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The Public Distribution Systems of Foodgrains and Implications for Food Security

A Comparison of the Experiences of India and China

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Abstract

A comparative study of the public distribution systems of foodgrains in India and China is expected to reveal lessons and experiences that are valuable to policymakers. This is particularly important for developing countries in their endeavour to ensure food security. This paper undertakes such an exercise. The main features and developments of the two public distribution systems are first highlighted. This is followed by a comparative analysis of their similarities and differences. The role of public foodgrain distribution systems in ensuring food security is then evaluated. Finally, policy implications are drawn.

Keywords: public distribution system, food security, poverty, food subsidy, India, China
JEL classification: I31, I38, Q11, Q18

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Acronyms

APL (families) above poverty line

BPL (families) below poverty line

FAO Food and Agriculture Organization

FCI Food Corporation of India

MSP minimum support price

PDS public distribution system

PL480 global food aid programme established by the Agricultural Trade Development and Assistance Act of 1954 into law as US Public Law 480, commonly known as PL480

TPDS targeted public distribution system (of India)

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1 Introduction

The issue of food security has been around for a long time and the right to adequate food and to be free from hunger have been repeatedly affirmed in a number of documents adopted by the United Nations (e.g., the Universal Declaration of Human Rights in 1948, the International Covenant on Economic, Social and Cultural Rights in 1966, and the Rights of Child in 1989). Nevertheless, by the early 1990s, there were still more than 800 million people, mostly in the developing countries, who did not have enough food to meet basic nutritional needs. This led the Food and Agriculture Organization (FAO) to assemble a World Food Summit in 1996, in which 194 countries took part and during which the Rome Declaration on World Food Security was drawn up.

The World Food Summit called on the international community to cut the number of hungry people by half to about 400 million by 2015. However, the progress towards achieving the target, as reviewed in the *World Food Summit: Five Years Later* in June 2002, remained disappointingly slow (FAO 2002). According to FAO (2004: 6), in 2000-02, the number of undernourished people worldwide remained as high as 852 million, including 815 million in the developing countries.

The number of people undernourished in India and China, the world's two most populous countries, currently stands at 363 million (two-thirds are in India), accounting for 43 per cent of the world total (FAO 2004: 7). Sources of food insecurity for both countries, i.e., huge population, limited agricultural resources, and unstable and unpredictable world markets, still prevail, presenting potential threats to national food security. Looking into their past practices, especially the access to food by the poor, may reveal valuable experiences and lessons. In this paper, we focus on the institution of the public distribution systems of food in these two countries and discuss how these systems have helped to improve food security.

2 Inception and evolution of the public distribution systems

Adequately feeding the huge populations in India and China has been a challenge. At the time of independence of the Republic of India and the founding of the People's Republic of China in the late 1940s, both countries encountered severe shortage of food. Since then, governments have made considerable efforts to improve food production and great achievements have been made. In both countries, the supply and reach of food are more comfortable, famines rarely occur, and large foodgrain imports are not required. One of the important policy instruments is the use of the public distribution systems (PDSs). In this section, we highlight how the PDSs are operated in each of the two countries. Due to significant reforms to the PDSs in both countries in the early 1990s, we present the PDSs in two stages: the period up to the early 1990s and the period since the early 1990s.

2.1 The public distribution systems effective until the early 1990s

India

In India, foodgrain is distributed through a combination of private markets and the *public distribution system* (PDS). The origins of the PDS can be traced back to the Second World War period. Before the war, small deficits in foodgrain supply already existed

and were met from imports. When the war broke out, imports became difficult and grain prices rose sharply (Suryanarayana 1985: 20). To ensure an equitable distribution of food, ration was introduced in 1942, with supplies from domestic procurement and imports, and distribution through ration shops. From December 1947 the government reverted to decontrol. However, prices had increased steeply by July 1948 and control was re-introduced in September 1948. A new scheme of distribution, the fair-price shop system, was established to ensure low market prices through large supplies to the market.

In 1965 the Food Corporation of India (FCI) was set up with the goal of handling grain procurement, distribution, and building a buffer stock. In the same year, the Agricultural Prices Commission (now Commission for Agricultural Costs and Prices) was set up to advise the government on prices to be paid to farmers. Around 1967/68, the name fair-price shop scheme was changed to the *public distribution system* (PDS) but the role and organization of the system remained unchanged.

The PDS is run jointly by central and state governments. While the responsibility of the central government (through FCI) is to procure, store and transport grains from purchase points to central *godowns* (warehouses) across the country, the responsibility of state governments is to transport these commodities from central *godowns* and distribute them to consumers through the network of fair-price shops.

Fair-price shops are owned privately or cooperatively and make profits from the commission on sales. They are licensed by state governments and principally distribute food items (wheat, rice, sugar, and edible oil) to customers at fixed prices. A shop

