the negotiated price brought the dual-track pricing system, which was abolished several months before in the 1993 reform, back into the grain economy.

34 General Office of the State Council 1994.

35 In 1997, wheat and rice outputs had reached their highest levels since 1949, with wheat output at 123.29 million tonnes (25.51% higher than in 1990) and rice output at 200.73 million tonnes (6.02% higher than the next highest record in 1990).



year.<sup>36</sup> The state subsequently realized that the GB was the major reason behind the fiscal deficit. This prompted the government to focus on the state food monopolist tool in the 1998 grain reform.<sup>37</sup>

The State Council's Document No. 15, issued in 1998, separated the state-owned grain storage and procurement enterprises from the GB. The government would no longer be responsible for any grain costs, except for those associated with the grain reserve, making the food system financially independent of the central government. In the following month, Decree No. 244 (1998) on Regulations on Grain Purchase (*liangshi shougou tiaoli* 粮食收购条例) further relieved the government of this fiscal burden and gave the GB more rights to price food.<sup>38</sup> It also introduced two new pricing principles: (1) grain pricing based on quality (*anzhi lunjia* 按质论价); and (2) selling grain at a favourable price (*shunjia xiaoshou* 顺价销售) to cover all food purchase costs. The 1998 Grain Purchase Regulations granted all food pricing rights to the GB.<sup>39</sup> The 40-year-old food subsidy system was terminated and stripped from the state's food security package.

The 1998 reform gave complete monopolistic rights to the GB. In effect, China's grain market had been administratively divided up into "little kingdoms," each with a unique small monopolizer (a local state-owned grain enterprise) over all food circulation in the wholesale market.

The 1998 grain reform put an end to the subsidization of the urban sector and fundamentally changed the rural-to-urban welfare transfer. The devolvement of authority over the food circulation system enhanced the power of the GB and gave it the right to control pricing, which had previously been held centrally.<sup>40</sup> By the end of the 1998 grain reform, the central government had successfully avoided a fiscal deficit; however, the reform had essentially handed the state's monopoly over food circulation to the GB, and transformed the food monopolistic tool into a monopolist.

## 2002–2008

Owing to the failure of the price protection system, the 1998 grain reform provided a unique opportunity for local GBs to depress farm-gate procurement prices in order to keep GB costs low.<sup>41</sup> With 1999's further decrease in the staple food crops' protection price, the average real procurement price in the next year fell

36 Liu, Zhang and Huo 2004.

37 In August 1997, the government introduced a new basic principle to guide the GB's work – "cost plus slim profit" (*baoben weili*) – and pointed out that state-owned grain enterprises could mark up (grain) prices (*shunjia zuojia*) in accordance with the new principle of ensuring that the grain selling price should not only cover costs (including its own running costs) but also include a profit.

38 State Council 1998a.

39 State Council 1998b.

40 Except for the ceiling price.

41 The protective price is set by the central government and is the minimum price for the state procurement of grain products that protects farmers' incentives. After the 1998 grain reform, the procurement protective price remained unchanged, or changed little, despite rising inflation.

to below the 1979 level.<sup>42</sup> Alongside this decline in real price, by 2003 the output of rice and wheat had fallen to 1982 and 1984 levels, respectively.<sup>43</sup>

Thereafter, in 2003, the Chinese government faced the largest systemic food crisis since 1979. The situation eventually forced the central government to fully open up the food circulation system. Different from the market trial to merely relieve fiscal pressure promoted in the 1985 Central Document No. 1, the trial in the 2004 Central Document No. 1 was largely a result of government fears that the stagnation of the food sector would continue to slow output and impinge on China's overall economic growth. Thus, in State Council Document No. 17 (2004), the State Council adjusted the protection prices for major crops in the main producing regions.<sup>44</sup> Subsequently, the government started to grant direct subsidies to peasants via county-level governments in order to accelerate food sector development.<sup>45</sup> For the first time since 1949, the Chinese government started to subsidize food producers directly.

