2 Grain Marketing Parastatals in Asia: Why Do They Have to Change Now?

SHAHIDUR RASHID, ASHOK GULATI,
AND RALPH CUMMINGS JR.

Context

The initial economic conditions and the rationales for public intervention in foodgrains markets were remarkably similar in those Asian countries whose governments intervened in their grain markets. Agriculture was largely weather-dependent, production variability was high, domestic markets were poorly integrated, international markets were highly volatile, and the countries had severe liquidity constraints on buying from the international market at times of scarcity. These countries were vulnerable to crop failures; their foreign exchange reserves were meager, and their national food security depended, apart from "mother nature," on the goodwill of—and relationship with—donor countries. These relationships, however, were not always smooth because of sharp differences in political ideology. Therefore, policy thinking in all of these countries converged on attaining self-sufficiency, improving food distribution, and managing food security threats arising from weather-related production shocks. This thinking coincided with the advent of the Green Revolution, giving the governments another justification for intervention—that is, mitigating the risks and uncertainties of the new technology. By the early 1970s, a food policy paradigm evolved, with governments directly involved in a procurement-stocking-distribution chain, which was again very similar among these countries.[1]

Nevertheless, the countries have had varying experiences over the years. In the 1980s and 1990s, some countries responded by reducing intervention, while others held on to the old practices with minimum reforms. The food subsidy bill has decreased in some countries but increased in others. The government's shares in grains markets have gone up in some countries but down in others. This chapter synthesizes these diverse experiences and draw implications for further reforms. The rest of the chapter is organized as follows: The next section provides a historical overview of the evolution of policies and institutions for public interventions, which is followed by a section that analyzes

1. Vietnam, which started late and from a communist beginning, is a partial exception.

changes in the underlying rationales for intervention. The fourth section discusses policy responses to changing rationales; and the fifth one evaluates the performances of price stabilization policies over the past three decades. The chapter concludes with a summary of the major issues and a discussion of their implications.

Food Policy and Parastatals in Asia

Although underlying conditions were similar, policy design, implementation approaches, and reforms in later years have varied widely among the countries. Policies have been implemented through parastatals in India, Indonesia, and the Philippines; a state agency (Directorate of Food) in Bangladesh; a combination of parastatals and state agencies in Pakistan; and parastatals without direct involvement in procurement and distribution in Vietnam. The following are brief country-by-country overviews of how parastatals and supporting policies evolved over time.

India

The great Bengal Famine of 1943 triggered the tradition of public intervention in India. The Famine Enquiry Committee Report, as well as subsequent studies, concluded that the root cause of famine was the failure of markets in responding to supply shortages in Bengal (that is, lack of spatial integration), rather than the availability of foodgrains in India as a whole, in that particular year.[2] Thus, the central premise for heavy public involvement was to address the perceived inability of private traders to ensure efficient allocation of essential commodities across space and time. Government actions focused on ensuring a steady flow of supplies at "reasonable" prices to consumers through domestic production supplemented by imports whenever production suffered a setback. Until about 1965, consumers were generally assured of a minimum supply, but a guaranteed income to the producers remained an elusive promise.[3]

Two major events coincided to prompt a change in policy. First, in 1965/66 and 1966/67 the country experienced two consecutive droughts of unprecedented severity that reduced foodgrain production almost 20 percent below their previous best levels. India was in crisis; it was bailed out only by a large volume of U.S. food aid that severely strained the country's pride. Second, in 1963 the new high-yielding wheat varieties (HYV) were first grown experimentally in India, and by 1966 prospects of the Green Revolution appeared

2. Sen's (1981) interpretation of famine, the entitlement failure, differs from this view. Although Sen's works have been extremely influential, many have disagreed with his view. See Devereux (2001).

3. This concern was based, in part, on the assumption that production responds slowly to price, but price responds swiftly and inexorably to demand or to fluctuations in supplies.

promising. The New Strategy of Agricultural Development, articulated in the Fourth Five-Year Plan (GOI 1970), marked a bold step beyond previous policies. A policy of combining high-yielding varieties of seeds with a package of complementary inputs in selected but widely distributed water-assured areas was proposed. The availability of scarce foreign exchange to import fertilizer and other inputs to support the program was given priority. Investments in agricultural supply industries were encouraged. Reorganizations of programs in research, extension, and rural credit, which had been initiated earlier, were accelerated and given greater support. However, what marked the most significant departure from the old ways was the seriousness and sincerity with which the policy recommendations were translated into action, the so-called "political will."

An integrated food and agricultural policy emerged. Food management operations of the government attempted to achieve the objectives of (1) increasing production by encouraging adoption of new technology, (2) stabilizing relative prices, and (3) protecting the consumption levels of low-income groups. An Agricultural Prices Commission was established in 1965, and so was the FCI, to make the price policy effective. Even though the specific duties of the FCI have changed over time, its main objectives have remained the same: (1) providing price support to farmers by procuring foodgrains at a remunerative price; (2) distributing foodgrains throughout the country at "fair" prices; and (3) maintaining buffer stocks to ensure national food security. In achieving these objectives, FCI was envisioned to operate competitively with private traders. The guiding premise was that, unlike private traders, a public-sector agency could act in the social interest. Given its size and financial strength, it was expected to secure for itself a commanding position in the foodgrain trade.

Pakistan

Pakistan's tradition of government intervention, in the form of food rationing, was inherited at independence in 1947; the objective was to mitigate seasonal price swings in the major urban centers that resulted from arbitrage failure brought on by inadequate infrastructure. In the early 1970s, it was recognized that farmers in general and small farmers in particular had neither adequate storage nor sufficient financial capacity to hold on to their marketable surplus in the hope of getting better prices later. This problem was the impetus for the formation of the PASSCO in 1973.[4] Funded by the federal government and six

4. PASSCO accounts for only about one-fourth of the wheat procured; PFDs procure the other three-quarters. However, their mandates are different. PFDs supply wheat to private flourmills at a fixed price that does not cover all expenses and, thus, involves substantial consumer subsidies. PASSCO supplies wheat to the designated public-sector agencies and recovers all its procurement and marketing costs through its sale price. PASSCO also maintains the country's strategic reserve of foodgrains.

nationalized banks, the agency was established with a wide charter and a range of activities.

In practice, PASSCO has concentrated on (1) implementation of a support price program for wheat, paddy, gram, potatoes, onions, and oilseeds; (2) price stabilization; (3) construction of storage facilities and development of marketing infrastructure; and (4) promotion of agro-based processing units, such as rice-husking mills, establishment of cold storage, and provision of farm machinery services to farmers. Atta (coarsely milled wheat), sugar, and other food commodities were rationed initially. However, over time the system lost its utility, especially in the provision of atta, and suffered from the many malpractices of officials of the food department and depot holders (fake ration cards, poor quality of atta, and the like). Under a new system begun in 1987, the government supplies wheat from its stocks at uniform issue prices to designated flourmills, which are required to supply atta through general stores in the market. In the wake of curtailment of coverage of support prices in recent years, PASSCO's role has been limited to the procurement of wheat regularly and paddy occasionally. Intervention with other crops has been characterized by an ad hoc approach.

