

Bureaucrat to Entrepreneur: The Changing Role of the State in China's Grain Economy

Author(s): Scott Rozelle, Albert Park, Jikun Huang and Hehui Jin

Source: *Economic Development and Cultural Change*, Vol. 48, No. 2 (January 2000), pp. 227-252

Published by: The University of Chicago Press

Stable URL: <http://www.jstor.org/stable/10.1086/452456>

Accessed: 22-09-2016 09:59 UTC

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at <http://about.jstor.org/terms>



The University of Chicago Press is collaborating with JSTOR to digitize, preserve and extend access to *Economic Development and Cultural Change*

Bureaucrat to Entrepreneur: The Changing Role of the State in China's Grain Economy*

Scott Rozelle
University of California, Davis

Albert Park
University of Michigan

Jikun Huang
Chinese Academy of Agricultural Sciences

Hehui Jin
Stanford University

The pursuit of efficiency, on the one hand, and the desire for low-priced, abundant food for urban consumers on the other, has led China's reformers to undertake a series of erratic policy swings in the course of managing the nation's grain economy.¹ Although some analysts have recognized the deleterious effects of such inconsistent policies on long-run economic development, political and economic considerations have until recently prevented policy makers from deepening reforms of China's grain economy.² While government leaders permitted free market commodity trade as part of a dual-track pricing strategy, the leadership never advocated sweeping liberalization of grain markets during the 1980s.³ Instead, planners directed a vast network of bureaucratic agents to procure, store, transport, process, and sell grain in an effort to preserve the government's influence over the economy. Especially when market forces were seen to be causing price instability, leaders relied on employees in China's parastatal marketing agencies to play a leading role in controlling the scope of market activity and moving goods to key sectors and regions.⁴ Such actions frequently were taken to protect urban residents in inland cities. The strategy also was designed to put pressure on deficit regions to increase investments in agriculture by threatening to deny them grain shipments.

In the early 1990s, leaders allowed market liberalization to proceed in grain markets.⁵ During this time, falling income in rural areas and rising supply led to falling grain prices and a surplus on the market. With tight budgets, leaders saw an opportunity to make the economy more efficient and at the same time reduce government fiscal obligations. Rationed grain sales were phased out and procurement prices were raised to market price levels. Triggered by a series of policies providing incentives for grain bureau personnel to engage actively in market trade, one of the most fundamental transformations of rural markets occurred as the commercialization of the food sector swept through both rural and urban grain trading units.⁶ For the first time in many decades, transactions among private and commercialized traders accounted for most of the movement of China's grain. The initial implementation of liberalization policies was a success. Farmer burdens were reduced and rural incomes grew in the first half of the 1990s.⁷ Grain supplies to cities, arriving through a variety of traditional and newly emerging marketing channels, remained abundant and improved in quality.⁸ Since 1994, however, rapid grain price inflation and a perception of loss of control over grain circulation have led to a reassessment of the progress of China's market reform program.⁹ In response, leaders tried to reassume administrative control over grain markets. Unlike earlier times, however, leaders in many places were unable to rein in the robust market activity, leading to a series of policy debates regarding the future of grain policy.¹⁰

The purpose of this article is to analyze the transformation of China's grain system, one of China's most pervasive planning hierarchies, into a network of arbitrage-seeking commercial traders, a metamorphosis that is contributing to the emergence of integrated, competitive commodity markets. Beyond recounting recent rural reforms and presenting empirical evidence of their impact on market development and economic performance, in this article we seek to more fully illustrate the process of economic transition by examining the microeconomic decisions of the individuals whose actions, taken collectively, constitute the reemergence of the market. The research draws on extensive interviews since the late 1980s in more than 20 provinces. Access to a unique and comprehensive set of data on provincial prices of major food commodities every 10 days between 1988 and 1995 facilitated a rigorous testing of many of the insights gained during interviews, and the authors' own survey on marketing practices in China's rural areas provided evidence on increasing competition in the grain economy.

To accomplish these objectives, in the first section we briefly document the most recent set of market liberalization reforms, explaining the smooth early implementation of these changes and assessing the impact of these reforms on the rural economy. In the following section we describe the grain price rises that began in early 1994, recount the government's responses, and explain why these interventions encountered dif-

faculties. In the final sections we discuss the dilemma facing China's policy makers in reforming state-market relations in the grain sector, suggest that this dilemma has arisen from the success of the reforms, and summarize the possible responses by the government to better manage the grain economy.

Grain Reforms in China

Despite launching a series of radical reforms, including decollectivization and the removal of restrictions on rural markets, reformers in the 1980s had no intention of forfeiting control over key commodities such as grain to the market. Agricultural planners did little, even in the mid-1980s, to encourage grain bureau employees to pursue the potential profits from out-of-plan grain trade (permitted beginning in 1985), and grain system enterprises did not participate in the state-owned enterprise reforms. Managers of grain outlets in many cities could not engage in commercial activities beyond the sales of staple goods. Fixed, low urban ration prices dampened the supply of high-quality grain. When out-of-plan prices rose in 1988 and 1989 and shortages of grain threatened, leaders directed grain officials to stabilize supplies, pressuring producers to sell their surplus to state channels, and actively suppressing free market trade and blockading shipments to regions of the country that had ignored central government directives to maintain high levels of grain production, such as Guangdong Province and other southern deficit regions. Leaders maintained high production levels with a multiplicity of policies such as mandatory delivery quotas, sown area targets, political rewards for high grain output, increased investment in infrastructure, and subsidies to producers.¹¹

An interview with the assistant manager of what is now one of the largest and most successful commercialized grain trading companies in Eastern China illustrates the degree of control that government maintained over the grain system in the 1980s: "We [the provincial grain bureau] spent little time trying to make money with grain transactions in the 1980s. Why should we? If we made money, it would either go back to the municipal finance bureau or more likely to the bank [to pay off the bureau's chronic debt]. . . . I spent most of my time traveling throughout China keeping contacts with our 'old friends' with whom we had traded since the 1960s and 1970s" (Hangzhou, December 10, 1995; interview no. ZJ951210-02).¹²

Recent Reform Movement: Market Liberalization in China's Food Economy

In the early 1990s, China's leaders were presented with a unique opportunity to deepen market reforms as falling prices, plentiful stocks, and low grain imports provided the "slack" for accommodating new reforms. Agricultural officials sought to liberalize prices and markets to

raise the efficiency of China's rural economy, increase rural incomes, and reduce the budget burden at a time when urban consumers were demanding higher-quality grain, rural income growth had stagnated, and budgetary pressures were growing. Grain price subsidies came under scrutiny as a possible source of budgetary savings. Fiscal managers also saw potential budgetary reductions by removing some of the 3 million grain system employees from the state's payroll.

Urban Reforms

In this environment, policy makers designed and implemented a series of policy reforms that radically changed the organization of China's grain marketing and pricing institutions in both the urban and rural economies. In addition to eliminating grain rationing and planned interprovincial grain transfers,¹³ the urban reforms had four other major components.

Commercialization of urban grain outlets. Signaling one of the most fundamental shifts in urban grain policy, many city officials made retail outlets less reliant on fiscal support and gave outlet managers and other personnel the chance to take advantage of new commercial opportunities in the liberalizing urban food economy.¹⁴ In its most typical form, managers agreed to an arrangement (usually oral and sometimes implicit) to oversee their retail outlets. Most city and township governments required newly commercialized grain shops to continue to sell grain and oil, but at market prices. Grain managers were not permitted to lay off workers and had to support retired employees. In addition, leaders expected managers to continue to carry out certain policy functions if called upon. In return, managers were granted the right to use the assets of their storefront locations, shop equipment, storage facilities, and transport fleets.