Central Document No. 1 (2004) established a competitive food market.<sup>46</sup> The following Decree 407 (2004) on Regulations on the Administration of Grain Distribution (*liangshi liutong guanli tiaoli* 粮食流通管理条例)<sup>47</sup> confirmed that diversified-ownership traders had the right to participate in the grain market. In 2008, the Chinese government finally encapsulated all of its agricultural policy goals under the single heading of "food security."<sup>48</sup>

In sum, the 2004 reform fundamentally changed the food circulation system in China. For the first time since the founding of the PRC, the state used the market to ensure food security. Since 2004, China's food sector has once again been geared towards the market.<sup>49</sup>

## Policy Instrument Alternation and Cyclical Growth Pattern

The theme running throughout the post-1979 food system reforms is the amendments to food policies. These amendments veer between food security and fiscal affordability via a pair of policy instruments (monopoly and market) that run in alternation to achieve food security (see Table 1).

### *Pre-1998 reform: veering between goals and instruments*

The top priority for policymakers at the beginning of the reform was to maximize food output in order to secure food availability. By using the GB as the policy

42 The real purchase prices of rice and wheat in 2003 were 80.12% and 64.07% of those in 1979.

43 The 2003 rice and wheat outputs were 80.03% and 70.15% of those in 1997.

44 State Council 2004a.

45 For details on direct subsidies to food producers, please see Huang, Wang and Rozelle 2013.

46 CCPCC 2004.

47 State Council 2004b.

48 NDRC 2008.

49 Following the release of the 2005 Central Committee Document No. 1 (CCPCC 2005), the state began to reduce agricultural tax. The following year's Document No. 1 (CCPCC 2006) completely abolished agricultural tax, and in the 2007 Document No. 1 (CCPCC 2007), the state increased its subsidies for agricultural production. The 2008 Document No. 1 (CCPCC 2008) re-emphasized the importance of grain production without instituting any non-market-oriented policies.

Table 1: China's Food Security Policy Package and Policy Instruments

1978–1992	1993	1994–1997	1998–2002	2003–2008
<b>Food Security Policy Package</b>				
<ul style="list-style-type: none"> <li>① Maintaining sufficient food output to guarantee food availability</li> <li>② Maintaining subsidized, low-priced food supply to the urban sector</li> <li>③ Avoiding excessive food budget deficits to central finance</li> </ul>	<ul style="list-style-type: none"> <li>① Maintaining sufficient food output to guarantee food availability</li> </ul>	<ul style="list-style-type: none"> <li>① Maintaining sufficient food output to guarantee food availability</li> <li>② Maintaining subsidized, low-priced food supply to the urban sector</li> </ul>	<ul style="list-style-type: none"> <li>① The financial independence of the GB from central finance</li> <li>② The GB's monopoly over the food system</li> </ul>	<ul style="list-style-type: none"> <li>① Maintaining sufficient food output to guarantee food availability</li> </ul>
<b>Policy Instrument</b>				
State monopoly	Market	State monopoly	GB monopoly	Market

Source:

Compiled by authors.

instrument, surplus agricultural products were controlled by the central government's planning system. Food was purchased from producers at a low price and sold at an even lower price to the urban sector. This food circulation mechanism subsidized the industrial sector at the expense of the farming sector. The monetary costs of this monopolized food circulation arrangement were completely absorbed by the central planning system.<sup>50</sup> As a result, the higher the grain output, the larger the fiscal budget for procuring and distributing food. Consequently, the conflict between food production (to ensure food availability) and fiscal budget control (arising from food procurement and urban subsidies) was the core theme of the state's policymaking on food from the mid-1980s to late 1990s.

Meanwhile, it was not until the 2000s that the fiscal revenue of the Chinese government began to rise rapidly; from the 1985 reform to the 1998 reform, the uncompromising tension between food security and fiscal constraint meant that it was vital that the state identify the correct fiscal budget – one that would neither depress farmers' incentives and reduce production nor create a potential fiscal crisis for the state.