Bangladesh

Like India and Pakistan, the genesis of the food security administrative structure, scope, and objectives, including food control mechanisms, was associated with wartime emergency followed by the great Bengal Famine of 1943. The political perception inherited from the British colonial tradition of the need to control foodgrain marketing remains firmly embedded even today. This tradition is illustrated by a plethora of regulatory instruments, which, although not enforced or only partially enforced, remains in place. However, unlike its neighbors, Bangladesh has not employed a parastatal to carry out price stabilization; instead, price support and public distribution are operated through the Department of Food.

At independence in 1971, Bangladesh was one of the poorest countries in the world and was hit by a famine in 1974. Therefore, protecting consumers and preventing famines were the main policy considerations in the early years after independence. There was a large influx of food aid and an associated upsurge in public distribution. However, the public distribution system was characterized by persistent heavy leakage. Progressive reforms have shifted the orientation of public policy from rationing to poverty-alleviation programs. The public system has evolved to achieve multiple objectives: targeted distribution to alleviate poverty, disaster management, and price stabilization.

By the late 1970s agricultural production started receiving greater attention. Deliberate policies were adopted to strengthen agricultural research, expedite technology diffusion, and encourage private-sector investment in agriculture. Increased public investments in agricultural research and extension in the 1980s and 1990s, together with private-sector investments in small-scale ir-

rigation, increased production significantly by making a shift away from highly flood-susceptible deepwater *aman* cultivation in the monsoon season to *boro* cultivation in the dry season, which reduced the length of time between major crops from 12 to 6 months. Substantial investment in infrastructure, some of which was done through food-for-work programs, improved the structure of roads and bridges, and the electricity and telephone networks.

And perhaps unique among the countries under review, in 1994 Bangladesh liberalized trade policy to permit imports by private traders. This policy reform, subsequently, has become a major component of its stabilization policy.

Indonesia

Traumatic events—the downfall of the Sukarno government in the late 1960s—triggered an aggressive public approach to food security in Indonesia. The economy was in shambles, characterized by negative growth and runaway inflation. The new government was especially sensitive to social unrest generated by high rice prices that had created political instability under the previous government. The fear of failure of domestic rice markets to arbitrage across time and space, weather-induced production changes, and volatility in international prices were considered the prime reasons for instability. Food policies were motivated by concerns for both consumption and production of foodgrains, primarily rice.

A key element of the New Order approach under President Suharto was heavy investment in the rural economy to increase rice production and sustained efforts to stabilize the price of rice. Government investment strongly supported the agricultural sector. Improvements in rural infrastructure—irrigation systems, roads, schools, market places, healthcare facilities, communications, electricity, clean water, and the like—built a foundation for a dynamic rural economy. Packages of technological change in the forms of high-yielding rice varieties, fertilizer, pesticides (followed by integrated plant management), and technical advice were developed and disseminated throughout the country. Agriculture had clear first priority in the early development plans.

Evolving from its role as the logistics agency for the military, the Food Logistics Agency (*Badan Urusan Logistik,* or BULOG) implemented a price band on rice. A floor price kept farmgate prices of rice above production costs. BULOG served as a stabilizing agent by buying rice production not absorbed by the market, especially during the harvest season. A ceiling price policy maintained the affordability of rice for lower-income consumers, especially in the urban areas; when the price of rice increased sharply during planting seasons, drought, and similar situations, BULOG sold cheap rice to targeted consumers. BULOG was the sole importer of rice; a "big country" justification—Indonesia, being a large country, could have a large influence on prices in what was then a thin international rice market—was used in part to support that monopoly role.

The Philippines

The Government of the Philippines regulated and intervened in rice and corn markets as far back as the 1960s. In the early years, intervention programs were carried out through two agencies, the Rice and Corn Board (RICOB) and the Rice and Corn Administration (RCA). These agencies were dissolved in 1972 when the National Grains Authority (NGA), the predecessor of NFA, was established to promote the integrated growth and development of the grain industry by addressing the key areas of market failures. However, until the early 1980s, price intervention policies, both economy-wide and commodity-specific, created an incentive structure that was significantly biased against agriculture. This bias was primarily evidenced by an overvalued peso to protect industry and other economy-wide policies to defend an unsustainable deficit in the balance of payments (David 2003).

In 1981, during a crisis in which rice supply was scarce even in the world market, the domestic supply of white corn (a substitute for rice) was short and the retail prices of both rice and corn were high. The government decided that it had to implement a price ceiling and rice rationing to defend the ceiling. With an executive order, NGA was transformed to NFA with additional mandates that were designed to protect consumers, promote rice self-sufficiency, and develop post-harvest technology for grain. Besides providing price support, NFA was tasked to build and operate a network of storage and post-harvest facilities throughout the country. Its mandates included (1) stabilizing year-round rice prices, (2) making rice affordable for the country's population, and (3) ensuring that palay (unmilled rice) prices gave rice farmers a reasonable level of income. Today it is both a regulator and corporation engaged in grain trading. As such, it has four functions: (1) trading, (2) regulatory, (3) developmental, and (4) corporate management. NFA has been the sole importer of rice into the Philippines for more than 25 years.

Vietnam

Vietnam clearly followed a different path than the other five countries discussed in this report. In the initial phase of unification of North and South Vietnam, agriculture was a major disappointment, making reform imperative. Directive 100 in 1981 permitted cooperatives to contract with farm households to produce given amounts on their own plots, but any surplus could be sold on the newly liberalized free market (Minot and Goletti 2000). Farmers responded impressively to the new incentives: per capita food production grew from 273 kilograms in 1981 to 304 kilograms in 1985. However, in 1985/86, the fiscal deficit ballooned as a result of reduced assistance from the Soviet Union and losses from the state-owned enterprises (SOEs). So in 1986 the government announced its intention to move toward a more market-oriented economy. Resolution 10 in

1988 recognized the farm household as the basic unit of production. Farmers were allowed to buy, own, and sell agricultural inputs, such as machines, water buffaloes, and tools. Cooperative land was assigned to farming households for 10 to 15 years under different forms of contracts or bidding. Furthermore, farmers were allowed to market 40 percent of contracted output. By 1989 compulsory government purchase of farm products was eliminated, and private traders were allowed to purchase directly from farmers. Market-oriented reforms were carried out in other sectors as well. The government eliminated most direct subsidies and price controls, tightened government spending, set interest rates at positive real values, unified and devalued the exchange rate, and moved toward a more liberalized international trade. The government reduced subsidies to SOEs and exposed them to greater competition.

When Vietnam began exporting rice, the government restricted the volume of rice exports through the use of export licenses, even as international trade in other commodities was liberalized. A SOE (the Vietnam Central Food Corporation [VINAFOOD]) retains the leading position (96 percent of volume) in international trade, which is largely confined to government-to-government transactions in relatively low-quality food-aid rice with a commercial price discount to the prevailing world price to African, Asian, and Middle Eastern markets. Recently, however, opportunities in international trade have been extended to the private sector. The Government of Vietnam carries out a regulatory role, issuing ordinances and decrees, but also signs contracts with other governments and private international buyers and assigns state-owned enterprises to supply rice. The government is playing an increasingly significant role in the development of grades and standards to assist in the improvement of quality.