The contracting agent and the form of profit-sharing arrangements differed among provinces and even among regions within provinces. In some cases, fairly close ties were retained between the grain bureau and commercial retail outlets. Basic wages were still paid from budgetary sources, but outlets implemented a collective bonus system that promised to pay employees bonuses after a certain amount of sales or profits had been achieved. In many of these cases, a profit-sharing arrangement was agreed upon in which the manager and upper-level grain bureau shared after-tax profits.

An example of this type of arrangement is a retail grain outlet owned and operated by a district's grain bureau (*shiqu liangshiju*) in Shanghai that was contracted out to the manager on a profit- and volume-based incentive contract (SH941003-01). Although 100% of the manager's compensation depended on the earnings of the firm, the other employees still received their basic wage from the bureau's budget. Employees were quick to point out, however, that it was impossible to live on their government salary (especially since they did not receive any bo-

nuses or subsidies as did regular government employees), and that they depended heavily on their volume-based bonuses.

At the other extreme of organizational arrangements, a person (typically the former manager) entered into an agreement granting the manager wide-ranging decision-making authority over the firm's business, including the level and distribution of wages and bonuses, supply procurement, and product sales and marketing strategies. In such cases, the contractor typically had claims to all or most residual profits (e.g., ZJ940909-02, HEB940714-03). But the manager often had more responsibility for paying and supplying benefits for workers compared with counterparts in areas where autonomy over firm activities was more limited.

Throughout China, leaders of large inland cities kept closer administrative control over grain bureaus than did their counterparts in wealthy coastal regions (HEN941007-04, SAX941011-01). Coastal grain bureaucrats-cum-traders also tended to face stronger incentives to trade for profits. Despite these differences, throughout China new organizational reforms encouraged managers and employees to pay more attention to earning profits, and compensation became more closely tied to performance.

Grain reforms also pushed retail outlets to diversify their product lines and services while staying in the grain supply business. In response, many managers expanded product lines and increased grain quality. Innovative managers frequently kept only a part of their storefront as a grain shop, partitioning off the rest of the property into another line of business, such as a restaurant or general trading company (SH930510-03).

An example of the effect of commercialization reforms on store operations is a retail outlet in Nanjing, a large coastal city (JS940929-01). After little change in sales volume, store assets, or business style for more than 25 years, the outlet expanded rapidly after 1993. Instead of selling only grain, the store now offered customers a variety of grocery and houseware items. The store had been hastily redecorated immediately after the changes, and a major renovation was planned for the following year. Pending grain bureau permission, the manager planned to rent out the office space above their outlet and turn half of the floor space into a restaurant and karaoke bar. The expansion would be funded mainly by profits earned from the outlet's grain trade business—both from its retail business and from rapidly increasing wholesale activities.

Relaxation of sourcing requirements had one of the largest effects on urban grain market development in many cities. For the first time in decades, grain outlets could freely choose their own suppliers, only one of which was their former administratively designated supplier. Private wholesalers had long participated in urban markets, providing grain to private stalls and institutional buyers alike, but they had seldom been al-

lowed to sell to state grain stores (even nonrationed items such as premium quality grains and flour). After the elimination of rationing, managers noted that grain poured into the cities through a multiplicity of channels, a trend encouraged by China's leadership. "Deepening the reform of the pricing and circulation systems of agricultural products is the key to further developing the rural commodity economy. . . . We should practice multi-channeled circulation."¹⁵ Outlet managers themselves created many of these new marketing opportunities. In some areas, firms sent their own truck fleets to nearby areas to purchase and haul back grain shipments, joining in the new wholesale business (SH930510-01, HZ951210-02).¹⁶ Sources of grocery and other common food products found in urban markets diversified to include private, quasi-state, and state-owned-enterprise (SOE) merchandisers, factory representatives, and wholesale outlets.

Establishment of urban food marketing networks. National and regional leaders also adopted measures that encouraged the development of deeper and more reliable markets. Markets do not appear instantaneously; they require the construction of physical meeting grounds, the creation of transportation and communication networks, and the development of a class of traders, both buyers and sellers, with the know-how and capital to act as intermediaries between producers and consumers.¹⁷ One important aspect of China's agricultural reform success has been the successful establishment of marketing networks for agricultural products.¹⁸

Markets for the exchange of grain products in urban areas developed steadily throughout the 1980s. The number of urban market centers in China expanded by nearly 15% per year, from 2,973 in 1980 to 13,106 by 1990 (table 1, col. 1). During this same period, the value of transactions increased at an even faster rate, so that the average market size also increased (col. 2). After slowing in the late 1980s, the rate of growth accelerated in the 1990s, the number of markets in urban areas increasing by nearly 50% between 1990 and 1995 (col. 1). The average volume of transactions in each market expanded even more rapidly, more than tripling in real terms between 1990 and 1995 (col. 2). Total investment in urban marketing infrastructure also expanded in the 1990s (col. 5). During field work from 1993 to 1995, we found that in every city we visited a number of competing wholesale marketing channels were supplying food to urban residents.

The number of registered traders and the amount of their trading capital also rose continuously throughout the 1980s (table 1, cols. 6 and 7). There were only 241,000 private and semiprivate trade enterprises registered with the State Marketing Bureau in 1980. By 1990, this number had risen to 5.2 million, over 20 times the level of a decade earlier. The average amount of capital used by each of these traders also ex-

TABLE 1
THE DEVELOPMENT OF URBAN AND RURAL MARKETS AND INTERREGIONAL GRAIN TRADERS IN CHINA, 1980-95

	URBAN			RURAL		GRAIN TRADERS		
	No. of Markets (1)	Trade Value (Mil. Yuan) (2)	No. of Markets (3)	Trade Value (Mil. Yuan) (4)	MARKET INFRASTRUCTURE (Mil. Yuan) (5)	No. of Traders (Thousands) (6)	Capital Used by Average Trader (Yuan) (7)	
1980	2,973	2,371	37,890	21,170	18	N.A.	N.A.	
1981	3,298	3,339	39,715	24,797	115	349	5,319	
1982	3,591	3,984	41,184	27,639	115	241	5,278	
1983	4,491	4,897	43,508	31,202	133	462	5,708	
1984	6,144	8,893	50,356	33,321	690	849	8,747	
1985	8,013	10,420	53,324	44,173	729	1,463	7,020	
1986	9,701	20,099	57,909	54,448	755	2,295	7,324	
1987	10,908	26,843	58,775	62,707	907	3,355	8,373	
1988	12,181	36,019	59,178	71,072	1,078	5,845	9,446	
1989	13,111	40,223	59,109	69,481	1,017	4,954	12,516	
1990	13,106	45,117	59,473	71,644	1,052	5,224	12,019	
1991	13,891	56,965	60,784	81,456	872	N.A.	N.A.	
1992	14,510	80,436	64,768	98,932	2,421	N.A.	N.A.	
1993	16,450	95,310	66,551	116,757	4,631	N.A.	N.A.	
1994	17,894	136,029	66,569	150,145	3,205	N.A.	N.A.	
1995	19,892	157,429	63,000	156,777	N.A.	N.A.	N.A.	

SOURCES.—*Zhongguo Gongshang Xingzheng Guanli Tongji Shishinian* (Forty years of statistics of China's market administration and management) (Beijing: State Statistical Bureau Press, 1992); and *Zhongguo Guonei Maoyibu Nianjian* (China Ministry of Domestic Trade yearbook) (Beijing: State Statistical Bureau Press, 1995, 1996).

NOTE.—All value figures are in real terms. N.A. = not available.

panded from about 5,000 yuan in 1980 to more than 12,000 yuan in 1990 (a modest increase when measured in real terms).