Table 1
Government subsidy on foodgrain consumption in India *

	Subsidy:				Subsidy:		
Year	Rs million	US$ million	% of GDP	Year	Rs million	US$ million	% of GDP
1976/77	4,773	544	0.53	1991/92	28,500	1,013	0.44
1977/78	4,801	586	0.47	1992/93	28,000	896	0.37
1978/79	5,694	698	0.52	1993/94	55,370	1,764	0.64
1979/80	6,000	761	0.50	1994/95	51,000	1,572	0.50
1980/81	6,500	749	0.45	1995/96	53,770	1,514	0.45
1981/82	7,000	738	0.42	1996/97	60,660	1,668	0.44
1982/83	7,110	703	0.38	1997/98	75,000	1,815	0.49
1983/84	8,350	735	0.38	1998/99	87,000	2,018	0.50
1994/85	11,010	892	0.45	1999/00	92,000	2,044	0.48
1985/86	16,500	1,310	0.59	2000/01	120,100	2,543	0.57
1986/87	20,000	1,545	0.64	2001/02	174,940	3,598	0.77
1987/88	20,000	1,438	0.56	2002/03	241,760	5,189	0.98
1988/89	22,000	1,357	0.52	2003/04	251,600	5,557	n.a.
1989/90	24,760	1,415	0.51	2004/05	277,460	6,372	n.a.
1990/91	24,500	1,078	0.43				

Note: * Financial year, April-March, subsidies on foodgrain include sugar for some years. All are at current prices. Exchange rates obtained from www//research.stlouisfed.org/fred2/categories/15, accessed on 13 July 2005.

Source: GOI (various years).

covers about 2000 people. Any person with a designated residential address, rich or poor, urban or rural, can draw supplies from these shops. In 2002, there were about 474,000 shops, 75 per cent in the rural areas. The grains distributed in these shops are of fair-to-average quality. Many well-off people prefer to purchase on the open market for grains of higher quality albeit at a higher price.

Pricing is crucial for PDS in India. It is based on current and anticipated open market prices. If prices are too high, the PDS cannot not justify its existence; if too low, a heavy financial burden ensues. When the price of grain is below its cost (procurement, storage, distribution, wastage, etc.), a government subsidy results. Since the early 1970s, procurement prices were increased annually to ensure reasonable remuneration to farmers. However, the prices at which the PDS dispatched grains could not be raised accordingly. Despite periodical revisions of the centrally-set prices, they were generally kept below costs. Consequently, the subsidy has increased from Rs 67 million in 1970/71 to over Rs 10 billion by 1984/85 and Rs 25 billion by 1989/90 at current prices (see Table 1). The increase in subsidy has attracted much attention and criticism (Parikh 1994; George 1996).

It should be noted that subsidy figures in Table 1 are not deflated. No comparable deflators are available for these two countries. Considering that both India and China experienced high levels of inflation during the periods covered, the subsidy in real terms would be smaller. Nonetheless, we calculated the proportion of the subsidy to total GDP and in India in most years it has been typically around 0.5 per cent. The proportion is higher in recent years due to a higher level of public stocks.

China

When the Communist Party of China came to power in 1949, there was a food shortage caused by decades of war. The new government took various measures to promote grain production, crack down on hoarding and speculation, and establish as well as strengthen state grain organizations. By the end of 1950, the grain situation was basically brought under control and the state grain organizations had gained a commanding position in the grain market.

China started its First Five-Year Plan in 1953. With economic reconstruction underway on a large scale, the demand for grain outpaced availability. In October 1953, it was proposed that the government procure grain directly for supply to consumers in urban areas through a ration system. This was endorsed by the government and implemented in December 1953. Consequently, the ‘unified grain procurement and sale system’ was established, and state grain agencies became the sole buyers and sole sellers in the grain market. Three kinds of buyers were covered by this system: (i) the non-agricultural population (urban) who were issued with grain coupons, (ii) the agricultural population who were engaged in non-grain production or did not produce grain in sufficient quantities, and (iii) other grain users (e.g., restaurants, bakeries, and food-processing factories or factories using grain as input).

An important element of the rationing system was that the grain coupons could be used in government grain stores, restaurants, and manufactured food stores, etc. Usually they could only be used within the issuing area (e.g., a city or a province) but a local grain coupon could be exchanged for a more general one (i.e., issued by a higher level government) to facilitate travellers. The local grain coupons were usually distributed

monthly, but could be used at any time or within a specific period. Although varying across provinces/cities, the proportion of fine to coarse grains was often fixed for a particular location. Food items sold through government grain shops primarily included cereals (chiefly rice and wheat flour), other coarse grains, and edible oil.

Up till the early 1990s, the system underwent few significant changes. These included:

i) Per capita ration was reduced by one kilogram per month in late 1960 in response to the nationwide famine;

ii) There were three selling price increases in the mid-1960s; and

iii) In 1985, the selling price of grain supplied to qualifying agricultural population was increased to equal the procurement price (the non-agricultural population was still provided with grains at the unified selling price which was below its procurement price). In the same year, changes in the provisions for other grain users were also made.

As a result of significant increases in the procurement prices of grains in the late 1970s and early 1980s, and with no increases in the selling price to the non-agricultural population, the government subsidy increased rapidly. By 1990 it had reached 27 billion *yuan* (see Table 2). This soon triggered much attention and debate within the country. Some advocated de-control over grain marketing, while others proposed that grain prices be determined by the market (see, for example, Liu *et al.* 1986; Cheng, Lu, and Yan 1987; Yu 1987). But many argued that China's grain situation could not be left totally to the market because of the critical importance of grain in feeding the people and maintaining social stability (Liu 1986; Ma 1987). The government kept the selling price of grain unchanged in order to maintain social stability.