Underlying Conditions Have Changed

If the rationales are evaluated in a "market failure" sense, there are four commonly agreed justifications for intervention in foodgrains markets: (1) weak infrastructure and limited flow of price information (lack of market integration), (2) risk mitigation for technology diffusion, (3) thinness and volatility of the international market, and (4) inability to participate in the international market.[5] This section provides an assessment of how each of these conditions has changed over time.

Infrastructure and Information Flow

When price policies were introduced, transport and communication infrastructure, the key determinants of efficient functioning of domestic markets, was either lacking or limited in all of these countries. Commodity movement was slow, traders had difficulties arbitraging over time and across space, and local-

5. See Timmer (1989b) for a detailed discussion on the rationales for public intervention.

ized supply shortages were challenges to policymakers in the region. Major food security threats, including famines, have been localized phenomena and were not directly linked with food availability in a nation as a whole.[6] These unfortunate events resulted from the unavailability or inadequacy of the provision of public goods, such as roads, and from the failure of price signals to be transmitted from deficit to surplus regions. Therefore, price stabilization was argued to be a justified intervention, as it addresses two sources of market failure: public goods and information asymmetry in the market.

Is such stabilization still a valid justification? We have examined data on the key indicators of infrastructure and reviewed studies on food market integration. The data show that all indicators of infrastructure and access to information have improved significantly over the past three decades (Table 2.1). Between 1970 and 2000, the networks of paved roads have increased more than three times in Pakistan and Bangladesh, more than four times in India, and an amazing nine times in Indonesia. Growth of the paved-road network has been somewhat slower in the Philippines, where it registered only a 27 percent increase in the three decades.

Indicators of access to information—represented by telephone, radio, and television densities—have improved as well. The ratios of telephone ownership to population in 1970 were 1 to 1,500 in Bangladesh; 1 to 841 in Indonesia; 1 to 566 in India; 1 to 469 in Pakistan; and 1 to 212 in the Philippines. In 2001 every fifth household in the Philippines; every sixth household in India, Indonesia, and Vietnam; every tenth household in Pakistan; and every fifty-fifth household in Bangladesh had access to a telephone.[7] The most remarkable of all improvements is the spread of mobile phone networks to remote areas. Although densities are still low, the culture of sharing (or using for a fee) has revolutionized information flow in most of these countries. In India, the number of mobile phones already exceeds the number of line phones and is growing at a rate of six million a month during 2006 (Srivastava 2006). It is now common for grain traders, even the smaller ones, to carry a mobile phone and stay in touch with traders in distant locations. Therefore, price information gets transmitted in minutes, and traders in various locations are better linked than ever.

The ownership of televisions and radios has also improved dramatically during the past three decades. In 1970, 1 in 20,000 people (or about 1 in 4,000 households) in India, 1 in 8,000 people in Bangladesh, 1 in 1,333 people in Indonesia, and 1 in 663 people in Pakistan had a television set. In the Philippines and Vietnam, the numbers were 1 in 93 and 1 in 43, respectively. By the year 2000, again assuming a household size of five, almost every household in Viet-

6. This phenomenon of localization was tragically demonstrated during the Madras Famine of 1876, Bengal Famine of 1943, as well as the more recent Bangladesh famine of 1974.

7. All household-level calculations are based on the assumption that an average household consists of five members.

TABLE 2.1 Indicators of infrastructure status

Indicator/ period	Bangladesh	India	Indonesia	Pakistan	Philippines	Vietnam	All six countries
Paved roads (thousand kilometers)							
1970	3.7	334.17	21.1	17.49	13.5	—	78.0
2000	13.9	1,363.00	203.21	65.2	17.1	96.1	293.1
Ground line telephones (per 1,000 people)							
1960s	—	1.450	1.100	1.850	3.600	—	2.000
1970s	0.967	2.700	1.850	3.117	7.717	—	3.270
1980s	1.578	4.370	3.970	5.240	9.500	1.189	4.308
1990s	2.684	16.124	18.970	16.632	23.782	13.835	15.338
2001	4.303	37.523	34.512	23.322	42.381	37.598	29.940
Cellular phones (per 1,000 people)							
1980s	—	—	0.045	0.018	—	—	0.032
1990s	0.468	1.332	4.306	0.854	19.142	2.277	4.730
2001	3.961	6.262	31.175	5.601	149.576	15.424	35.333
Televisions (per 1,000 people)							
1970	0.12	0.05	0.75	1.51	10.67	23.42	6.09
1980s	2.80	7.32	33.69	14.81	30.06	34.69	20.56
1990s	6.35	57.25	109.00	63.25	98.13	117.47	75.24
2000	6.98	78.03	149.46	130.97	143.79	184.76	115.67
Radios (per 1,000 people)							
1970	12.79	31.05	8.51	49.50	41.04	65.53	34.74
1980s	31.75	61.52	134.21	84.29	75.77	101.03	81.43
1990s	46.52	103.96	151.77	101.13	147.43	106.11	109.49
2000	49.44	120.53	157.19	105.09	161.23	108.67	117.03

SOURCE: Authors' calculations based on data from World Bank (2003).

NOTE: An "s" after the year reflects the average for the decade. — indicates not available.

nam; every other household in Indonesia, Pakistan, and the Philippines; every third household in India, and every twenty-ninth household in Bangladesh had a TV set. Radio ownership has also increased by similar magnitudes in the 1990s.

The improvements in infrastructure and information flow are reflected in recent studies of market integration (Table 2.2). Three different studies on the Philippines, using three different methodologies, conclude that provincial markets for rice are well integrated, although Mendoza and Rosegrant (1995) found corn markets to be poorly integrated. Similarly, analyzing prices in 27 provinces for various time periods, studies have concluded that the Indonesian rice markets are rapidly adjusting and are well integrated. In Bangladesh performance of rice markets has changed from being severely disorganized in the 1970s to being integrated in the 1990s.

The results of market integration studies on India are mixed, and the only study on Vietnam concludes that rice markets, at least over distances, are not well integrated. However, in both cases lack of integration is largely attributed to government regulations, particularly the restrictions on movement of grain. In India transportation by road requires passage through a large number of checkpoints that increases costs and reduces private traders' profitability because of inordinate delays and payment of "speed money" (World Bank 1999).[8] This observation is consistent with the common finding that Indian foodgrain markets are integrated in the long run but not in the short run. Similarly, in Vietnam movement restrictions prevented spatial arbitrage from bringing price differences down to the costs of transportation and marketing; as of late 1996 the procedures to buy and transport rice from the south to the north resembled those of trade with another country (Minot and Goletti 2000).