Shanghai is a good example of how the government can play a positive, active role in promoting urban markets. The dirty, uninspiring warehouses at the grain bureau of Shanghai's Jingan District at one time were located on the banks of Suzhou Creek at the head of an isolated, twisting alley (SH930511-02, SH930513-01, SH941004-01). Now the sprawling storage units cannot be seen from the front of the property. They are hidden behind the multistoried rice wholesale market, which many times during the week more resembles Nanjing East Road's shopping district than the tarmac of a state grain warehouse. The market hosts over 100 sellers who come from all parts of the Yangtse delta and all strata of the grain business. The largest booths are staffed by agents from rice mills in Suzhou County in Jiangsu, Pinghu County in Zhejiang, and Songqing County in the Shanghai suburbs. A commercial subsidiary from the Shanghai seed company sells high-quality Thai rice from its experimental fields (which are no longer used for trials). A private trader with connections to the Shanghai Soybean Oil Crushing Plant not only sells oil from his cousin's plant, but also sublets a part of his space to another relative who each month brings in a truckload of "black" rice, a specialty product said to have medicinal quality, from his home in northern Jiangsu. The sellers sell to anyone, from locals living in a neighboring housing project who need 10 *jin* of polished Japonica no. 1 to the downtown cafeteria that wants a guaranteed 3-month supply of high-quality northeast rice shipped on oceangoing barges from Dalian.

Rural Reforms

In the rural sector, the pace of grain market liberalization also accelerated in the early 1990s. In different parts of China, and at different times, policy makers reduced mandatory delivery quotas and eliminated the implicit tax on farmers by raising the procurement price to market levels.¹⁹ While the quota reforms have been quite well publicized, the commercialization of the grain system in rural areas proceeded more unobtrusively, much in the same way as it did in urban areas.

Commercialization of grain bureaus. Policy makers promoted rapid and wide-ranging commercialization of the procurement arms of the grain system. Beginning in 1992, officials converted prefectural and county grain bureaus and township grain stations into commercial grain trading companies.²⁰ Although there is regional heterogeneity, agreements between the grain bureau and grain station managers resembled those agreed to by urban retail shop managers. Grain companies had to continue trading grain and oil seeds and accept responsibility for guaranteeing the employment of personnel and supplying pensions for retirees. They also were expected to carry out certain policy functions such as quota procurement and storage of national and local buffer stocks. Trad-

ing companies, like other commercial concerns, were expected to cover operational expenses and pay income tax. In return, reforms gave grain managers control of state-owned assets, most important, their storage facilities and fleets of trucks, and provided greater contractual incentives to earn profits.

Profit- and cost-sharing arrangements, like those negotiated by urban retail outlets, varied among provinces and were designed to elicit greater effort by managers and employees to increase efficiency and reduce budgetary obligations. In general, grain companies assumed greater responsibility for paying employee wages and supporting retired staff. The share of profits available to the firm for bonuses, employee services and benefits, and reinvestment were spelled out explicitly in many contracts. In a county in Guizhou, for example, 100% of the pay of managers and workers in 1993 came from the county budget (GZ960501-01). By agreement, this was reduced to 70% in 1994 and 50% in 1995. Under the contract, grain stations retained 50% of profits for bonuses, services, and benefits. The other 50% was used to offset losses from policy operations.

The effect of the new incentives on grain managers is well illustrated by the testimony of a trader in a western Liaoning county who was able to make huge profits even in the first year of operation after liberalization. Interviews with the ever-grinning, newly successful, and outwardly arrogant trader revealed some of the reasons for his success:

Two years ago, I sat in this office all year long. There was nothing to do. . . . [But now] it is different. If I can do a couple more years of business like I have this year, I will be a rich man. Since we were allowed to buy and sell grain [and keep the profits], I have not sat around any more. Every day, I am on the phone. I go into Shenyang, looking for good buys or someone in need of grain. I like to go down to the railyard. Flour coming up from northern Jiangsu can sometimes be picked up cheaply, especially now that credit is tightening up. Many people who ordered large lots of flour could not find enough cash to pay for their whole order. And, in this business, no cash, no trade. (Liaozhong County, Liaoning Province, October 1994; LN940716-02)

Not all traders, however, have fared so well. A manager in a poor, northwest province grain bureau tells his story of reform:

In 1992, grain bureau officials commercialized our county's trading and transport division. Wages are no longer paid out of the county budget. Our management team is on a profit sharing contract. Almost all of our employees work on a commission basis. The 16 township grain stations in the county also are contracted out to their original managers. In 1993, we made positive profits for the first time—if one counted grain sales through Spring Festival. However, I think rising grain prices are the main reason for the high profit margin. In the long run, I do not believe we can make money if things do not change. Our main trouble is that the cost of doing

business is getting increasingly expensive. There are no central markets from which (or to which) grain trading companies can procure (or sell) large quantities of grain on a regular basis. (Luonan County, Shaanxi Province, September 1994; SHX940921-01)

Reform Successes: Growth and the Expansion of Market Activities

One of the most significant aspects of the immediate impact of the numerous liberalization reforms was that “nothing” happened. There were no sharp disequilibrating effects of market liberalization measures, as in Eastern Europe and the former Soviet states, where grain shortages emerged and agricultural output and incomes in a number of countries fell by more than 50%.²¹ Instead, food prices in the early 1990s stayed constant or even declined in real terms. Other macroeconomic indicators such as per capita income and the level of inequality improved. There were no major shortages in either urban or rural markets. Production expanded in 1993, and grain imports fell dramatically after 1989. Even accounting for the direct wage subsidies provided by the state to urban workers to compensate for higher food prices, in 1992 the proportion of the national budget used for food subsidies fell below 10% for the first time since the 1970s.²²

Because of the nearly seamless initial transition, the scope of the changes and the extent of the reform efforts went largely unnoticed during the initial years after implementation. With stability goals achieved during the first months after the reforms, did the reforms achieve the efficiency gains sought by reformers? We present evidence on the effect of the economic policies implemented in the early 1990s on domestic trade expansion and the integration and competitiveness of markets.

Domestic Trade Expansion and Changing Patterns in China's Grain Flows

During the 1990s, the growth of trade of agricultural products within China's domestic market continued, driven by two sets of agents—the newly commercialized state trading firms, and private individuals and trading companies (fig. 1). Despite depressed prices and fairly stagnant production, the volume of total grain traded from 1990 to 1992 was more than 10% higher than that from 1987 to 1989, and rose even faster after 1992. According to national statistics, the proportion of free market trade (or procurement by nonstate traders) increased throughout the early 1990s (from 10% in 1989 to 13% in 1992 to more than 20% in 1995).²³ The proportion of sales to state grain units that was nonvoluntary also fell from 53% in 1990 to 45% in 1992 and to less than 40% in 1995. The proportion of grain flowing through nonstate channels fell in 1991 and 1992, not because of lower volume, but in part because of increased commercial trading by state trading companies.

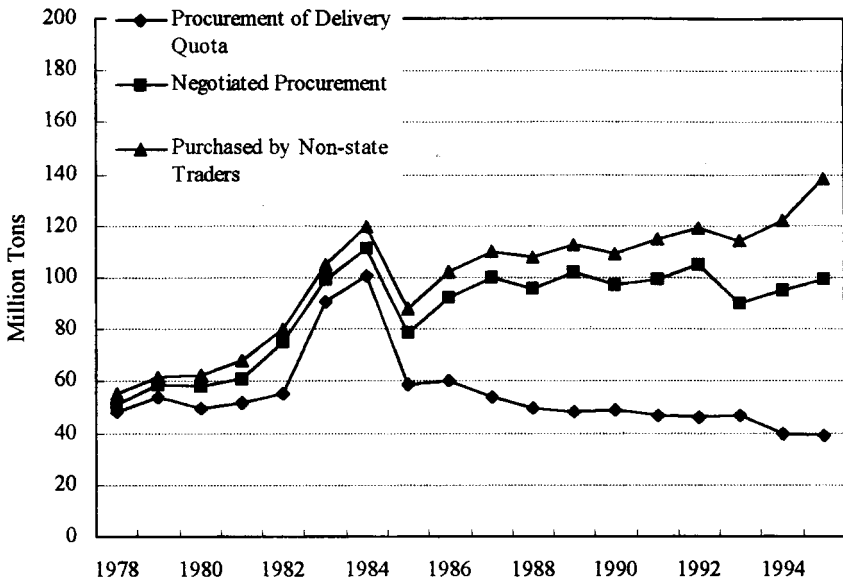


FIG. 1.—Grain marketing activity by types of traders in China, 1978–95. (Source: Ministry of Domestic Trade database.)