Table 2
Government subsidy on foodgrain consumption in China *

	Subsidy:				Subsidy:		
Year	¥ million	US$ million	% of GDP	Year	¥ million	US$ million	% of GDP
1978	1,114	706	0.31	1991	26,703	5,005	1.24
1979	5,485	3,666	1.36	1992	22,435	4,059	0.84
1980	10,280	6,719	2.28	1993	22,475	3,891	0.65
1981	14,222	8,322	2.92	1994	20,203	2,338	0.43
1982	15,619	8,232	2.95	1995	22,891	2,735	0.39
1983	18,213	9,194	3.07	1996	31,139	3,734	0.46
1984	20,167	8,638	2.81	1997	41,367	4,972	0.56
1985	19,866	6,747	2.22	1998	56,504	6,807	0.72
1986	16,937	4,894	1.66	1999	49,229	5,947	0.60
1987	19,543	5,237	1.63	2000	75,874	9,165	0.85
1988	20,403	5,468	1.37	2001	60,544	7,315	0.62
1989	26,252	6,965	1.55	2002	53,524	6,467	0.51
1990	26,761	5,580	1.44	2003	55,015	6,647	0.47

Note: * Calendar year, subsidies on grain, cotton and edible oil. Data excluding cotton not available. All are at current prices. Exchange rates obtained from www://research.stlouisfed.org/fred2/categories/15, accessed on 13 July 2005.

Source: SSB (various issues).

2.2 The public distribution systems since the early 1990s

Clearly, both India and China had spent a large amount on subsidizing food consumption in the early 1990s. By then, however, majority of consumers in both countries were enjoying increased disposable income resulting from economic reforms and could afford foodgrains at market prices. To reduce the food subsidy, many argued that the PDSs need to be reformed so as to target specifically the poor and needy (Deng 1991; Jha 1992; Ahluwalia 1993; Pal, Bahl and Mruthyunjaya 1993). Since the early 1990s, both governments have reformed the PDSs but have chosen different paths. India has endeavoured to make the PDS increasingly targeted to the poor while China has tried to reduce the subsidy burden by cancelling the PDS.

India

Despite the heavy burden on the public exchequer, few in India have proposed reducing or dismantling the PDS in order to reduce the subsidy. Many agree that the PDS should be viewed as an instrument of income transfer in favour of the poor. From this perspective, existence of the PDS is justified on the ground of providing food security to the poor (Ahluwalia 1993; Dantwala 1993; Pal, Bahl and Mruthyunjaya 1993). Such a view is shared by the government, which believes that (i) eliminating the food subsidy is neither desirable nor feasible in the short and medium term although there is a strong reason to contain it, and (ii) the PDS, as it has now evolved and grown, needs to pay more attention to the poor and vulnerable (GOI 1994: 66).

Under such guidelines the government first launched a scheme in early 1992 to revamp the PDS in some 1800 backward and remote areas. Additional grains were allotted to the states at prices lower than the issue prices for normal PDS. During 1992-95, measures were undertaken to reduce the PDS entitlements to the non-poor or less poor population in an effort to reduce subsidies. Different types of ration cards (in different colours for different rations) were introduced for different groups of the population. In 1997, the government launched a revised scheme of distribution known as the *targeted public distribution system* (TPDS). Under TPDS, foodgrains were distributed under two-tier delivery system to households below poverty line (BPL) and above poverty line (APL), with each BPL family receiving a set amount of foodgrains per month at heavily subsidized prices (see Table 3).

Under the TPDS, the amount of heavily subsidized grains supplied to each of the BPL families was set at 10 kg per month. This set amount, however, has varied over time since 1997, depending on the size of the buffer stock. When the stock level was high, it was increased in an attempt to reduce the stock; for example, in 2001 this amount was increased to 25 kg per month per family (GOI 2002: 128). It was further increased to 35 kg in 2002 (GOI 2003: 94). The price at which the grain is sold to BPL families is set to equal half of its cost. In practice, however, the issue price to BPL families is often less than this stipulated cost (Table 3), and in the earlier years, it was significantly less than half its cost. The issue price to APL families was intended to represent 90 per cent of the cost but in the past years the actual price was often below this target level.

The share of grain to BPL families has also changed over the years, and is closely linked to the amount available in the buffer stock. In 1997-98, of the 17.5 million tons of total BPL and APL allocation, some 41 per cent (7.2 million tons) were for BPL

Table 3
Costs and issue prices of wheat and rice in India (1991-2003)

	Wheat			Rice		
	Cost (Rs/kg)	Issue price (Rs/kg)	Issue price/cost (%)	Cost (Rs/kg)	Issue price (Rs/kg)	Issue price/cost (%)
1991-92	3.91	2.80	72	4.97	3.77	76
1992-93	5.04	2.80	56	5.85	3.77	64
1993-94	5.32	3.30	62	6.65	4.37	66
1994-95	5.51	4.02	73	6.95	5.37	77
1995-96	5.84	4.02	69	7.63	5.37	70
1996-97	6.63	4.02	61	8.58	5.37	63
1997-98	7.98			9.37		
BPL		2.50	31		3.50	37
APL		4.50	56		7.00	75
1998-99	8.00			9.95		
BPL		2.50	31		3.50	35
APL		6.50	81		9.05	91
1999-00	8.87			10.74		
BPL		2.50	28		3.50	33
APL		6.82	77		9.05	84
2000-01	8.58			11.80		
BPL		4.15	48		5.65	48
APL		8.30	97		11.30	96
2001-02	8.59			11.96		
BPL		4.15	48		5.65	47
APL		6.10	71		8.30	69
2002-03	9.15			11.84		
April						
BPL		4.15	45		5.65	48
APL		5.10	56		7.30	62
July						
BPL		4.15	45		5.65	48
APL		6.10	67		8.30	70

Source: GOI (2004).

population (GOI 1999: 69). In 2000-01, 18.5 million tons (64 per cent) were allocated for distribution to BPL families, compared to 10.3 million tons to APL families. Since the TPDS was implemented in 1997, over 60 million BPL families benefit from this revised distribution scheme every year.