Risk Mitigation and Technology Diffusion

New technologies come with risk; hence, their adoption critically depends on availability and effectiveness of risk management institutions. In the 1960s insurance and credit markets were either missing or incomplete in all of these countries, and farmers operated in a highly uncertain production and marketing environment, which greatly enhanced the risks and discouraged farmers from adopting new technology. Besides, domestic markets were very thin, and farmers had little confidence in investing in new technology. The argument was that the state-sponsored agencies and parastatals could help reduce the risks and build effective markets, which in turn would encourage farmers to adopt new technology. Therefore, one of the central rationales for price support policy was to mitigate those risks and help farmers ensure the profitability of cultivating their land with modern crop varieties.[9]

This risk mitigation is no longer a persuasive justification for public intervention. As already argued, the domestic markets are now well integrated and the high-yielding varieties (HYVs) now cover practically all area sown to wheat and a large proportion of area sown to rice (Table 2.3). Note that Table 2.3 is constructed to show the percentage of total HYV rice area to total rice area, and does not reflect the true saturation of technology adoption. There are essential

8. In addition to imposing several restrictions on private trade, the Government of India has offered concessions to FCI, such as cheap credit and priority in public transportation, which have made FCI a privileged trader in Indian foodgrain markets. Furthermore, pan-seasonal and pan-territorial pricing policy leads to a situation in which there are no geographical and intertemporal price variations in trade, which both reduces incentives for private trade and destroys the commercial motivation of FCI.

9. In fact, floor price guarantee is a variant of forward-pricing schemes, which promote farmers' willingness to participate and reduce enforcement problems, such as moral hazard and adverse selection, inherent in instituting futures markets in developing countries. See Stiglitz (1987) and Islam and Thomas (1994) for a review of these issues.

TABLE 2.2 Recent market integration studies in selected countries

Country/study	Geographic coverage	Time period	Findings
India			
Gosh (2003)	Wheat markets in Bihar, Haryana, Punjab, Rajsthan, Uttar Pradesh	1984–97	Wheat markets within and across states spatially integrated
Kumar and Sharma (2003)	Rice in regional markets in Haryana		Integrated in the long run but not in the short run
Jha et al. (2003)	All-India, state-to-state price transmission analyses	1984–97	Wheat markets integrated across states
Palaskas and Hariss-White (1993)	Rice in 3 regional markets in West Bengal	1988–90	Integrated in the long run but not in the short run
Puri (1996)	All-India analyses of rice and wheat	1985–95	Most markets integrated in the long run but not in the short run
Baulch and Jariath (1997)	Wheat in 7 regional markets in Rajasthan	1992–96	Not integrated in the short run
Indonesia			
Ismet, Barkley, and Llewellyn (1998)	Rice in 9 major provinces	1982–93	Rice markets in all major provinces integrated
Alexander and Wyeth (1994)	Rice in all 27 provinces	1979–90	Except in 2 provinces, all markets well integrated
Alexander and Wyeth (1995)	Rice in all 7 major regional markets	1979–90	All 7 market locations are integrated
Ellis, Magrath, and Trotter (1991)	Rice in all 27 provinces		Competitive and rapidly adjusting

Philippines			
Silvapulle and Jayasuriya (1994)	Rice in 5 market locations	1975–89	Regional markets well integrated
Mendoza and Rosegrant (1995)	Corn markets		
Baulch (1997)	Rice in regional markets	1980–93	All regional markets integrated
Bangladesh			
Dawson and Dey (2002)	Rice in 12 regional markets	1992–97	Perfectly integrated
Das, Zohir, and Baulch (1997)			Integrated in both short and long run
Goletti, Ahmed, and Farid (1995)	Rice in 64 districts	1989/90–1991/92	Degree of market integration moderate
Ravallion (1987)	Six districts in Bangladesh	1972–75	Lacks integration both in the short and the long run
Pakistan			
Kurosaki (1996)	Wheat and Basmati rice in the Punjab	1989/90–1991/92	Wheat and rice markets well integrated spatially right after harvest; wheat markets not integrated temporally
Vietnam			
Minot and Goletti (2000)	Rice markets in 4 geographic regions	1989–1999	Regional markets not integrated

TABLE 2.3 Percentage of area sown to modern rice and wheat varieties

Period	Bangladesh	India	Indonesia	Pakistan	Philippines	Vietnam	All six countries
Rice							
1960s	1.9	8.2	8.0	—	31.0	—	12.3
1970s	14.3	33.1	40.9	—	65.6	4.7	31.7
1980s	31.4	56.6	72.2	—	85.8	31.1	55.4
1990s	49.4	61.9	70.8	—	81.7	64.2	65.6
Latest	61.8	71.9	76.7	—	96.3	85.6	78.5
Wheat							
1970s	7.7	29.5	—	43.0	—	—	26.7
1980s	94.8	67.8	—	80.7	—	—	81.1
1990s	95.7	76.0	—	86.1	—	—	85.9
Latest	100.0	92.0	—	94.0	—	—	95.3

SOURCES: Authors' calculations based on data from CIMMYT (2004), FAO (2004), and IRRI (2004).
NOTES: The numbers reflect averages for the decade. — indicates not available.

requirements, such as irrigation facilities and low probability of flooding, which constrain cultivation of HYV rice but not the traditional varieties.[10] A better indicator would be to take HYV area as percentage of irrigated rice area, but such disaggregated data are not available for all countries. Data from India and Bangladesh suggest that, if irrigation is available, farmers allocate almost 100 percent of their land to modern varieties of rice. This fact implies that the farmers have mastered the technology, and their land-allocation decision (to cultivate HYV or other crops) is dictated by the profitability of crops, not by the technology risks.

Thinness and Volatility of Global Food Markets

Attaining self-sufficiency in food was one of the central drivers of food and agricultural policies in Asia. The argument for this policy was that the world market was highly volatile and too thin for these countries to bet on their food security. The rice market was particularly volatile. Factors contributing to instability were the geographic concentration of rice production, a thin and fragmented world market with high transactions costs in trading, low domestic price elasticity of demand, and relatively low world stockholdings (Jayne 1993). The situation, however, has changed over the past two decades on all counts.

10. For example, in flood-prone areas of Bangladesh, farmers cultivate deep-water *aman* (a long-stem traditional variety) that is more resilient to flooding. Therefore, it is perfectly rational for the farmers to cultivate traditional varieties in such circumstances, and they will continue to do so irrespective of price support programs.

First, global foodgrain markets have matured in terms of traded volume, as percentage of total global production and consumption (Table 2.4). Wheat and maize markets have always been relatively robust. In 1966, India imported more than 10 million tons of wheat, albeit provided as food aid under PL 480, without large disruptions in the international wheat market. On the other hand, during the 1960s and 1970s, Indonesia's 3 million tons of imports in a 7- to 10-million-ton international rice market could have had significant impact on international rice prices. But the international rice market is now approximately 25 million tons annually, production has become more stable because of irrigation and pest control, and new exporters (particularly Vietnam) have become major participants. Bangladesh successfully utilized privatized international trade, albeit with certain favorable circumstances, as a major source of its price stabilization and food security program to adjust to a poor harvest in late 1997 and a massive flood in 1998 (Dorosh 2001). In 1998 Indonesia was able to im-

TABLE 2.4 Changes in the trade of cereals in the world market

Indicator/year	Rice	Wheat	Coarse grain
World trade (as percentage of production)			
1972–74	3.54	18.65	10.40
1975–77	3.93	17.81	12.24
1978–80	4.70	19.51	13.65
1981–83	4.04	21.70	12.71
1984–86	3.87	18.43	10.80
1987–89	3.72	21.28	12.72
1990–92	3.90	19.25	11.07
1993–95	5.20	18.68	10.97
1996–98	6.12	17.42	10.30
1999–2001	6.26	18.63	11.81
2002–03	7.27	19.40	12.02
World trade volume (million tons)			
1972–74	7.79	65.64	65.14
1975–77	9.53	67.57	82.70
1978–80	12.35	84.05	100.16
1981–83	11.71	101.34	93.43
1984–86	12.25	93.85	88.62
1987–89	12.29	107.91	97.52
1990–92	13.82	108.42	92.53
1993–95	18.93	100.87	90.51
1996–98	23.73	103.37	92.14
1999–2001	25.08	108.65	103.44
2002–03	27.50	110.00	104.80

SOURCE: Authors' calculations based on annual time series data from USDA-FAS (2004a).

port more than 6 million tons of rice in the wake of the worst drought in recent history with very little impact on the world rice market (Timmer 2002).