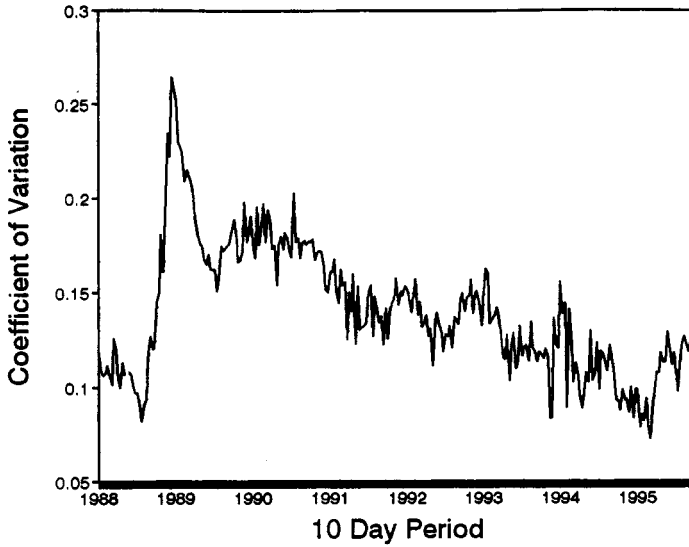
The increased domestic trade flow also induced local governments in rural areas to establish new periodic markets (table 1, cols. 3 and 4). After expanding rapidly in the early 1980s (the number of markets grew by 7% per year on average, and the transaction value in real terms by more than 15%), growth in both the number of markets and transaction value slowed in the late 1980s. After the market liberalization reforms, the growth of rural markets resumed. Between 1990 and 1992, the number of markets increased by nearly 10% and the value of the goods traded rose by more than 25%. After 1992, while the number of markets remained fairly constant, activity measured in traded value rose sharply, increasing by more than 60%.

Market Integration

Marketing and price reforms also led to a striking increase in the integration of markets. Falling coefficients of variation (CVs) for provincial rice and maize prices from 1988 to 1993 imply that price variation among markets fell, one sign of increasing integration (fig. 2). Statistical tests of the change in variance measures show that the average variance for the two series is significantly lower in 1991–93 than in 1988–89. Average rice and maize price differences among provinces also have fallen steadily (fig. 3). By these measures, the 1990s reforms succeeded in increasing grain market integration.

More formal tests of market integration (provided by cointegration

Panel A: Rice



Panel B: Maize

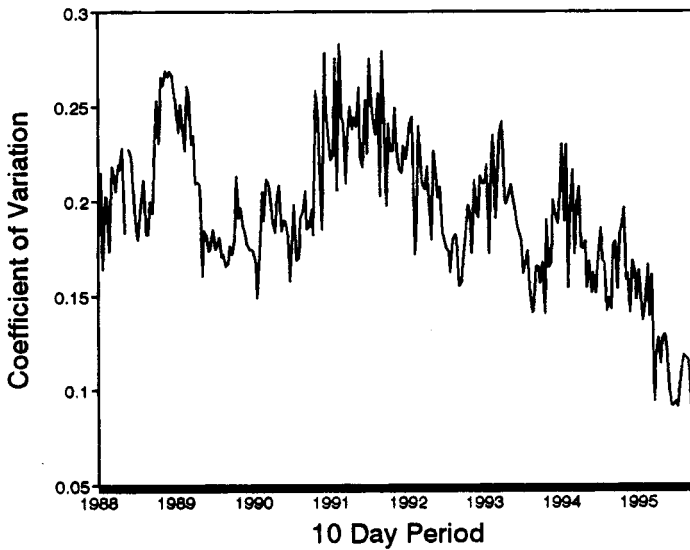
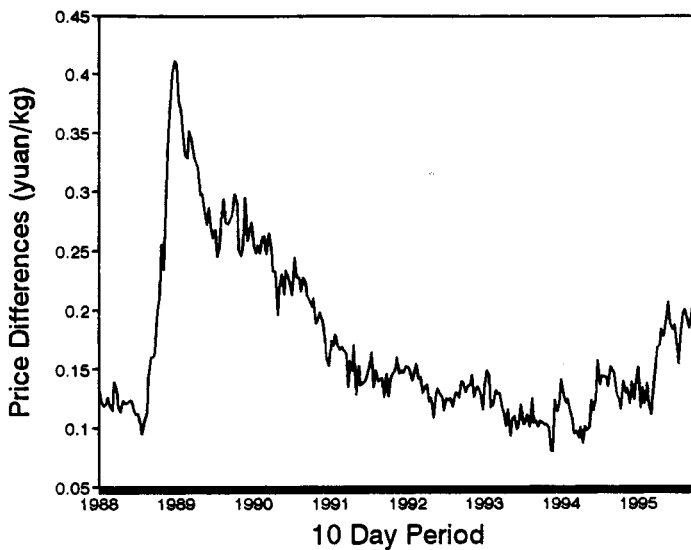


FIG. 2.—Coefficient of variation among provinces of nominal prices of grain in rural markets in China, 1988–95. (Source: Market Administration Bureau Rural Market Survey.)

Panel A: Rice



Panel B: Maize

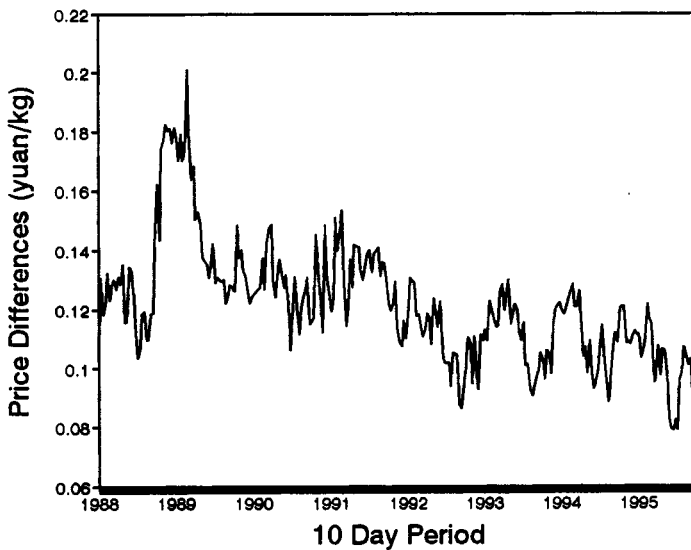


FIG. 3.—Average of price differences between pairs of provinces in rural markets in China, 1988–95. (Source: Market Administration Bureau Rural Market Survey.)

analysis) support these results. Cointegration statistics measure the proportion of movement in one price that is transmitted to another price during the period of observation. The coefficient on the “causing” price is bounded between 0 and 1, where 0 indicates that there is no impact on the “affected” price variable (and markets are not integrated), and where 1 indicates that markets completely adjust within the analysis period. A coefficient inside the 0–1 interval indicates that prices adjust only partially within the period of observation (or that markets are integrated, but frictions slow down price transmission). Two markets are integrated if the coefficient is not different than one at a 5% level of significance.