In addition to TPDS, the Indian government initiated or strengthened a number of schemes to further assist the very poor in the form of cheaper grains. In December 2000, the *Antyodaya Anna Yojana* (grain scheme for the poorest of the poor) was launched (GOI 2001: 92). It seeks to identify the ten million poorest households out of the 65 million BPL families, and to provide them with 25 kg of foodgrains per family per month at a low price of Rs2/kg for wheat and Rs3/kg for rice. The *Annapurna* scheme, commenced in 2000-01, provides 10 kg of foodgrains per person per month free to indigent senior citizens above the age of 65 but who are not drawing pension under the national old age pension scheme. In August 2001, the *Sampoorna Gramin Rozgar Yojana* (integrated rural employment scheme) was announced, under which states are provided with five million tons of foodgrains annually for undertaking work

programmes. Other existing welfare programmes were also strengthened to provide foodgrains to benefit the poor. These include the midday meal scheme, wheat based nutrition programme, scheme for supply of foodgrains to scheduled caste/scheduled tribe/other backward classes, the scheme for supply of foodgrains to indigent population living in welfare institutions (GOI 2002: 128). These schemes are used primarily (i) to make the TPDS more focused and targeted towards the poor, (ii) to increase the employment opportunities of the poor, and (iii) to help reduce the overstock of foodgrains in the central reserves.

After revamping PDS in the early 1990s, grains are still supplied to consumers at prices lower than cost. Hence, the subsidy on foodgrain consumption remains. Since the introduction of the TPDS, the subsidy has continued to rise (Table 1) because the issue prices for grain for BPL are significantly lower than cost and the distribution of almost free grain has expanded through special schemes.

China

By the late 1980s and early 1990s, the issue of grain subsidy was receiving considerable attention (Du 1989; Gu 1990; Ke 1990; Huang 1990; Deng 1991). In May 1991, the government moved to reduce subsidies for rationed grain by increasing the unified grain selling prices. But they were still below procurement prices. In April 1992, however, selling prices were further increased to equal procurement prices.

Due to a succession of good harvests, market grain prices were low in the early 1990s, and were not much different from the prices of grain in government shops. Urban consumers bought more grain from the market to ensure better quality and selection. Further, the consumption of non-grain food in urban areas started to increase at the expense of foodgrain. This resulted in less importance being attached to the grain coupon and some urban residents started to sell coupons for cash. After certain experiments during late 1992 and early 1993, the state-operated unified grain sale system virtually disappeared around mid-1993.

From October 1993, grain prices in the free market increased sharply and this was aggravated by panic buying. Having been sensitive to grain prices, the government immediately mobilized measures to cope with the price surge, including price ceilings on grain traded in the free market. Although grain prices were brought under control early December of that year through heavy administrative interventions, price fluctuations continued in some areas in the first half of 1994. From July 1994, grain prices rose again quickly all over the country. Certain areas reintroduced the coupons in late 1994 and by September 1995, about half of the 30 provinces restored the use of coupons (Anon. 1995; Ka 1995).

Prices were stable during much of 1995, thanks to additional grain imports and increased grain supply through government shops at subsidized prices. That year local governments were assigned the primary responsibility of handling grain matters under their jurisdiction. Consequently, the public distribution of grains differs across regions, although all regions procure grains under a quota regime at government-set prices. Some cities sell subsidized grains through government shops without ration; others apply the ration. A few cities, led by Shanghai and Beijing, also attempted to target the low-income population. This was later followed by other cities (Anon. 1996a, 1996b; Shen 1999).

However, the need for government provision of subsidized grain through its outlets did not last long. The grain supply in the market turned to abundance from 1996 and prices remained relatively low (Tian and Zhou 2005). For the majority of the population, buying grains at the market price was no longer a problem, although assistance was continued for some low-income consumers. However, approach to providing assistance started to change mainly in the urban areas and a cash income subsidy is currently provided to the needy instead of cheap subsidized foodgrain.

From 1993, reform of the old social security system led to the establishment of a new social security system that is cash income transfer based. Since 1994, there has been an increased number of publications addressing China's social security issues (see, for example, Ding 1997; Shi 1997; Yan 2003; Yu 2003; Guo 2004). Prior to 1994, attention was paid to social security issues by Beijing Review (1994) and Jiao (1994). Jiao (1994) points out that as a result of economic reforms, the old social security system could no longer 'live up to its functions of promoting production and social stability, helping the underprivileged, and helping to guarantee a basic living standard for all'. It is interesting to note is that in recent years, increasing attention has also been paid to the establishment of a social security system in rural areas (e.g., Yu 2003; Guo 2004). Wei (2003) attempts to address social security issues for rural migrants working in urban communities.

In summary, the PDS in China gradually disappeared around the mid-1990s. Assistance to the poor was no longer provided in the form of subsidized foodgrain. Instead, under the reformed social security system it was gradually replaced with a cash income transfer. Government subsidy on grains, however, was not completely eliminated (see Table 2) but is being spent on maintaining stocks to cover any temporary market fluctuations and the occurrence of large-scale food insecurity.