Second, although it is still high compared to domestic markets, price volatility in the international market has shown significant decline in the past two decades, particularly in the 1990s. Dawe (2002) has demonstrated that the average absolute value of annual rice price change has declined from 24 percent during 1965–1981 to just 11 percent between 1985 and 1998. The author attributes the increased stability to three factors: increased production stability, a deeper world market (both noted above), and the commercial orientation of several major exporters. These patterns suggest that rice prices are likely to remain relatively stable in the future.

Ability to Participate in the International Market

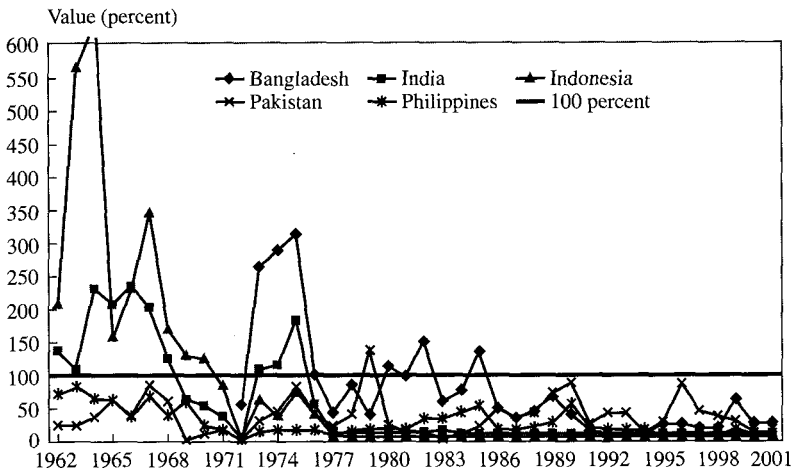
Another justification for state intervention, very significant in the 1960s, was that most of these countries had little foreign currency reserve and their food security greatly depended on food aid. The severity of the problem is demonstrated by plotting the value of cereal imports (commercial plus food aid) as percentage of foreign currency reserves (Figure 2.1).[11] Notice that, until about the early 1970s, cereal import values exceeded foreign currency reserves in India and Indonesia and constituted a high proportion of total reserve in Pakistan and the Philippines. In Bangladesh, cereal import value was higher than foreign currency reserves as late as 1987. These numbers clearly demonstrate the critical link among foreign currency reserves, food aid, and food security. Clearly, without food aid, the countries would have encountered serious food security problems until about the late 1970s.

The link between foreign currency reserves, food security, and food aid was clearly manifested in India when that country was hit by two consecutive droughts in the mid-1960s. In 1966, the country needed more than 10 million tons of food to feed its population and had about US$419 million in its reserves. Thus its spending its entire reserves could buy only 6.76 million tons of wheat at current prices (US$62 per ton). Therefore, when the United States cut off food assistance under PL 480, the situation turned into a crisis. The leaders of India had to appeal to the United States to reconsider food aid; the United States eventually bailed out India by supplying more than 8 million tons of food aid. This experience severely strained Indian national pride, and attaining food self-sufficiency quickly became the top priority of the government's policy agenda articulated in the Fourth Five-Year Plan.

A review of the trends in foreign currency reserves and import capacity, defined as the export value of goods and services deflated by import price in-

11. Foreign currency reserves do not include gold, special drawing rights, and funds with the International Monetary Fund (IMF). Cereal imports include government imports, food aid, and other commercial imports.

FIGURE 2.1 Values of cereal imports as a percentage of foreign exchange reserves, 1965–2001



dex, indicates that the situation has improved dramatically over the past three decades (Table 2.5). To better understand the magnitudes of improvement, let us consider the Indian case in 2004. During June–July 2004, total foreign currency reserve in India was US$120 billion and rice was selling in the world market at US$185 per ton. Thus, buying all 25 million tons of rice available in the world market would take less than 5 percent of Indian foreign currency reserves—quite a contrast to the situations of drought years in the mid-1960s! The improvements in other countries are also remarkable. Except Bangladesh, which continues to receive large amounts of food aid, and Pakistan, where import values were high for a couple of years in the 1990s, the value of total cereal imports in most of these countries now constitutes only a small fraction of their total foreign currency reserves. Thus, international liquidity is no longer a major constraint, and hence these countries can use world markets to meet their food security objectives more efficiently.

The central message from this section is that the rationales used to justify the policy of intervention in grain markets have changed. However, we note that the analyses are based on aggregate macro-level data and hence do not capture regional variations in access to infrastructure or institutions, such as credit and insurance, which are important for risk management. Therefore, governments will continue to have legitimate roles to play in those circumstances.[12] The Bangladesh case study highlights that the government took these considerations

12. We thank an anonymous reviewer for making this suggestion.

TABLE 2.5 Indicators of ability to use international markets to ensure food security

Period	Bangladesh	India	Indonesia	Pakistan	Philippines	Vietnam	All six countries
Foreign exchange reserves (million US$)							
1960s	—	422	59	188	100	—	192
1970s	241	2,938	1,859	322	1,429	—	1,358
1980s	463	4,171	4,735	747	1,059	—	2,235
1990s	1,892	19,598	16,628	1,297	7,630	2,292	8,223
2001–03	1,843	69,954	30,848	7,468	13,213	4,668	21,332
Share of cereal import value to foreign exchange reserves (percent)							
1960s	—	151.26	285.21	37.81	56.02	—	132.58
1970s	142.72	49.91	37.56	42.08	10.17	—	56.49
1980s	72.64	6.32	8.21	29.22	28.54	—	28.99
1990s	20.21	0.96	7.31	33.97	7.59	0.05	11.68
2001	21.47	0.00	2.64	0.98	4.49	0.03	4.94
Import capacity (index: 1995 = 100)							
1970	24.33	19.31	6.55	52.39	23.36	—	25.2
1975–80	13.81	29.18	37.93	38.39	30.34	—	29.9
1980s	26.69	46.43	51.80	48.61	49.10	27.46	41.7
1990s	97.04	107.04	101.52	97.41	105.84	87.76	99.4
2001	168.22	179.29	119.41	104.76	144.90	—	143.3

SOURCES: World Bank (2003); IMF (2004).

NOTES: An "s" after the year reflects the average for the decade. — indicates not available.

seriously when it embarked on policy reforms. The guiding principle was that lifting restrictions would change the incentive structure (getting prices right) and help markets develop through greater private-sector participation. But the government kept playing the legitimate public roles—that is, protecting the section of the population that is vulnerable to climatic shocks and resides in geographically disadvantaged regions. These issues are further highlighted in the concluding section of this volume.