Before the 2004 food marketization, the Chinese government's main method for achieving food security was by maintaining a state monopoly over food supply and purchase via the GB. After the late 1980s, the rapid expansion of the GB's administrative capacity also caused a sharp increase in its running costs. With the 1993 reform, the state realized that the market could fully replace the state's monopoly to service national food security. However, high inflation in the 1990s led the state to attribute soaring food prices to market failure. The market was quickly abandoned as a policy instrument, and the state once again pinned its hopes on maintaining the monopoly over food and introduced a series of food policies to comprehensively tighten its control of the production, procurement and sale of major grain crops. The sudden reversal in 1994 was because the market could replace the GB only in delivering food products but not in performing the function of transferring welfare from the agricultural sector to the urban industrial sector. Since the market could not satisfy the government's need to provide food accessibility (for example, welfare transfers), having a food monopoly remained the state's primary and preferred policy instrument until 1998.

### *The 1998 reform: redefining food security goals*

China's food policy goals underwent a series of major revisions in the late 1990s. In particular, welfare transfer to the urban sector was removed from the state's food security definition package and reducing the GB's fiscal deficit was prioritized.

<sup>50</sup> The cost of the mechanism refers to the inverse price difference between grain purchases and urban sales, as well as the associated costs of grain transportation, storage and distribution.

The driving force behind these policy amendments was the state's attempt to eliminate fiscal deficits. As the raised procurement price had motivated farmers to increase their output, by the end of the 1990s the accumulated fiscal burden had grown so large that it was almost impossible for the Chinese government to maintain a reasonable fiscal balance.

Not surprisingly, the next stage of the 1998 reform aimed to relieve the fiscal pressure that stemmed from the state's monopoly over food. Policymakers attributed the fiscal deficit during the 1994–1998 period to the costs of bridging the urban–rural welfare gap as the central government had maintained subsidies to the industrial sector and increased the food procurement price to incentivize rural production. The 1998 reform thus introduced two main measures: it abandoned urban food subsidies and allowed the GB to decide on the farm-gate procurement price in most provinces.

The essence of the 1998 reform was to integrate the policy instrument with the food policy goals, making the GB not only a monopolistic instrument but also the food policy goal-setter. Before 1998, the GB, as an instrument, did not have the authority to determine either the rural procurement price or the subsidized urban selling price; the 1998 reform delegated these two pricing responsibilities to the bureau without it having to take on any political responsibility for ensuring food security.

Maintaining fiscal affordability, the main constraint in food policymaking, was very much left to the GB. Before 1998, fiscal deficits in food control came from direct payment transfers (for example, urban subsidies). However, these deficits were itemized as an unpaid balance in the GB's accounts and in the books of its subordinate grain enterprises. Subsequently, when the direct subsidies ceased, the central government relinquished most of its food monopoly interests to the GB in the 1998 reform to leave this deficit with the GB without drawing from the national treasury. However, this principle, from the standpoint of the GB, signalled that the GB could monopolize food circulation on behalf of the government. Moreover, the relinquished grain pricing rights allowed the GB to take advantage of the arbitrage opportunity in grain trading.

The 1998 reform finally resulted in the GB acquiring a monopoly over the food market during the 1998–2003 period, leading to a continuous decline in the food supply. By 2003, China faced the biggest systemic food crisis it had encountered since 1979.

#### *The 2003 grain reform: newly established “food security”*

The 2003 food crisis compelled policymakers to systemically overturn China's food monopoly system. The situation pushed the central government to further liberalize food trading and adjust the deployment of welfare transfers between the country's rural and urban sectors. This significant transformation of food policy depended on two facilitating economic conditions.

*Condition one.* Maintaining food security has been a consistent goal of the Chinese government. At an early stage of the reform, when poverty was endemic, this challenge could be simplified to maximizing grain output in order to provide for a healthy and productive population. Later, as disposable incomes rose, the food security challenge became more complicated as it endeavoured to meet the needs of the under-nourished population but also accommodate the dietary demands – especially for protein-based foods – of an increasingly affluent population. Thanks to more than two decades of economic growth, the purchasing power of China's urban sector had strengthened sufficiently to withstand a higher food price. As shown in Table 2, the average per capita disposable income (nominal) of China's urban households increased approximately 14-fold in the 20 years from 1978 to 1998, and another tenfold in the following five years (1998–2003). Although the grain price had also increased since the early 1980s, it was quickly surpassed by the rise in urban income. From 1985 to 1998, the share of per capita urban household disposable income that went towards grain expenditure halved, and from 1998 to 2003, it dropped further by another half to 2.29 per cent. As a result, there was a quantum leap in the urban sector's food purchasing power. The importance of grain consumption in the construct of urban household expenditure fell so quickly that the importance of subsidizing urban grain consumption correspondingly declined in the state's policy goal-setting. However, this remarkable rise in urban incomes started in the mid-1990s. At this point, China's food sector marketization might have been faltering.