3 Comparison of the PDSs: similarities and differences

Originally introduced to combat food scarcity, the food distribution systems in both India and China have played an important role in ensuring an adequate food intake, particularly during periods of food shortage. Both countries supply their people with food at subsidized prices under a ration system. In this section of the paper, the two PDSs are compared and their similarities and differences are highlighted.

3.1 The objectives of PDSs

Both countries have chosen not to rely completely on the private market but to have instead a government food distribution system. The main objectives of the system in both cases are threefold:

i) To contain rises in food prices and keep them within reasonable limits in the wake of production shortage and increasing food demand;

ii) To ensure availability of minimum amount of food at a reasonable price to those who do not produce it (or produce it in insufficient quantity); and

iii) To make food available at reasonable prices to low-income groups whose food security is most severely affected by high prices.

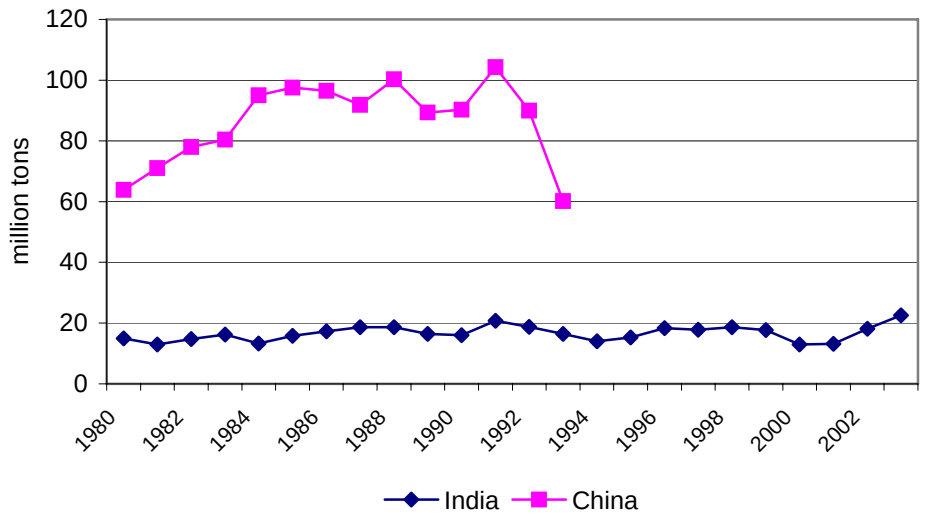
The system has evolved in both countries from a history of periodic food shortages and corresponding sharp price hikes in the private market system. The distribution mechanism also serves as an early warning and quick response system in case of local famine situations.

3.2 The system

The PDS included subsystems for the procurement, storage and distribution of foodgrains. Both countries took steps to involve the local/state governments in the system. China sought to establish a command position for government organizations in the grain market, and thus monopolized grain marketing. The government of India also tried the same but failed. Consequently, less than 10 per cent of the grain production in India is handled by the government and the rest is left to the private market. The Indian PDS does not attempt to meet the public's entire grain requirement but the PDS is instead intended to cover a certain minimum of the eligible groups coming to the fair-price shops. In contrast, the Chinese government assumed responsibility for feeding the entire registered urban population. As a result, quantities handled by the government of India are much lower than those handled by the government of China (Figure 1). Figure 1 also shows that the quantities despatched through the PDS in India have varied, depending on grain availability and prices on the open market, while in the case of China, with the increasing urban population, the quantity of grains supplied through government shops rose continuously until the mid-1980s when additional agricultural market reforms were initiated (Figure 1).

In China grains were procured by the local governments according to quotas as assigned by the national government. Total procurements and any imports were allocated to

Figure 1
Quantity of foodgrains distributed through the PDSs *



Note: * Following the price surges in 1993, ration was reintroduced in some regions, and was carried out jointly by the central and local governments. The distribution of foodgrain by the various tiers of government gradually disappeared from 1993 onward. Data for 1994 and thereafter not available to the authors.

Sources: GOI (2004); SSB (various issues).

different provinces by the national government, which also managed the stocks. In India the entire procurement process is the responsibility of central government through FCI, which constitutes a part of the farmer price support system. FCI, who handle the distribution to the states, also manages the stocks and distributions across godowns all over the country. Thus, the costs and subsidies involved in the operations of the PDS in China seem to have been shared between the national and provincial governments, whereas in India they are largely borne by the central government.

3.3 Operation and performance

Both countries' food distribution systems, despite their various shortcomings, have played a significant role in distributing food to the people, particularly during shortages (Acharya 1983; Zhou 1998; Jharwal 1999; Swaminathan 2000; Zhou, Liu and Perera 2001). In addition, the public food distribution system has had a significant role in stabilizing prices in the market and this is particularly true in the case of India (Jharwal 1999).

The unit cost of grain handled through the Indian PDS has been rising in recent years (Table 3). This is partly attributable to the high post-procurement cost and leakages to the open market (Ahluwalia 1993). In recent years, India's excessive public stocks (Table 4) have added to the increasing cost of its PDS (GOI 2002, 2003). Table 4 shows that the actual stock in the beginning of 2002 was more than three times greater than the buffer norm. On the other hand, in China low operation efficiency is a key factor contributing to the increasing cost of its PDS. Although the government has gradually given up supplying grain to consumers through its outlets, it still procures grain for a buffer reserve and various other uses. Low efficiency is a significant contributor for the increasing subsidy.