But the Old Ways Continue in Most Countries

The previous section has demonstrated that, at the aggregate level, the key justifications for public intervention have lost significance over the past 30 years. Policies have changed, too, but these responses have differed across countries. This section provides an account of these varied changes, focusing on two aspects: (1) policies designed to facilitate parastatals' operations and (2) the changes in the size and scale of their operations.

Policies to Facilitate Public Intervention Programs

Historically, a range of government regulations has supported parastatals or other government agencies involved in food intervention programs. Monopoly controls in international trade, restrictions on movements of foodgrains by the private sector, cheap credit and preferential access to transportation for the parastatals, and limits on private storage have been extensively used in all of the countries studied. A summary is presented in Table 2.6, and the economic arguments, current practices, and the relevance of the regulations are discussed below.

MONOPOLY IN INTERNATIONAL TRADE. There are two arguments commonly cited to justify government monopoly of international trade in foodgrains: (1) to keep a control over scarce foreign currency reserves and (2) to take advantage of scale economies. The first argument is that, because the foreign exchange reserves were limited and food imports accounted for a major share of them, there had to be a mechanism to monitor and regulate reserve expenditures. Therefore, it was assumed that by making an administrative rather than a business decision, for import, governments would be in a better position to optimally spend the countries' scarce foreign currency reserves. The second argument is that, because governments were large buyers, and there were many sellers in the international markets, they would have greater bargaining power (some degree of monopsonistic power) to negotiate lower import prices. By contrast, if private traders were allowed to import, they would have no bargaining power (pricetakers) and hence would have to pay higher prices. This situation would, the assumption goes, not only increase domestic prices, but would also drain out precious foreign currency reserves.

Because the foreign exchange reserves have improved dramatically, the first argument is no longer persuasive. Regarding the second argument, the reality has been quite contrary to its central assumptions. The empirical evidence suggests that, instead of enjoying scale economy, the policy has actually served as an easy avenue of rent seeking by bureaucrats and politicians who were entrusted to make import decisions. For example, analysis of historical data of wheat imports in India suggests that, in most years, the government has actually paid higher import prices than the private sector would have paid.[13] Another empirical example comes from Bangladesh, where both government and the private sectors imported foodgrains to address the crisis following the 1998 flood. Although the size of government imports was much larger than that of the private sector (the size of each consignment of public imports was about 82,000 tons compared to 300–400 tons by the private sector), the government paid substantially higher prices and took much longer times to complete the transactions.[14] Our country case studies suggest that similar evidence

13. In India, there are reports that some bureaucrats have been implicated for rent seeking in grain imports.

14. These numbers are based on Annex 4 of Ali and Jahan (2003), who provide transaction details obtained from three major banks in the country.

TABLE 2.6 Regulatory framework to facilitate parastatal operation

Regulations/restrictions	India	Indonesia	Philippines	Bangladesh	Pakistan	Vietnam
Monopoly on export						
Year introduced	1965	Never had large surplus	Never had large surplus	Never had large surplus	1974	1989
Still enforced?	No, but quota on export	n.a.	n.a.	n.a.	Private sector export allowed since 1987	Yes
Monopoly on import						
Year introduced	1965	1967	1972	1972	1948	1975
Still enforced?	Yes	Officially withdrew in 1998, but reinstituted	Yes	No, lifted in 1992–93	Private import freed in 1987, but quickly reversed	Yes
Movement restriction						
Year introduced	1941 (during British rule)	1967	n.a.	1941 (during British rule)	1941 (during British rule)	1975
Still enforced?	Yes, partially	Yes, partially	No	No, lifted in 1989	Lifted in 2001, but enforced in 2004	Yes

Credit concession						
Year introduced	1973–74	1979	1972	1948 (during East Pakistan era)	1948	1989
Still enforced?	Yes, although interest rate revised in 1994	No, reformed in 1998, but has credit guarantee from central bank	Yes, occasionally	No, reformed in 1992	Yes	Yes
Preferential access to transportation						
Year introduced	1965	n.a.	n.a.	Preferential access to rail- and waterways	No	n.a.
Still enforced?	Yes	n.a.	n.a.	Reformed in 1997	n.a.	n.a.

SOURCE: Compiled and provided by the country collaborators using various government documents and circulars.

NOTE: n.a. indicates not applicable.

is available from other countries as well, particularly in the Philippines and Indonesia, both of which have practiced monopoly control for many years.

Nevertheless, despite mounting evidence, many countries continue to exercise partial or complete trade control over foodgrain markets in Asia. The parastatals (or government agencies) control imports of rice and corn in the Philippines, exports of rice in Vietnam, and imports of wheat in Pakistan and India. The past two decades have also witnessed vacillating import policies in both Indonesia and Pakistan. In 1987–88, Pakistan freed wheat imports but quickly reversed its policy on the grounds that the private sector was importing substandard wheat. Since then, the government has regularly imported wheat, involving large subsidies, to supply its public distribution schemes that have mainly benefited the flourmills and have been reported in local media to have bred corruption in local food departments. Total subsidies on government exports and imports were as high as US$190 million in 1995/96, equivalent to about 68 percent of the total food subsidy bill. Similarly, in Indonesia, rice import restriction was lifted in 1998, but resulted in larger volumes of imports and consequently increased calls (including from BULOG) for more protection. The government instituted a temporary ban on imports and allowed only a group of expressly licensed importers to import rice (USDA-FAS 2004b).

MOVEMENT RESTRICTIONS. In the Indian subcontinent, the policy of movement restriction dates back to colonial rule in the early 1940s, when it was enforced with the dual objectives of preventing hoarding and building stocks for distribution in major urban centers. The objectives, however, changed when price support policies were adopted in the 1960s. The idea was to bring the prices down to the support-price level in surplus areas, so that governments could procure a sufficient supply for their buffer-stocking and public-distribution operations. In India, researchers often used the term "bottle up," which became very popular in the 1970s and 1980s, when the government frequently enforced movement restrictions in the surplus states.

The policy of restricting foodgrain movements by the private sector is still partially enforced in India and Indonesia and is frequently enforced in Pakistan and Vietnam. Pakistan officially lifted movement restrictions in 2001, but in 2004 restriction on wheat movement was being enforced in the state of Punjab to facilitate public procurement of wheat. Similarly, movement restriction in India was officially withdrawn in 1977, but was frequently re-introduced until the 1990s. Even today, India enforces movement restrictions in selected states on the grounds of preventing smuggling to neighboring countries. In Vietnam, as of late 1996 rice trade between the north and south resembled that of trade between two separate countries (Minot and Goletti 2000). Why is this policy so popular? Presumably, it does aid public procurement. However, it also creates lucrative rents for an influential group of stakeholders, including food officials, law enforcement agencies, and politicians. Historically, the policy has never been conducive to resource allocation and market development. The Indian ex-

perience clearly suggests that the policy has hindered private trade, bred corruption, and contributed to poor integration of markets.[15]