*Condition two.* The “tax sharing reform” (*fenshui zhi gaige* 分税制改革) that began in the 1990s rapidly enhanced the central government's fiscal capacity.<sup>51</sup> Thanks to the fast growing tax base and the adjustment of the central–local finance structure, central finance grew sufficiently for it to make good the share of food-related expenditures in annual central government revenue in the 2000s (see Table 3).

As China's state revenue rapidly grew, the government's share of expenditure on supporting agricultural production (*zhinong zhichu* 支农支出) and urban food consumption steadily decreased. In 1993, central government spending on this sector was 25.71 billion yuan, 26.85 per cent of the year's central revenue. This proportion decreased by 78.47 per cent in the ten years after the tax reform (1993–2003) to 5.78 per cent in 2003, and was reduced further to the almost negligible level of 4.71 per cent in 2006 (Table 3). Thus, unlike the huge fiscal deficits created by the food monopoly before the 1998 reform, by 2003 the central government's expenditure on supporting rural production and urban food consumption was no longer compromised by government finance, which was now backed by very strong economic conditions that enabled the Wen Jiabao 温家宝 administration to distribute large-scale food production subsidies. Central government

51 After the 1993–1996 tax sharing reform, the central government's revenue increased sharply, both at the absolute level and as a share of total government revenue.

Table 2: **Urban Households per Capita Disposable Income and Grain Expenditures**

	1978	1981	1985	1993	1998	2003
Urban household per capita disposable income (yuan)	343.40	500.40	739.10	2,577.40	5,425.10	8,472.20
Urban household per capita expenditure on grain consumption (yuan)	--	59.16	62.28	129.96	226.79	194.15
Share of urban household per capita income spent on grain (%)	--	11.82%	8.43%	5.04%	4.18%	2.29%

Source:

National Bureau of Statistics 1981–2009.

Table 3: **Central Government Revenue and Explicit Subsidies for Agriculture**

	1993	1994	1998	2003	2006
Central government revenue (billion yuan)	95.75	290.65	489.20	1,186.53	2,045.66
Central government expenditure on explicit subsidies for supporting agricultural production and urban grain, cotton and oil consumption (billion yuan) <sup>a</sup>	25.71	24.70	63.38	68.57	96.31
Share of central government revenue spent on explicit subsidies (%)	26.85%	8.50%	12.96%	5.78%	4.71%

Source:

Ministry of Finance 1991–2009.

Note:

<sup>a</sup>This is a sum of “central government expenditures for supporting agricultural production” and “subsidies on price increase in grain, cotton and edible oil.”

only spent 0.65 per cent of its total expenditure for 2004 on supporting agricultural production. This was in sharp contrast to the 1993 reform when the government’s financial situation was still precarious.

The core of the 2003 reform was based on the new definition of food security and the use of the market as the main policy instrument. This change in its essence was an abandonment of the previous government strategy of using the food sector to support industrial expansion with sustained low labour wage costs. The origins of this strategy can be traced back to the 1950s. With the elimination of this demand, the state’s major goal in attaining food security was now almost equivalent to ensuring sufficient grain supply or food availability.<sup>52</sup> The

52 The central government still has a hand in several areas of the grain sector, including overseeing the foreign trade of grain and maintaining the strategic grain reserve.

2003 market-oriented reform removed the GB, as a monopoly power, from the food circulation system and utilized the urban sector's purchasing power to guard food accessibility. The urban food selling price was mostly translated into production incentives for farmers.