Table 4
Actual foodgrain stocks (wheat and rice) and minimum buffer norms, India

Beginning of the year	Buffer norm	Actual stock	Excess (actual stock minus buffer norm)
1997	15.4	20.0	4.6
1998	15.4	18.3	2.9
1999	16.8	24.4	7.6
2000	16.8	31.4	14.6
2001	16.8	45.7	28.9
2002	16.8	58.0	41.2
2003	16.8	48.2	31.4
2004	16.8	24.4	7.6
2005	16.8	21.7	4.9

Source: GOI (various issues).

3.4 The use of private sector

The private grain sector, if properly regulated and used, can play an important role in the management of a country's food distribution. India and China have treated the private sector differently. In China, private traders were subject to strict control and restrictions in the early 1950s, and were almost totally banned from trading grains from

late 1953 to the early 1980s. Since then, private traders have been allowed to trade in the market although they were constrained by many government regulations. In the late 1990s they were again prohibited from procuring grain directly from the producers although they were allowed to engage in other grain trading activities. A new policy was introduced in June 2004 which gave more freedom to private traders, allowing them to procure grain directly from the producers, subject to a licence. In India, there are fewer restrictions on private-sector grain marketing, and as a result, the private grain sector is well developed. Private channels have also helped the Indian government to cope with the highly concentrated market arrivals during the marketing season in states with a heavy surplus.

3.5 Coverage and targeting

The coverage of PDS is different in China and India. In China, the ration system favoured the registered urban population, irrespective of wealth. Deficit or non-grain producing rural households were also included. In India, both urban and rural households with designated residential addresses were entitled to subsidized grain, irrespective of income. However, during the 1990s, some modifications were introduced and entitlements to non-poor families were reduced.

In India, despite the fact that the rural population is covered and some three-fourths of the fair-price shops are located in rural areas, the issue of whether the people in rural communities receive an equitable share of the benefits from the PDS has received much attention (see, for example, Dev and Suryanarayana 1991; Ahluwalia 1993; Dantwala 1993). In China, on the other hand, there have been very few arguments supporting the interests of the rural people, even when surplus grain was transferred to urban areas, leaving rural people without adequate stocks. Contrary to efforts in India, very few researchers in China have attempted to examine how the bias of the PDS implemented by the Chinese government have impacted on the rural populations of the country.

3.6 Costs and policy responses

In both countries a considerable amount of the budget is spent on food subsidies, and efforts have been made to reduce the public exchequer's heavy burden. Each country, however, has chosen a different approach to deal with the subsidy burden.

The Chinese government selected to reduce the subsidy by allowing its PDS to disintegrate, preferring instead to reform the old social security system and to establish a new system of cash income transfers to focus more on the needy. This transition may have been made possible by three factors. First, the majority of the urban population could afford to buy foodgrain at market prices. Second, the economy was strong enough to provide social security support (in the form of cash income transfers) to the urban poor; and finally, the strong grassroots administrative arrangements were useful in helping identify the poor.

Although the government of India realized that there are compelling reasons for containing the subsidy, its elimination is considered as neither desirable nor feasible in the short and medium term (GOI 1994: 66). Rather than abolish the PDS in order to reduce the subsidy, the Indian government initiated policies to improve the efficiency of the PDS, including

better targeting of the poor and the vulnerable. This has led to the introduction of the TPDS in the late 1990s.

There have been many attempts to address the effectiveness of the PDS of India, especially on its impact on the poor. See for example, Radhakrishna et al. (1997); Kozel and Parker (1998); Dutta and Ramaswami (2001); Zhou, Liu and Perera (2001); Dev (2002); Ramaswami (2004), and Jha and Srinivasan (2004). Findings are mixed, however. According to Kozel and Parker (1998), the TPDS is often cited by the poor as essential to their wellbeing. Zhou, Liu and Perera (2001) also indicate that the PDS in India has contributed to welfare improvement of the poor. Others, however, believe that the PDS has had minimal impact on the poverty and nutritional status of the population, and that it is not cost-effective (Radhakrishna et al. 1997; Jha and Srinivasan 2004). Some argue that other anti-poverty programmes such as employment schemes could be more effective.

4 Impact of the PDS on food security

Having compared the PDSs in the two countries, we now address the impacts of the PDSs on food security.

4.1 National food security

There is no doubt that the PDSs have contributed to national food security in both countries. Since consumers are assured of foodgrain supply, the PDS limits panic-buying during food shortage, and eliminates unnecessary fluctuations in the market. The buffer stock, a vital element of the PDS, plays a particularly important role. In China, the PDS helped the country to survive both domestic food shortages as well as the western blockage of food imports in the early 1960s (Zhao and Qi 1988). In India, the functioning of the minimum support price (MSP) and FCI, and the existence of buffer stocks made large-scale food imports such as those under the PL480 food aid programme unnecessary. Also, the stock release during consecutive droughts of 2001-03 helped to ease food shortage. With its buffer stocks, India has managed successfully to cope with the severe drop in grain output without having to rely on large imports.[1] In 2003, India managed to net-export about 5 million tons of grains (GOI 2004: s-22).

4.2 Food security of the general public

In principle, the PDS in India is accessible to all people, rural or urban residents, rich or poor, provided that they have the designated residential address. In contrast, the majority of the rural people in China were excluded, but all urban residents, rich or poor, were covered. These measures have ensured a more equitable distribution of foodgrain to the general public, particularly important in times of severe grain shortages.

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1 India's buffer stock level dropped from 61.7 million tons in July 2001 (when the norm in July is 24.3 million tons) to 20 million tons in April 2004 (the norm in April being 15.8 million tons) (GOI 2004: 93).