CONCESSIONAL CREDIT FACILITIES. Governments have to commit financial resources to implement floor and ceiling price policies. Food logistics agencies need a line of credit to purchase grain, domestically or internationally, and to store it until prices go high enough to justify market injection. There are three important economic consequences of this policy. First, parastatals require large volumes of credit (often 20–30 percent of total agricultural credit) and hence can reduce credit availability to other sectors. Such was indeed the case in India during the early to mid-1990s when credit extended to FCI accounted for 75–94 percent of total trade credit (RBI 2001). Second, the policy discourages private traders, whose transaction costs become higher relative to parastatals. Finally, Timmer (1989b) argues that when prices become stable, credit demand becomes unstable, and the instability can impose significant adjustment costs to the rest of the economy, regardless of whether the food logistics agency is increasing or decreasing its use of credit.[16]

Our country case studies indicate that at some point all countries have provided concessional credit to their food marketing agencies and many countries continue the policy (Table 2.6). FCI has enjoyed preferential credit access since 1973/74. The interest rate on FCI credit was about 7 percentage points lower than market rates until 1982/83 and 5–6 percentage points lower thereafter. Indonesia had a similar policy until 1998. BULOG had access to an unlimited line of credit at heavily subsidized interest rates in the early years and at commercial rates guaranteed by the Bank of Indonesia since 1998 (Timmer 2002). In 1998, VINAFOOD received an interest-free loan of roughly US$150 million from Vietnam's export promotion fund to purchase and export rice.

OTHER RESTRICTIONS. Parastatals (or government agencies) have also been supported by other restrictions and/or public facilities in the Indian subcontinent. Two of the common practices have been restrictions on storage and preferential access to transportation, both of which continue to be enforced in India. Restrictions on private storage originated from a common perception that traders are speculators who make abnormal profits by hoarding and artificially increasing prices. A direct policy outcome of such perceptions was the promulgation of the Essential Commodities Act in India and Anti-Hoarding Act in

15. The policy was counterproductive even in the early years after independence in India. After the central government gave power to the provinces to control movement, every province, every district, every *taluk* (smallest administrative unit) in eastern India had become a food republic unto itself, destroying the trade machinery for the distribution of foodgrains (Chopra 1981).

16. To further elaborate this point, Timmer (1989a, 22) writes, "when credit demand rises (say after a good harvest), interest rates rise or government loans are rationed, budgets of other agencies are cut, investment projects delayed, or the deficit is financed by increasing the money supply, with attendant potential for inflation. On the other hand, when [a] loan is unexpectedly repaid, money and purchasing power is withdrawn from the economy, with potential recessionary impact."

Bangladesh, which, although not strictly enforced, are still in existence. In addition, public food agencies in both countries had enjoyed preferential access to railway transportation for years. While Bangladesh reformed this policy in the late 1990s, FCI in India continues to enjoy it. In fact, the private traders get only sixth preference if they want to transport their grain through Indian railways (Deininger and Deininger 2001).

Changes in the Size and Scale of Operations of Food Marketing Agencies

Compared to the early years of the Green Revolution, parastatals' (government's) market shares, measured by the percentage of procurement to total production, have increased significantly in India, modestly in Bangladesh, and declined in the Philippines and Pakistan (Table 2.7). The most striking example is India, where public procurement of rice and wheat has increased from about 10 percent of production in the 1970s to as much as a quarter of production in recent years.

While public procurement has declined in Indonesia, the Philippines, and Pakistan, total public distributions have actually increased, as governments in these countries imported larger volumes of foodgrains to supply their public distribution programs. For example in the Philippines, although rice-equivalent paddy procurement by NFA was less than 3 percent of market production in the 1990s, public distribution accounted for more than 10 percent of total food supply.[17] This situation is very different from that in the 1970s, when procurement (6.13 percent) was larger than distribution (4.69 percent). The same is also true for Indonesia, where procurement as a percentage of production (4.51 percent) was less than half of BULOG's distribution as percentage of total supply of rice (11.83 percent). In Pakistan, not only has total distribution increased, public procurement as a percentage of total production (by provincial food agencies and PASSCO) continues to be large, ranging between 23 and 35 percent of total wheat supply over the past three decades (Table 2.7).

Another way to assess changes in the size of public price stabilization efforts is to examine total number of employees, but unfortunately, such time series data are not available for all countries. However, the data that we have suggest that the total number of employees in food logistics agencies has increased in India and decreased in Bangladesh. In India, FCI started its operation with only 3,904 employees in 1965, which increased to about 29,000 by 1970, more than 50,000 by 1980, and about 65,000 in the 1990s.[18] In addition, Indian food

17. The total supply of food, taken from the Food and Agriculture Organization of the United Nations Statistical Database (FAOSTAT; FAO 2004) includes food for human consumption only and is defined as the sum of total production, net import, and change in domestic stock.

18. The numbers for 1965 through the 1980s are from Chopra (1981); World Bank (1999) reported 65,000 regular employees and 175,000 casual workers. However, according to FCI's statistics on its website, it now has about 55,000 regular employees.

TABLE 2.7 Degree of public intervention (percent)

Indicator/ period	Bangladesh[a]	India	Indonesia[b]	Pakistan	Philippines[c]
Procurement as percentage of total production (milled rice)					
Rice					
1970s	1.52	9.82	3.54	—	6.13
1980s	1.82	14.01	6.80	—	5.28
1990s	3.31	16.88	4.51	—	2.53
2001–03	3.11	25.26	—	—	2.68
Wheat					
1970s	2.60	18.33	—	—	5.18
1980s	9.06	19.53	—	29.69	1.16
1990s	4.68	20.88	—	24.39	0.25
2001–03	5.28	22.32	—	20.50	—
Distribution as percentage of total supply[d]					
Rice					
1970s	4.33	9.46	10.82	—	4.69
1980s	3.83	14.65	9.11	—	8.35
1990s	3.31	13.42	6.67	—	10.50
2001–02	3.47	15.45	11.83	—	12.71
Wheat					
1970s	81.24	26.41	95.66	—	1.67
1980s	66.14	19.73	102.37	27.04	0.89
1990s	39.65	17.62	97.30	35.31	3.82
2001–02	19.85	19.56	92.60	22.66	7.94

SOURCES: Ahmed, Haggblade, and Chowdhury (2000) and Food Planning and Monitoring unit for Bangladesh; NFA website for the Philippines; Rashid and Gulati (2003) for India; Timmer (1996: Appendix) and Arifin (2003) for Indonesia; FAOSTAT (2004) CD-ROM for supply and production statistics.

NOTE: — indicates not available.

[a]The distribution figures in Bangladesh include food aid, which is the main source of support in social safety net programs.

[b]Because domestic production is miniscule, the distribution of wheat in Indonesia is calculated as the total wheat import as percentage of total supply.

[c]The Philippines figures under wheat are for white maize.

[d]Total supply of food, taken from FAOSTAT, includes only the food available for human consumption and is defined as the sum of production, net import, and change in domestic stock.

policy has also created a large group of stakeholders that include about a half-million ration shops, almost a quarter-billion ration cards, and more than 6,000 state marketing and regulatory agencies (including *mandi* boards) directly involved with public food management programs (Rashid and Gulati 2003).