### *Policy instrument alternation and cyclical growth pattern*

Since 1978, the amendments to food security goals have been made in tandem with changes in fiscal affordability. Food security, as China's major food policy goal, experienced two shocks: fiscal insecurity and the GB's monopoly interests. In the first 30 years of reform, three turning points, all shaped by the impact of food security, separated China's food output into four phases (Figure 2). The shaping forces of the first two turning points were one-dimensional, owing to pressures from the Chinese government's fiscal security (1985 and 1989) (see Table 4). The 1993–2003 shock to food security was brought about not only by fiscal pressure but also largely by the GB's monopoly (1999–2002). Thus, in the reform era, changes in food policies were reflective of amendments to the Chinese government's food security goals.

The first shock came about from the gradual delinking of urban food subsidies from China's food security policy package in order to deal with the fiscal deficit. This process began with the 1992 selling price adjustment and ended with the 1998 "selling grain at a favourable price" approach, which was fully accomplished by the GB's monopoly of the wholesale grain market's upstream urban food distribution. High food prices were seen as endangering the country's food accessibility before 1998, as the Chinese government's definition of food security equated food accessibility with the supply of low-priced food to the urban sector in order to support rapid industrialization. By the end of the 1990s, the low-wage, low-price features were unsustainable in the urban sector: the rapid growth of the non-state-owned industrial sector had pushed up average industrial wage levels and urban incomes.<sup>53</sup> The state concluded that it was unsustainable and in fact redundant to subsidize urban food prices.

The second shock was triggered by the use of the food monopolistic tool, the GB. The GB's food monopoly triggered the 2003 food crisis in China and led to the de facto termination of most grain monopoly interests. The GB's monopoly over food circulation was closely related to government behaviour in the late 1990s. With the 1998 SOE reform, the government realized that converting large state-owned sectors into state-owned monopoly enterprises would prevent continuous losses in the state-owned sectors. However, unlike industrial state-owned enterprises, the GB and its affiliated enterprises were not food producers and therefore could not directly determine total food output. The GB's

<sup>53</sup> Following the rise of the private sector, SOEs accounted for around one-third of total industrial production in 1997–1998. This pushed up non-SOE industrial wage levels, including the wages of migrant workers.



Table 4: **Central Government's Fiscal Load of Food Subsidies**

Year	Explicit subsidies on food, cotton, edible oil (billion yuan)	Central government expenditure (billion yuan)	Central government food subsidy load (%)
1978	1.11	53.21	2.09%
1985	19.87	79.53	↗ <b>24.98%</b>
1986	16.94	83.64	↘ 20.25%
1989	26.25	88.88	↗ <b>29.54%</b>
1995	22.89	199.54	↘ 11.47%
1998	56.50	312.56	↗ <b>18.08%</b>
2003	55.02	742.01	↘ 7.41%

Source:

Ministry of Finance 1991–2009.

Notes:

Food subsidy data stops at 2006.

monopoly thus created an inherent conflict between its control of food and the nation's food availability.

The central government's response to the impact of these two shocks demonstrated its preference for the shock-response approach and food monopoly as a policy instrument. Government reaction to the lack of food security was normally very slow. In the face of any potential threat to food security (for example, the 2003 crisis), the government would adopt a shock-response mode, and only then when the government felt food insecurity might potentially have a negative impact on urban industrialization. After 1979, the periodic depletion of the grain supply was a direct result of years of continuous decline in food output. Although the central government was clearly aware that the continuously decreasing food monopsonistic procurement price was a factor, it did nothing to address the problem during the first few years of the decline in output. This implies that the central government was not a proactive decision maker in policymaking, but rather was a negative and passive responder, which was one reason for the wide fluctuations in China's food output (see Figure 2).

It is also evident that the Chinese government had a strong preference for maintaining a food monopoly (a rudimentary tool of a centrally planned economy) as a policy instrument. In China's post-1979 agricultural reform, it was thought that the market might jeopardize urban food accessibility, and that uncontrollable food prices could put China's plan of rapid industrialization at risk. At that time, the Chinese government viewed both sufficient food availability and urban subsidized food accessibility as essential components of food security; however, under the stringent monopoly system these two components were seemingly in fundamental conflict with fiscal constraint.