The urban bias in China was unfair to its farmers. Nonetheless, the country has been able to sustain its population through several difficult times of food scarcity. In retrospect, this practice of milking the agricultural sector has enabled China to secure grain for urban distribution and to extract funds for industrialization, giving the country more momentum for development (Liu 1998).

4.3 Food security of the poor

When the PDSs were first initiated, there was no direct targeting the poor in either system. The poor were treated as any other eligible person. In China, while the majority of rural residents were excluded, the very poor were provided with various relief measures. Targeting the poor was gradually introduced in urban areas from the early 1990s as a means of reducing grain subsidy. The price surges of 1994 and 1995 led to supplies being rationed in some regions. During those few years, targeting was widely used (Anon. 1996a, 1996b; Shen 1999).

In India, the PDS was indirectly targeted for the poor, as the provision of grain was only fair-to-average in quality, and wealthier customers could buy better quality grain on the open market. The system became more protective of the poor with the introduction of the TPDS in 1997. While Radhakrishna *et al.* (1997) claim that the impact of the PDS on nutritional status of the poor is minimal, Zhou, Liu and Perera (2001) find that the cereal consumption and nutritional intake of the poor has improved over time, thanks to the PDS. The Zhou study analyses food consumption and nutrition intake of the poorest 30 per cent of the population. It examines how the PDS may have affected the food consumption and welfare of the poor from multi-dimensional perspectives: between rural and urban regions, across states, and over time. According to Ramaswami (2004), targeting was achieved because the relatively rich voluntarily sidestep the programme. However, as the poor in India live in slums, they do not have the requisite designated address and may consequently not be able to take advantage of the PDS. Indeed, they may even be worse off, as PDS has induced higher open market prices (Dantwala 1967; Tyagi 1990: 88-99).

5 Policy implications

5.1 Subsidy on food can be a cost-effective way to help the developing-country poor

The substantial food subsidy has attracted criticism in both countries, and the efficiency of the PDSs is often questioned. However, it must be recognized that the most essential part in the wellbeing of the poor is access to adequate food supply and that food needs to be obtained within a much stricter time constraint than virtually any other life necessity (Spitz 1985). Access to food (in the short term) can be arranged either through direct cash transfers within a well-established social security system, or through the provision of subsidized food by PDS. Direct transfers imply an effective income monitoring mechanism so that an income test can be applied, but most developing countries lack such a mechanism. Consequently, a government-administered system for distributing food at reasonable prices is a practical option to provide a safety-net to the poor.

Table 5
Shares of social security expenditure and foodgrain subsidy out of total government expenditure (at current prices)

Year	Expenditure on social security (excl. subsidy on grains)[a]	Subsidy on grains	Total government expenditure	Social security expenditure out of total govn't expenditure	Social security expenditure and grain subsidy out of total govn't expenditure
	Rs million	Rs million	Rs million	%	%
			INDIA, 1992-2004		
1991/92	10,470	28,500	1,061,688	0.99	3.67
1992/93	12,910	28,000	1,186,173	1.09	3.45
1993/94	14,440	55,370	1,364,894	1.06	5.11
1994/95	17,410	51,000	1,502,600	1.16	4.55
1995/96	26,000	53,770	1,688,889	1.54	4.72
1996/97	27,830	60,660	1,910,450	1.46	4.63
1997/98	29,440	75,000	2,154,867	1.37	4.85
1998/99	33,310	87,000	2,568,860	1.30	4.68
1999/00	48,340	92,000	2,994,312	1.61	4.69
2000/01	33,770	120,100	3,256,698	1.04	4.72
2001/02	37,130	174,940	3,612,364	1.03	5.87
2002/03	32,060	241,760	4,013,750	0.80	6.82
2003/04	33,670	251,600	4,737,273	0.71	6.02
Year	Expenditure on social security (excl. subsidy on grains)	Subsidy on grains[b]	Total government expenditure	Social security expenditure out of total govn't expenditure	Social security expenditure and grain subsidy out of total govn't expenditure
	¥ million	¥ million	¥ million	%	%
			CHINA, 1993-2003		
1993	7,527	22,475	464,230	1.62	6.46
1994	9,514	20,203	579,262	1.64	5.13
1995	11,546	22,891	682,372	1.69	5.05
1996	12,803	31,139	793,755	1.61	5.54
1997	14,214	41,367	923,356	1.54	6.02
1998	17,126	56,504	1,079,818	1.59	6.82
1999	17,988	49,229	1,318,767	1.36	5.10
2000	21,303	75,874	1,588,650	1.34	6.12
2001	26,668	60,544	1,890,258	1.41	4.61
2002	37,297	53,524	2,205,315	1.69	4.12
2003	49,882	55,015	2,464,995	2.02	4.26

Notes: [a] Includes expenditure on (i) welfare of SC/ST and other backward classes and (ii) social welfare and nutrition.

[b] Includes subsidies on grain, cotton and edible oil. Data without cotton are not available

Sources: GOI (various issues) for India, and SSB (various issues) for China.

In developing countries like India and China, expenditures on food subsidy are a part of the country's social security expenses. A comparison between social security spending in the USA, Australia, and Japan and food subsidy expenditure in China and India reveals that the expenditure of developed countries on social security is much higher than that of India and China on food subsidies (expressed as share of total government budget) (Zhou and Gandhi 2000). Whereas social security expenditure is 22 per cent in the USA, 35 per cent in Australia, and 22 per cent in Japan, food subsidy is only about

4-6 per cent in China and India. In both countries, even when all other social security expenditures are included, the proportion at about 6-8 per cent is still much smaller than that in the developed countries (Table 5).