The integration tests in this study are based on a unique data set collected by the State Market Administration Bureau (SMAB) in Beijing. More than 180 reporting sites from 28 provinces across China send prices on a number of agricultural commodities every 10 days to SMAB’s information department. The prices represent average transaction costs for the day in the designated rural periodic market. The five to 15 individual market prices for each province are aggregated into provincial average prices by the Ministry of Agriculture’s Research Center for Rural Economy (RCRE). In this article our tests of market integration use the price series for rice and maize between 1988 and 1995. If an individual commodity is not traded on a rural periodic market, a price is not reported. Prices for rice are available for 23 provinces and municipalities and those for maize for 22 provinces. There are no complete price series for any grains for Shanghai, Fujian, Qinghai, Tibet, and Xingjiang. Price series for rice also are not complete for Inner Mongolia, nor are price series for maize for Heilongjiang. Nominal prices from the SMAB data set are deflated using monthly consumer price indexes calculated and reported by the State Statistical Bureau.

Most rice and maize markets have become increasingly integrated after liberalization policies of the early 1990s (table 2, cols. 1–2 and 4–5). The number of pairs of provinces that became integrated went up more than four times between 1988–89 and 1991–93 for rice markets and more than doubled for maize markets. These increases reflect an expanding geographic range of spatial market integration.

The price trends for rice in Guangdong and Hunan (fig. 4, panel A) and the price spread between the two regions (panel B) provide an interesting case study for how price differences between regions collapsed to a constant level as markets integrated after 1990. In 1988, as grain prices in the nation (and Guangdong, in particular) began to rise, Hunan provincial officials directed all government bureaus—especially employees in the grain system—to adopt measures to keep rice prices low for their own consumers. Grain bureau workers staffed blockades on roads leading out of the province. Rail freight shipments of grain out of the province were restricted by provincial edict. Government officials banned

TABLE 2
 NUMBER OF SIGNIFICANT COINTEGRATION COEFFICIENTS SHOWING INTEGRATION
 ACCORDING TO COINTEGRATION TESTS IN CHINA, 1988–95

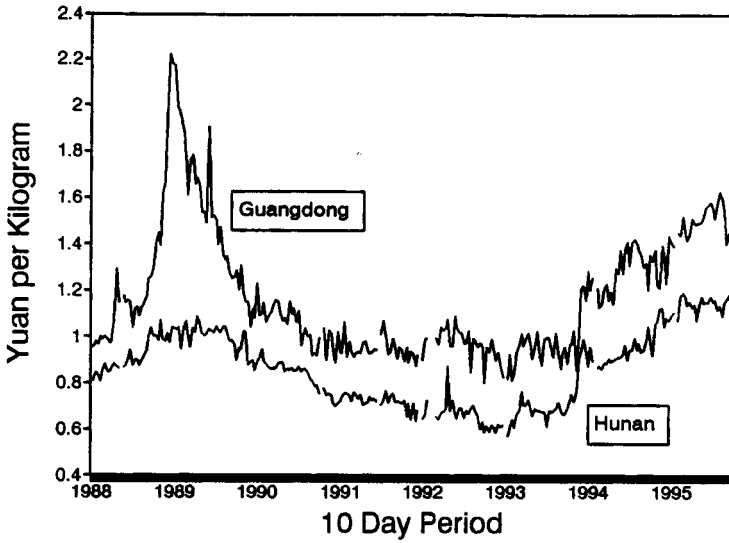
PROVINCE	RICE			MAIZE		
	1988–89	1991–93	1994–95	1988–89	1991–93	1994–95
Beijing	2	9	10	4	8	6
Tianjin	1	8	7	3	8	5
Hebei	3	9	8	2	10	4
Shanxi	2	6	7	3	9	5
Inner Mongolia	3	8	8
Liaoning	1	5	8	3	10	3
Jilin	1	6	11	6	8	3
Heilongjiang	1	7	6			
Jiangsu	2	8	8	4	7	6
Zhejiang	1	5	8	3	8	9
Anhui	3	12	7	3	9	5
Jiangxi	2	6	10	5	7	5
Shandong	2	11	6	3	11	7
Henan	2	6	7	3	7	5
Hubei	1	7	7
Hunan	2	8	8	4	10	6
Guangdong	2	10	6	5	8	5
Guangxi	1	9	4	5	9	6
Sichuan	2	7	9	5	8	9
Guizhou	1	8	8	2	10	8
Yunnan	2	7	8	4	9	5
Shaanxi	3	8	7	5	7	6
Gansu	2	7	10	4	8	4
Ningxia	2	6	10	5	8	9
Total pairs	41	175	180	84	187	129

individuals from transporting more than 100 kilograms of rice by train unless they had a permit. Drawn by higher prices, Hunan farmers found it profitable at times in 1989 to buy train tickets and carry individual sacks of rice across the border into Guangdong. But such activities fell short of moving the volume of grain that could equilibrate prices between regions. Prices in the two regions stopped moving together in the late 1980s, implying that the two markets were not well integrated.

After 1990, as policy controls loosened, prices began to track each other more closely (fig. 4). The data support observations that profit-seeking traders in Hunan's newly commercialized grain bureaus shipped rice to Guangdong whenever the interprovincial price differences exceeded the costs of marketing and transport. The flow of grain between the two provinces created a more stable price relationship.

The pattern of price movement in late 1993 and early 1994 (when, like in 1988–89, domestic farm prices rose quickly) illustrates the differences in the Hunan-Guangdong marketing relationship between the 1980s and the postliberalization period in the early 1990s. During 1993–

Panel A. Real Rice Prices



Panel B. Real Price Differences

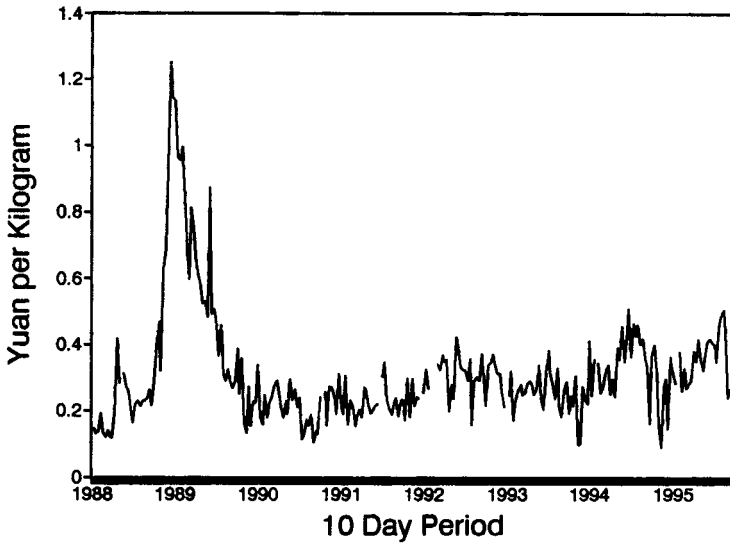


FIG. 4.—Comparison of real rice prices in Guangdong and Hunan provinces, 1988–95. (Source: State Market Administration Bureau database.)

94, when prices in Guangdong rose, Hunan prices followed closely, despite efforts by the Hunan government to prevent out-shipments of grain. Although price differences do widen somewhat in the latest years of the sample, the differences are not nearly as pronounced as in the earlier period (fig. 4, panel *B*).

Excerpts from a 1994 interview with one Yangtze delta grain bureaucrat and trader illustrates how far profit-minded traders were willing to go to pursue arbitrage opportunities, as well as the growing interdependence among grain and other markets, both foreign and domestic:

This year, traders have come from Guangdong for the first time [in many years] looking to procure rice. In my opinion, an important reason for this is the foreign exchange reforms which devalued the yuan making imports more expensive. . . . Oh yes! The [the Guangdong traders] also say it is more expensive this year to ship rice from Hunan to Guangdong since Hunan's governor was trying to keep Hunan's rice from flowing into Guangdong. The [Guangdong] traders went directly to township and village leaders and township grain stations [in the Yangtze Delta province] offering to guarantee a floor procurement price of 0.70 yuan in exchange for a promise [by local producers or their agents] to deliver grain after the state procurement deliveries had been completed. If the price exceeds 0.70, the trader pays the going market price, and if it falls to below 20 or 30 percent below 0.70 [which it never did], the deal would be off. The trader is willing to offer the guarantee in return for a sure source of rice. (Yangzhou Prefecture, Jiangsu Province, October 1994; JS941002-02).