After the 1998 grain reform, the GB was no longer used as a policy tool; it had become a profit-maximizing monopolist – at the expense of maintaining sufficient food supply, which was a key initial policy objective. This change threatened China's food security from the availability side.

## Conclusion

Although some favourable policies may explain the periodic food sufficiency and security at different stages of the reform in China, they cannot account for the output dips in [Figure 2](#). This alternation between output peaks and troughs throughout the reform era was not a random process, but rather it occurred in a cyclical pattern.

When the real food procurement price is introduced into research on China's food security situation, the cyclicity of food output is found to perfectly match changes in the real procurement price, indicating a correlation between the food pricing mechanism and its underlying causes, and the cyclical nature of China's post-1979 food security.

In this article, the food procurement price (monopsonistic and monopolistic) was used to trace the underlying intentions of the Chinese Communist Party's policymaking, and the alternations between the two major goals (food security and fiscal security) and policy methods (monopoly and the market). Put simply, the biggest issue facing the state was how to guarantee food security with a state monopoly under a limited fiscal budget.

Food security, as previously defined by the Chinese government, referred not only to the maximization of food availability but also to the maintenance of the GB's food monopoly interest and rural-to-urban welfare transfer to support the state's overall goal of industrialization. However, welfare transfer and the food monopoly affected not only the fiscal budget (as the state bore the cost) but also farmers' incentives to increase food output. In 2003, when basic food availability was in crisis owing to the GB's monopoly over food circulation, the state finally abandoned the GB in favour of the market. Meanwhile, thanks to improved economic conditions and the long-term outcome of the 1993–1998 tax reform, the state was able to successfully drop welfare transfer from its food security package, making it possible for the state to use the market as an instrument in guaranteeing China's food security after the 2003 reform. Since 2004, there has been a monotonic increase in China's per capita grain output (see [Appendix Table 2](#)), with food accessibility being boosted by the country's national income. The success of food marketization reform has hinged greatly on the greatly enhanced national income, which has helped the government to solve the food security puzzle.

Compromises made by the government when dealing with the conflict between policy goals and instruments have shaped the country's complex of market institutions and have determined the cyclical nature of China's food security. Price, as a clue to changing food policies, works as an unbiased estimator of which way the government will veer in the Chinese food security puzzle.

The change in direction may explain the reason why, when the observation period is extended to 30 years, single factor determinants could no longer explain the changing patterns of China's food production. Meanwhile, the state's passive response to shocks has shown a state-oriented agricultural transition, facilitated

by reforms to the food pricing system. The alternations in food policy instruments, alongside the evolution of food security goals, have intermittently spurred agricultural output, and have also shaped the cyclical character of three decades of China's agricultural growth.

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## Biographical notes

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**摘要:** 本文通过对 1979 年至 2008 年间中国粮食政策的观测, 来探寻中国的国家政策、粮食安全以及粮食市场建构之间的内在关联。在 2004 年粮食流通体制全面市场化之前, 中国的粮食安全政策一直试图同时实现粮食的充裕性和可获得性这两个政策目标。国家一方面充当垄断买家向农民发出人造的价格信号以调节粮食产出, 另一方面, 也同时扮演垄断卖家的角色, 运用粮食消费价格补贴来降低城镇部门的工业化成本。基于粮食政策目标的双重性, 中国的粮食安全很大程度上取决于财政补贴粮食购销价差的能力。因此, 在确保粮食安全和减轻财政压力之间, 中国的粮食政策呈现出长时间的摇摆态势。这一摇摆的过程本质上是为了在实现粮食安全的同时, 尽力避免粮食流转造成财政危机的可能。中国粮食政策制定的难题得以解决, 最终依赖于快速增长的国民收入水平。直到 21 世纪初, 高速增长居民收入提高了中国国民对于粮食价格的耐受度, 降低了粮食可获得性在中国粮食政策制定中的迫切需要, 并在这一层面上消除了中国政府在粮食安全的长期顾虑。

**关键词:** 农业改革; 粮食政策; 粮食安全; 粮食自给自足; 渐进式改革; 粮食流通体制

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Appendix Table 1: **The Evolution of Food Policies in Central Documents and Decrees, 1979–2008**