Given that the PDS is still being used in India, the country's economists and policymakers need to evaluate the situation carefully when they embark on reducing the food subsidy. Efforts to reduce the subsidy purely for the sake of improving efficiency must take into consideration the cost of helping the poor in other ways. The experience of China clearly shows that while the foodgrain subsidy has dropped in recent years, total social security expenditures have increased in both absolute and relative terms (see Table 5, bottom panel). In contrast, even though the foodgrain subsidy has escalated recently in India, the social security expenditure has not increased. In balance, total expenditures for both social security and food subsidy have remained largely comparable to earlier years (see Table 5, top panel). For India, helping the poor through the PDS seems to be the appropriate approach.

5.2 The level of economic development and provision of food subsidy

With regard to food security, the experience of China shows that when a country's economic development reaches certain level, it is possible to shift from food subsidy to direct cash payments. In doing so, one needs to consider the general public's ability to buy grain on the open market, and whether the truly poor can be identified without unreasonable high administrative costs. China, with its history of a centrally controlled regime, has well organized administrative mechanisms in place that extended right down to street-level units. This helps to identify those in need with little extra costs.

In India today, the majority of the population can afford to buy grain on the open market and in normal circumstances they do not need to rely on the PDS. The country's economy is also in a much stronger position than earlier. However, India lacks the administrative facilities that could help to identify the poor and to administer income transfers in a cost-effective manner. Thus, the PDS is likely to exist in India for some time to come.

5.3 PDS is still needed in India

In India, a large number of people are undernourished; India's undernourished may well constitute the largest share of hungry people in any single country of the world. They all need to be provided with food. Given that identifying the poor and administering direct income transfers is likely to be costly, food subsidy with proper targeting remains a more cost-effective way to improve food security. Policymakers, economists, and the general public should not be hasty in abolishing the PDS but should wait till the country is ready to make direct income transfers to the poor.

Until such a time, it is imperative to improve the efficiency of the PDS to reduce or eliminate waste and leakage. In recent years, the demand for the PDS has been declining, largely due to income growth on one hand and a change in the structure of demand on the other. Indians are consuming less foodgrain per capita by substituting non-cereal foods (GOI 2002: 123). This decline may justify gradual reduction in the size of PDS operations.

Pilot programmes to reduce PDS operations or even shift to direct income transfers could be considered in regions or states where conditions permit.

5.4 A buffer stock controlled by the central government is essential

In India, buffer stocks are a significant element in the operations of the PDS, and in efforts to smooth domestic market fluctuations. China, on the other hand, was unable to build a reasonably sized buffer stock until the mid-1980s (Zhou 1997), but since then the buffer stock has contributed importantly to the management of China's grain economy. A buffer stock controlled by the central government is still the vital means of achieving food security in both China and India. This is true whether or not a physical PDS is maintained. In China, the PDS gradually disappeared, but the buffer stock system is still in place. Such a system is needed to deal with temporary market fluctuations and to handle any large-scale food insecurity.

It would be to the advantage of both countries if they could learn from each other. India, on the one hand, could gain from China's experience by learning to manage its buffer stock with more flexibility. Once the stock becomes excessive, different measures need to be exercised to dispose of the surplus, e.g., exporting, as China did in 1998-2003, when it exported large quantities from its buffer stock, even though subsidy had to be provided. Excessive grain stock can also be used to produce processed foods or animal products.

China, on the other hand, could benefit from India's PDS administration by bringing transparency to its buffer stock management. Zhou and Tian (2005) attribute the high cost of maintaining China's buffer stock to the lack of transparency. With transparency in its operations, China may not need to maintain such high volumes of buffer stock.

Learning from each other could resolve the criticism often directed at the excessive amount of public stock in India or the lack of transparency in grain management in China. Interestingly, although China's buffer stock is well over 100 million tons (exact figures not available from government sources), few have complained about excessive buffer stock (limited information published on the minimum norm). Quite the contrary, the Chinese are often concerned about grain security. In comparison, when India's buffer stock was some 20-40 million tons over its norm in the past few years (15.8 million tons in April and 24.3 million tons in July), there was considerable outcry about the excessive stock.

6 Concluding comments

In this paper, we examined the institution of the PDSs in India and China and discussed how the PDSs have helped these two populous countries to improve national food security, food security of the general public, and food security of the poor. Our analyses show that a PDS is a useful policy instrument, particularly when there is a shortage of food. It can also be a cost-effective measure to counteract poverty. Moreover, a buffer stock controlled by the central government is essential to ensuring and improving a country's food security, regardless of whether or not a physical PDS is maintained.

The experiences of the PDSs in both countries under study could provide valuable lessons. India would benefit by adopting a method of flexible management for its buffer stock, as is done in China. Likewise, China needs to adopt a lesson from India in managing its buffer stock with transparency. Contrasting experiences in the two countries reveal that when a country's income level improves, PDS operations need to be modified to make it more flexible and better targeted. For example, the PDS should be geared to helping the poor in normal circumstances, and its coverage extended during food emergencies. Following China's example, India might consider reducing its PDS operations, the reduction needs to be done gradually. Pilot programmes to reduce PDS operation or to switch to direct income transfers could be considered in regions or states where conditions permit.

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