And these ties among markets are not limited to advanced, east coast provinces. Traders and agents of trading companies interviewed in remote counties on the Loess Plateau in Shaanxi Province in north-west China conferred with an office manager in Xian to determine offer prices for grain based on current prices in Guangdong, Shanghai, or Beijing (SAX930820-01). Similarly, traders recognized the increasingly close correlation between Liaoning (in the northeast) maize prices and Guangxi (in the south) livestock prices (LN940710-01, BJ941015-03).

Competitiveness in China's Grain Markets

Have the reforms made trade more competitive? In the postliberalization era, large grain firms may seek to maximize their profits not only by exerting more trade effort, but also by exploiting market power. T. Sicular suggests that one indicator of increased market power is whether the price paid by grain bureaus in open market transactions is systematically lower than that paid by other market participants.²⁴ A slight widening of the negotiated-market price gap for maize in 1991 and 1992 would be consistent with an increased market power argument (fig. 5, panel *B*).²⁵ But the increase is so small and the level of aggregation so great that it is difficult to make inferences from these price movements.

Other evidence suggests that grain bureaus and their quasi-commer-

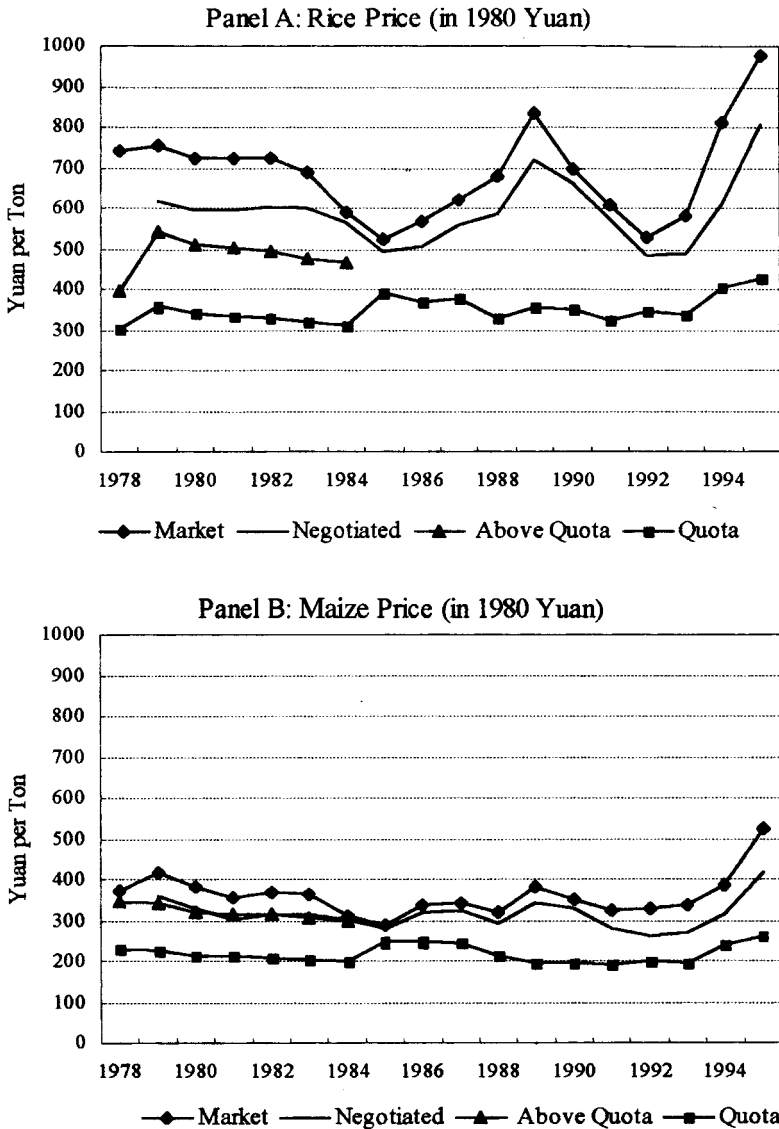


FIG. 5.—Market, negotiated, above-quota, and contract price of rice and maize in China, 1978–95. (Source: Ministry of Domestic Trade database.)

cial trading subsidiaries not only do not have market power, but that they are being subjected to increasing market competition. The gap between negotiated and market prices in 1990–92 narrows for rice (fig. 5, panel A). In percentage terms, this gap falls for all crops between 1993 and 1995. A survey of 31 villages in Hebei and Liaoning conducted by us in

June–August 1995 provides evidence supporting an increased-competition hypothesis. When asked whether the gap between the negotiated price offered by the local grain station and the market price offered by private traders had widened or narrowed between 1988 and 1995, 86% of the respondents said the gap had narrowed, 11% said it remained the same, and only 3% said that it had widened.

The entry of new, profit-oriented private traders, however, offers the most convincing evidence of rising competition. In a survey that we conducted in 1996 of 184 leaders in randomly selected villages in seven provinces, respondents reported that sales to the state by farmers of both their primary and secondary staple grain crops had fallen between 1988 and 1995 (table 3, rows 1–3). Overall, farmers have reduced the proportion of their sales (both voluntary and nonvoluntary) to state traders from 84% to 65% for rice, from 77% to 67% for wheat, and from 34% to 33% for maize. Some farmers have chosen to increase their sales in free local periodic markets (rows 7–9). Most, however, have decided to market their surplus directly to small private traders (rows 4–6). Between 1988 and 1995, the proportion of farm-gate sales to private traders rose from

TABLE 3
CHANGING PATTERNS OF GRAIN MARKETING AND EMERGENCE OF COMPETING
MARKETING CHANNELS IN CHINA'S VILLAGES, 1988 AND 1995

	PRIMARY CROP*		SECONDARY CROP		NATIONAL AVERAGE†	
	1988	1995	1988	1995	1988	1995
Sales to state:‡						
Rice	84	72	72	63	84	65
Wheat	75	67	82	77	77	67
Maize	45	45	38	31	34	34
Sales to free traders and private rural firms:						
Rice	6	11	1	10	7	22
Wheat	10	21	9	13	12	23
Maize	7	7	31	38	21	25
Sales at periodic markets:						
Rice	10	17	28	28	10	14
Wheat	15	12	9	10	11	9
Maize	48	48	32	31	45	41

SOURCE.—Author's community-level survey of 184 randomly selected, nationally representative villages in eight provinces.

NOTE.—Figures are all in percent of marketed surplus sold through respective marketing channels.

* Primary crop refers to the major crop marketed by farmers in the respondent's village.

† National average is estimated from the sample by using provincial averages from the sample provinces for similar neighboring provinces and weighting by provincial populations.

‡ Including mandatory deliveries and voluntary sales at "negotiated prices."

7% to 22% for rice, from 12% to 23% for wheat, and from 21% to 25% for maize.

The testimony of grain traders in all regions of China suggests that without government interference markets in China would continue to integrate and become increasingly competitive. The rising number of traders, especially those participating in local market trade (in both urban sales and rural procurement settings), belies fairly robust competition. In fact, large traders in well-developed trading centers have recently begun to complain about shrinking profit margins. Even in poor areas, quasi-government traders face competition. As one county trading company manager explained:

Locally there is too much competition from small traders. Private traders do not have the high overhead of county grain companies like ours. In the late 1980s, all of the non-quota grain was bought and sold by the grain bureau. Now, of grain traded at market prices in our county, 40 percent is government negotiated trade, 40 percent is among farmers on rural markets, and 20 percent is by private traders. In addition, Supply and Marketing Cooperatives (SMCs) and the local agricultural bureau have become involved in grain trade. The most active traders in the future, in my opinion, will be the township grain stations. Their costs are lower; they have relatively good facilities; and they have easier access to villages. (Shanyang County, Shaanxi Province, July 1993; SAX930705-01)

Inflation and Retrenchment

The success of market liberalization in the early 1990s was downplayed when food prices began to rise rapidly in December 1993 and continued to increase throughout the winter and spring of 1994. From late 1993 to mid-1994, the average nominal price of rice in rural periodic markets rose more than 70% from 1.30 yuan to 2.30 yuan per kilogram. Prices in key urban centers rose faster, by nearly 80% in Shanghai and over 90% in the markets around Shenyang, Wuhan, and Guangzhou. Inflation-adjusted real prices of rice, wheat, and maize also rose, but at a much slower rate. Between late 1993 and the middle of 1995, real rice prices rose by 75% and those of wheat and maize by about 60%.