Date	Issuing authority	Keynotes
28 Sep 1979	CCD No. 4 (1979) <sup>a</sup>	Food procurement prices increased by 20% for quota price and a further 50% for above-quota price.
28 Nov 1982	CCD No. 137 (1982)	Food sales increased sharply, exceeding the state's capacity for grain (sales) and fiscal burden.
1 Jan 1985	CCD No. 1 (1985)	Reverse 30:70 ratio.
16 Sep 1990	SCD No. 55 (1990) <sup>b</sup>	State procurement.
4 Apr 1991	SCD No. 18 (1991)	Appropriate increases introduced for urban grain and edible oil rationing prices.
6 Mar 1992	SCD No. 15 (1992)	Purchase and sales at the same price.
26 Mar 1992	SPB & MC No. 64 (1992) <sup>c</sup>	Further endorsement of purchase and sales at the same price.
15 Feb 1993	SCD No. 9 (1993)	Diversified-ownership traders permitted to participate in the food market and supported in doing so.
2 Jul 1993	Agricultural Law <sup>d</sup>	Urban food subsidies gradually reduced. Private traders permitted to purchase wholesale and retail agricultural products. Urban food subsidy system ended.
5 Nov 1993	CCD No. 11 (1993)	State monopoly of food procurement and selling ended.
9 May 1994	SCD No. 32 (1994)	State-owned grain enterprises must "take tight control of 70 to 80 per cent of commodity grain in circulation." Only authorized state-owned grain enterprises legally (and exclusively) permitted to procure grain from farmers. Provincial Governor's Grain Responsibility System.
16 June 1994	GOSCD No. 76 (1994) <sup>e</sup>	All food trading work retracted back to the GB.
29 Nov 1994	SCD No. 62 (1994)	Account withheld and interest suspended.
30 May 1995	SCD No. 12 (1995)	The use of the grain purchase fund (including cotton and edible oil) tightened.
2 Oct 1997	GOSCD No. 38 (1997)	The state announces a new basic principle to guide the GB's work as "cost plus slim profit" ( <i>baoben weili</i> ) and permits GB to mark up prices (food) ( <i>shunjia zuojia</i> ) in accordance with this principle.
16 May 1998	SCD No. 15 (1998)	Central government's finance overwhelmed. The GB becomes financially independent from central finance.
1 Jun 1998	SC Decree No. 244 (1998) <sup>f</sup>	The GB given more rights to price food: food pricing based on quality ( <i>anzhi lunjia</i> ) and food to be sold at a favourable price ( <i>shunjia xiaoshou</i> ).
7 Nov 1998	SCD No. 35 (1998)	All grain pricing rights granted to the GB.

Continued

Appendix Table 1: **Continued**

<b>Date</b>	<b>Issuing authority</b>	<b>Keynotes</b>
20 Nov 1999	SCD No. 20 (1999)	Some grain varieties to exit protected price system.
31 Dec 2003	SCD No. 1 (2004)	Food market liberalization.
23 May 2004	SCD No. 17 (2004)	All grain-pricing rights withdrawn from state-owned GB.
26 May 2004	SC Decree No. 407 (2004)	Food price determined by market supply and demand, and diversified-ownership participants permitted in grain circulation.
31 Dec 2004	CCD No. 1 (2005)	Agricultural tax reduced.
31 Dec 2005	CCD No. 1 (2006)	Agricultural tax completely abolished.
31 Dec 2006	CCD No. 1 (2007)	Subsidies provided to staple food producers.
31 Dec 2007	CCD No. 1 (2008)	Farmers' subsidies increased.
14 Nov 2008	National Development and Reform Committee	All grain work to come under the single heading of "food security." Medium- and long-term plan for national food security (2008–2020).

Source:

Compiled by the authors.

Notes:

<sup>a</sup> "CCD" stands for Central Committee Document; <sup>b</sup> "SCD" for State Council Document; <sup>c</sup> State Price Bureau and Ministry of Commerce Document No. 64 (1992); <sup>d</sup> Agricultural Law of 1993, first version; <sup>e</sup> General Office of the State Council Document No. 76 (1994); <sup>f</sup> State Council Decree No. 244 is also known as the "Regulations on Grain Purchase" (*liangshi shougou tiaoli*).

Additional references for [Appendix Table 1](#):

General Office of the State Council (Plain Text) No. 38. "Guowuyuan bangongting guanyu zuohao qiuliang shougou gongzuo de tongzhi" (Circular of the General Office of the State Council on doing the autumn grain purchase work well), 2 October 1997.

SCD No. 12. "Guowuyuan pizhuan Zhongguo renmin yinhang deng liu bumen guanyu jiaqiang liang mian you zhengce xing shougou zijin guanli yijian de tongzhi" (Circular of the State Council on the proposal of the Chinese People's Bank and five other departments on strengthening the management of funds for the purchase of grain, cotton and edible oil within the framework of state policies), 30 May 1995.

SCD No. 137. "Guowuyuan guanyu renzhen zuohao liangshi gongzuo de tongzhi" (Circular on the diligent execution of all operations affecting grain), 28 November 1982.

SCD No. 20. "Guowuyuan guanyu jinyibu wanshan liangshi liutong tizhi gaige zhengce cuoshi de buchong tongzhi" (Supplementary circular of the State Council on policies and measures for further reform of the grain circulation system), 11 October 1999.

SCD No. 32. "Guowuyuan guanyu yinfa 'liangshi fengxian jijin shishi yijian' de tongzhi" (Circular of the State Council on issuing the proposals on implementing the grain risk fund), 30 April 1994.

SCD No. 35. "Guowuyuan guanyu yinfa dangqian tuijin liangshi liutong tizhi gaige yijian de tongzhi" (Circular of the State Council on issuing the proposals on promoting the reform of the grain circulation system under current circumstances), 7 November 1998.

SCD No. 9. "Guowuyuan guanyu jiaukai liangshi liutong tizhi gaige de tongzhi" (Circular of the State Council on speeding up reform of the grain circulation system), 15 February 1993.

State Price Bureau and Ministry of Commerce. Document No. 64. "Guanyu tigao liangshi dinggou jiage de tongzhi" (Circular of the State Council on increasing the grain procurement price), 2 June 1992.

Appendix Table 2: Output of Grain Crops, Rice and Wheat, 1978–2015

Year	Grain output <sup>a</sup> (million tonnes)	Rice output (million tonnes)	Wheat output (million tonnes)
1978	304.77	136.93	53.84
1979	332.12	143.75	62.73
1980	320.56	139.91	55.21
1981	325.02	143.96	59.64
1982	354.50	161.60	68.47
1983	387.28	168.87	81.39
1984	407.31	178.26	87.82
1985	379.11	168.57	85.81
1986	391.51	172.22	90.04
1987	402.98	174.26	85.90
1988	394.08	169.11	85.43
1989	407.55	180.13	90.81
1990	446.24	189.33	98.23
1991	435.29	183.81	95.95
1992	442.66	186.22	101.59
1993	456.49	177.51	106.39
1994	445.10	175.93	99.30
1995	466.62	185.23	102.21
1996	504.54	195.10	110.57
1997	494.17	200.73	123.29
1998	512.30	198.71	109.73
1999	508.39	198.49	113.88
2000	462.18	187.91	99.64
2001	452.64	177.58	93.87
2002	457.06	174.54	90.29
2003	430.70	160.66	86.49
2004	469.47	179.09	91.95
2005	484.02	180.59	97.45
2006	498.04	181.72	108.47
2007	501.60	186.03	109.30
2008	528.71	191.90	112.46
2009	530.82	195.10	115.12
2010	546.48	195.76	115.18
2011	571.21	201.00	117.40
2012	589.58	204.24	121.02
2013	601.94	203.61	121.93
2014	607.03	206.51	126.21
2015	621.44	208.23	130.19

Source:

National Bureau of Statistics 1981–2016.

Notes:

<sup>a</sup>According to the NBS, grain output here consists of summer grain, early rice and autumn grain, including cereals, potatoes and beans.