One of the most hotly debated topics in China is why grain prices suddenly took off after nearly 50 months of continuous decline in real terms. While a complete debate of these issues is beyond the scope of this study, we note that since the price increases came so soon after market liberalizing reforms, a number of leaders believed that policy played a role in causing these escalations in price.²⁶ Officials surmised that removing procurement obligations led to falling grain-sown areas. Private traders and "unscrupulous quasi-state traders" were accused of draining surplus areas of local stocks, driving prices even higher. Urban wholesalers were accused of stockpiling inventories in deficit areas, taking advantage of their market power. Leaders could not understand why their or-

ders to release grain did not stem the rising prices. There was a general perception that the government had lost control of the grain economy, and that policy retrenchments were needed to stabilize grain prices.²⁷

Since food still accounts for about 50% of consumption expenditures by urban residents and nearly 60% of the average rural consumption bundle, rapid increases in the prices of grain and other food commodities were seen as a threat to overall price stability.²⁸ Because of the political and economic importance of maintaining an abundant supply of low-cost food for urban workers, the State Council undertook a number of actions to curb grain price inflation beginning in the first half of 1994.²⁹ In urban areas, price controls were imposed and rationing of state grain sales was reintroduced. Procurement quotas at below market prices were reintroduced in rural areas. Grain stations were asked to sell state grain stocks at ceiling prices, and movement of grain out of surplus areas was restricted to suppress local prices.

However, these policies failed to achieve the government's stabilization goals. Price controls in cities led to shortages. In response to the faltering supply, officials in some urban areas began to choose not to enforce the regulations. In other municipal regions, maximum price limits were quickly raised by officials who were afraid of prolonged shortages. Unlike previous years, many procurement quota obligations were not fulfilled.³⁰ Blocking shipments to deficit areas proved unsuccessful, and grain continued to flow among regions through multiple channels.³¹ Integration of the rice markets increased in the postretrenchment period (table 2, cols. 2 and 3; figs. 2 and 3, panel A). While integration in the maize markets abated somewhat (table 2, cols. 5 and 6), closer analysis shows that most of the drop was due to falling integration in several of the inland provinces.³²

One explanation for diminished control of the grain economy is that institutional changes led commercialized, quasi-government trading companies to pursue profits and evade orders to stop grain shipments or execute unprofitable buffer-stock operations.³³ Interviews in 1994 and 1995 support this explanation. Leaders in a number of provinces (such as Henan, Shaanxi, and Jiangsu) reported that some grain-station managers resisted selling government stocks at low prices to defend price ceilings for fear of having to bear the cost of such policy operations or to avoid reducing the profitability of their own trade since sales of buffer stocks might lower market prices and devalue their stocks of trade grain (HEN94101001-02, SAX941017-01, JS940929-02). In one case in Guizhou, a county grain station could not release government buffer stocks because the grain had already been shipped illegally to Guangdong for a hefty profit (BJ960520-01). In other cases, we interviewed field agents from local grain bureaus who only reluctantly collected quotas from farmers since as traders they did not want to alienate those who might want to sell them grain later in the year (ZH941210-02). One quasi-government

commercial trader's comment illustrates why trade prohibitions failed. "Why would I not ship rice—even when some officials appear on television telling me not to? They do not pay my salary any more. If I do not trade grain, I cannot support my family or my employees!" (HEN941010-01).

The propensity to pursue profits and ignore policy edicts also was evident in urban areas. Profit-motivated urban retail outlets did not want to sell low-cost, rationed grain since they earned only 0.005 yuan per kilogram price margin on ration sales (a level set by policy), while earning up to 0.15 yuan per kilogram on regular market sales. Managers of many grain outlets admitted that they took actions to limit the sale of the low-priced, low-profit rice. For example, when the low-priced grain arrived from the district warehouse, employees would dump it on the floor and select out the worst rice. The rice was displayed in a far corner of the shop, and ration sales hours were limited (SH940620-01).

Dilemmas in Reforming State-Market Relations

Following 15 years of reform and bold market liberalization initiatives in the early 1990s, the retrenchments of 1994 did not work nearly as effectively as leaders had expected. Liberalization and institutional policies gave state grain trading firms an incentive to shirk when carrying out policies that encroached on their commercial activities. Success in market liberalization and commercialization of state grain trade thus has created a policy dilemma for government officials: Should officials increase their efforts to regain control of the grain economy using traditional policy instruments even if it means reversing institutional reforms? Or should policy makers establish new institutions and rules that preserve the allocative efficiency of markets while establishing more indirect controls over resource flows?

Despite the rapid growth of markets and numerous institutional changes, China's grain market institutions remain in a state of uncertain transition. Ownership and control rights of newly commercialized state grain trading companies vary substantially among regions and have yet to be clearly defined. Important aspects of market institutions, such as transport and communications infrastructure, a legal system to enforce contracts, product standards, and credit financing institutions, are still maturing. Government leaders are still adjusting to the new marketing environment, struggling with new tools, such as buffer-stock operations, to achieve long-standing policy objectives.

There is some question as to whether returning to the old world of tight government control of markets and prices is even possible. Even if it were, the high costs of such a course should make officials wary. First, the costs of enforcing market controls have risen enormously given the proliferation of market participants and marketing channels. Second, a return to the old system is likely to involve significant sacrifices in lost economic efficiency and lower rural incomes (whether because of the re-

imposition of taxes or distortions in resource allocation). Finally, the budgetary costs of subsidizing urban grain sales and keeping all grain bureau employees on the state payroll are considerable. These costs aside, a major reversal of grain liberalization measures would go directly against the spirit of economic reform, which could influence the pace of the overall reform process.

How, then, can the government move forward? One promising solution is to proceed with institutional reform that makes a clearer separation between commercial trade and policy implementation. According to interviews in a number of areas (Guizhou, Sichuan, Zhejiang, and Henan) beginning in 1996, grain bureaus were asked to separate staff between commercial and policy operations and keep separate accounts for the two activities. If a grain manager has conflicting objectives, it is likely that neither goal is well served, a point borne out by experience. Commercial firms should be left to conduct trade, while policy functions are taken up by specialized government agencies with no conflicting functions. Under such a scheme, if the government contracts with commercial firms to perform services such as procuring and storing grain, it should be as a commercial transaction voluntarily entered into by both parties. The exact configuration of policy measures implemented by government agencies and those contracted out to commercial firms can be flexible. The example of other developing Asian countries such as Indonesia and India suggests that a clear division between policy and commercial trade is possible.

Making state grain-trading companies fully commercial requires that unfair advantages and disadvantages in market competition be eliminated. State traders should not be granted preferential access to output markets (especially for procurement) or credit markets. Private traders should not be unfairly burdened by cumbersome licensing procedures or other implicit entry barriers. However, state grain traders should not suffer from unreasonable handicaps. More vigilant tax enforcement or greater numbers of regulations governing operations, restrictions on reducing labor forces, welfare responsibilities for retired persons, and large grain debts from the early reform period are all factors that reduce the competitiveness of state traders.

In an increasingly commercial environment, the government's role is to serve as an impartial arbiter of fair market competition, steadfastly prohibiting rather than encouraging barriers to interprovincial trade. Shutting of markets destroys incentives for producers and traders, exacerbates inequities, and makes stabilization through buffer-stock operations less effective. The government can support market development by investing in public goods that promote market development—transport and communications infrastructure, market institutions such as wholesale and futures markets, the development of uniform quality standards for grain, and contract enforcement mechanisms.

The Chinese government's recent establishment of a national grain reserve system signals its recognition of the necessity of using market-based mechanisms to stabilize prices. It will still take some time for planners to learn how to employ buffer-stock operations (where and how much to optimally stockpile and release grain). The debate over the desirability of more direct policy interventions will undoubtedly continue. But this discussion should occur with the understanding that China's grain markets have matured and cannot be influenced in the same manner as before, without incurring much higher costs.

Notes

* We have benefited greatly from discussions with and comments from Bob Baulch, Fred Crook, Marcel Fafchamps, Wally Falcon, John McMillan, Barry Naughton, Al Nyberg, Xiaopeng Luo, Jean Oi, Terry Sicular, Jeffrey G. Williamson, and two anonymous reviewers. We acknowledge the support of the International Development Research Center (IDRC), the International Rice Research Institute (IRRI), the International Food Policy Research Institute (IFPRI), and the China Division of the World Bank. The support of Stanford's Institute for International Studies and the Center for East Asian Studies is also gratefully acknowledged. Scott Rozelle is a member of the Giannini Foundation.

1. Louis Putterman, "Dualism and Reform in China," *Economic Development and Cultural Change* 13 (1992): 467-93.

2. Terry Sicular, "Redefining State, Plan and Market: China's Reforms in Agriculture Commerce," *China Quarterly* 143 (December 1995): 1020-46.

3. Scott Rozelle, "Gradual Reform and Institutional Development: The Keys to Success of China's Rural Reforms," in *Reforming Asian Socialism: The Growth of Market Institutions*, ed. John McMillan and Barry Naughton (Ann Arbor: University of Michigan Press, 1996).

4. Andrew Wedeman, "Regional Protectionism: Translations," *Chinese Economic Studies* 26, no. 5 (Fall 1993): 3-104; Jean Oi, *State and Peasant in Contemporaneous China: The Political Economy of Village Government* (Berkeley and Los Angeles: University of California Press, 1989).

5. Sicular described these changes in her 1995 *China Quarterly* piece (see n. 2 above).

6. Andrew Watson, "China's Agricultural Reforms: Experiences and Achievements of the Agricultural Sector in the Market Reform Process," Working Paper no. 94/4 (Chinese Economy Research Unit, University of Adelaide, Adelaide, Australia, 1994); and Albert Park and Scott Rozelle, "Commercialization of the State in Rural China," mimeograph (Department of Economics, University of Michigan, Ann Arbor, 1997).

7. *Zhongguo Tongji Nianjian* (China statistical yearbook) (Beijing: China Statistical Press, 1981-95).

8. Jikun Huang and Scott Rozelle, "Market Development and Rural Food Demand in China," *China Economic Review* (May 1998), pp. 1-20.

9. Y. Duan, "Reform: The Only Way for Agriculture to Get Out of Difficulty," *Liaowang* 18 (May 2, 1994): 17-18.

10. Jiyuan Chen, "Several Problems in the Rural Areas Which Urgently Need to Be Studied at Present," *Liaowang* 18 (May 2, 1994): 16-17; Xiwen Chen, "The Central Government's Politics and Measures Are Good, But It Is Difficult to Implement Them at the Local and Departmental Level," *ibid.*, pp. 13-16.

11. Scott Rozelle, "Decision Making in China's Rural Economy: Defining a Framework for Understanding the Behavior of Village Leaders and Farm Households," *China Quarterly* 137 (March 1994): 99–124.

12. Throughout this article, all interviews are documented with a coding system linking it back to our field notes. The first two (or three) letters denote the province; the next six numerals denote the interview data; the final two numerals denote the number of the interview of that day. Most interviews were done with guarantees of respondent confidentiality. For more details on any given interview, please contact Scott Rozelle.

13. F. Zhong, "A Review of Recent Grain Reforms in Rural and Urban Areas," mimeograph (Department of Agricultural Economics, Nanjing Agricultural University, Nanjing, 1993); and Sicular (n. 2 above).

14. Shuo Wu, "Interprovincial Circulation of Grain and Wholesale Markets in China" (paper presented at the joint meeting of the Chinese Agricultural Economics Association, the Taiwan Rural Economic Society, and the American Agricultural Economics Association, Beijing, 1992), and "Implementation of Market Regulations under the Macro Control of the State—the Key to Carrying Out China's Grain Development Strategy" (paper presented at the Conference on Market Economy and China's Agriculture: Problems and Prospects, Fudan University, Shanghai, December 7–8, 1995).

15. Statement by Premier Li Peng in Watson (n. 6 above).

16. Xiaopeng Luo and Frederick Crook, "Rice Market Integration in South China," mimeograph (Department of Agricultural Economics, University of Minnesota, 1997).

17. John McMillan, "Markets in Transition," in *Advances in Economics and Econometrics: Theory and Applications*, ed. David Kreps and Kenneth Wallis (Cambridge: Cambridge University, 1995).

18. Rozelle, "Gradual Reform and Institutional Development" (n. 3 above).

19. Sicular (n. 2 above); Watson (n. 6 above); T. P. Lyons, "Commercial Reform in China: The Grain Trade of Fujian Province, 1978–1988," *Economic Development and Cultural Change* 41 (1993): 691–736.

20. Albert Park, "Grain Market Liberalization in Shaanxi Province," U.S. Department of Agriculture, *USDA Economic Research Service Asia and Pacific Rim Agriculture and Trade Notes* (November 1993), pp. 3–4; and Frederick Crook, "China Trip Report—U.S. Corn Team," mimeograph (Economic Research Service, U.S. Department of Agriculture, Washington, D.C., 1994).

21. Justin Lin, Fang Cai, and Zhou Li, "Why China's Reforms Have Been Successful: Its Implications for Other Reforming Economies," mimeograph (Department of Rural Economy, Development Research Center, Beijing, 1994).

22. Scott Rozelle, Albert Park, Jikun Huang, and Hehui Jin, "Dilemmas in Reforming State-Market Relations in Rural China," mimeograph (Department of Economics, Stanford University, Stanford, CA, 1996).

23. *Zhongguo Shangye Nianjian* (China commercial yearbook) (Beijing: Ministry of Domestic Trade Press, 1990–94).

24. In Sicular (n. 2 above) the argument is made that if state grain traders had market power and used the monopsonistic power to maximize their profits, they would set a procurement price below the competitive market price.

25. The widening price also might reflect the reimplemention of a policy role for negotiated purchases. At one time, some localities required (or encouraged) farmers to sell negotiated grain to the state at a price somewhat below the going market price. If data from these purchases are averaged into negotiated purchases that are conducted at market prices (i.e., if markets were competitive), the national aggregate negotiated price could be below the reported market price.

26. "Document Requires Tight Rein on Grain," *Renmin ribao* (People's daily) (June 16, 1994), p. 2.

27. Wu, "Interprovincial Circulation of Grain and Wholesale Markets" and "Implementation of Market Regulations under the Macro Control of the State" (both cited in n. 14 above).

28. X. Chen (n. 10 above); Duan (n. 9 above).

29. Crook (n. 20 above).

30. Jikun Huang, "Review of China's Agricultural Policy, Market and Trade Developments in 1995" (paper presented to ad hoc group of experts on East-West economic relations in agriculture, OECD, Paris, 1996).

31. Luo and Crook (n. 16 above); and Wen Yu, "Market Integration in China's Grain System" (master's thesis [in Chinese], Graduate School, Chinese Academy of Agricultural Sciences, 1997).

32. A more complete discussion of these issues can be found in Rozelle et al. (n. 22 above).

33. Park and Rozelle (n. 6 above).