In Indonesia, BULOG operated with about 500 employees during the first five years of its operation, which jumped to six thousand by the 1990s—at a

time when public procurement was declining. The size has important implications for BULOG, especially since its transformation into a state trading enterprise (STE) in 1998 to operate on commercial principles. Furthermore, given its past record of inefficiencies, estimated to be US$2 billion in 1993–98, downsizing and restructuring is perhaps unavoidable for BULOG to be a sustainable STE in the near future.

By contrast, the size of the government agency responsible for price stabilization has declined by 30 percent in Bangladesh. On the average, the Directorate of Food employed 11,598 employees in the 1980s, which gradually has declined after reforms to 8,170 during 2001–02. With the downsizing, the efficiency of the food department has improved, too. For example, the system loss (storage and transit losses) has declined from being as high as 3 percent of distribution in the 1980s to about 1.5 percent in the 1990s (Ahmed et al. 2003), and the public distribution system, in combination with private imports, contributed effectively in managing the response to the 1998 flood (Del Ninno et al. 2001).

The Bottom-Line Questions

The bottom-line questions are: Why are some policies, particularly monopoly control and movement restrictions, so popular? What persuades governments to continue to provide regulatory supports to food logistics agencies? Policymakers and bureaucrats, by nature, are risk averse. Some would argue that the policies have worked—although not necessarily very well. Such policies will change only when a conclusive case is made that alternatives work better. However, both monopoly controls over international trade and restrictions on foodgrain movements encourage corruption. When parastatals are given monopoly status, corrupt food officials and politicians are given an opportunity to receive large commissions for arranging government-to-government contracts. In the absence of highly sophisticated audit systems, the corruption can go undetected, even when purchase prices are set well above what is warranted by the actual quality of grain imported. In addition to the transfer of resources from taxpayers to corrupt officials, such incentives create massive waste associated with excess and rotting grain in public warehouses (Roumasset 2003).

In the case of movement restrictions, incentives for rent seeking are even higher, especially in countries where public procurement is large and foodgrain production varies greatly across regions. In addition to subsidizing food officials, the policy creates lucrative rents for law-enforcement officials who guard the checkpoints, for politicians from surplus regions who collect higher taxes, and even for the politicians and food officials from deficit regions who can gain by buying subsidized grain and selling it at higher prices. Benefits to special interests are some of the reasons why, despite overwhelming evidence of its inefficiency, the policy keeps re-appearing.

Benefits and Costs

Admittedly it is difficult to separate the contribution of price stabilization policies from the overall government commitment to economic development as expressed in all policies and investments. Similarly it is difficult to distinguish the merits of policies and investments from those of the institutions implementing these policies. These problems notwithstanding, we attempt to draw inferences about benefits based on price stability and performance of the agricultural sector; compare the operational costs of parastatals in countries that liberalized (or reduced intervention) with countries that continue to have significant parastatal presence; and, finally, draw implications for reforms.

Benefits of Price Policies

Attribution problems notwithstanding, the case studies suggest that price policies have benefited Asian agriculture in three important ways: (1) they have ensured price stability, (2) they have boosted agricultural production, and (3) they have helped mitigate disasters.

PRICE STABILIZATION. If the commonly used measure of price stability—the coefficient of variation—in domestic markets is compared with that in the international markets, all countries reviewed in this volume appear have done well in terms of food prices.[19] Some studies have attempted to link the price stability with other economic and political indicators. Highlighting the effects of price stability, some authors have concluded that the countries most successful at price stabilization have also been among the fastest growing economies in the world (Timmer 1992, 2000) and that where food prices have not been stabilized and food security remains questionable, political stability and economic growth have been threatened (Pinckney 1993). Because these studies are based on cross-country empirics, a plausible interpretation of the conclusions is that price stability can have positive effects, irrespective of the level at which prices are stabilized.

In our sample of countries, an aggregate analysis would probably yield the same conclusion; that is, all countries have been able to stabilize prices and achieve significant agricultural growth over the past few decades. There is no denying that the stability of prices—no matter at what level they are stabilized—can mitigate risks and give farmers some degree of certainty in allocating their land in favor of the crops for which prices are guaranteed.

However, analyzing the levels of stability can offer further insights as to whether the stability has been achieved efficiently. If the international parity is taken as the benchmark, our case studies indicate that the countries have stabi-

19. Note that Vietnam has not pursued price stabilization in the conventional sense. The food logistics agency VINAFOOD neither procures from farmers nor distributes to consumers; its role is restricted mainly to rice export within the limit of government-set quotas. In the Philippines, experiences with price stabilization have been mixed.

lized prices at various levels. For example, compared to world rice prices, the Philippines has maintained its domestic prices above, India has almost always kept its prices below, and Indonesia has stabilized its prices at world levels. The policies for wheat have also been different in India and Pakistan, the two main wheat-growing countries in our sample. In India, wheat prices were supported above international prices until 1989, below international prices during 1990–98, and above international prices during 1999–2002. By contrast Pakistan has always maintained wheat prices below international levels; to make this stabilization policy effective, the government has heavily taxed agriculture over the past three decades.[20]

Does stabilizing at various levels matter in terms of growth and public spending? A rigorous analysis-based answer to this question is beyond the scope of this study. However, available studies from two countries in our sample, Indonesia and Bangladesh, suggest that stabilizing around the international parity did pay off well in the initial years of the policy. In Indonesia, where domestic prices of rice were maintained around world prices until about the early 1990s, Timmer (1997) has demonstrated that price stability did contribute to the country's growth rates. In particular, his econometric estimates suggest that stabilized rice prices raised the growth rate of Indonesia by about 16 percent during 1969–74, 14 percent during 1974–79, and 4 percent during 1989–91 over what they otherwise would have been. In Bangladesh, where major reforms have been implemented to bring domestic prices to international parity, there has been a reduction in food subsidy bills and, compared to earlier periods, price variability has declined in the 1990s (Ahmed, Haggblade, and Chowdhury 2000; Del Ninno et al. 2001).

PERFORMANCE OF THE AGRICULTURAL SECTOR. In Asian countries, most of which have practiced price stabilization during the past thirty years or so, the performance of the agricultural sector has been remarkable. Compared to years before the Green Revolution, cereal production has more than doubled (even quadrupled in many cases), poverty has declined in both relative and absolute terms, and many countries in the region are now enjoying overall economic growth and prosperity (Table 2.8). Rice production has increased from 99 million tons in the 1960s to about 260 million tons during 2000–03; the proportion of undernourished people has declined by about 40 percent; and per capita income in terms of purchasing power parity (PPP) has more than tripled. Successes are spectacular when measured by poverty reduction in Indonesia and India, by rice production in Indonesia, and by wheat production in India and Bangladesh. In just two decades, the proportions of undernourished people declined from 26 percent to 6 percent in Indonesia and from 38 percent to

20. The information on varying policies comes from Gulati and Narayanan (2003) for India; Clarete (2003) for the Philippines; Schiff and Valdes (1992) and Salam and Mukhtar (2003) for Pakistan; and Timmer (1997) for Indonesia.

TABLE 2.8 Changes in cereal production, nutritional status, and income

Period	Bangladesh	India	Indonesia	Pakistan	Philippines	Vietnam	All six countries
Production growth rate							
Rice[a]							
1951–66	2.0	2.4	2.6	4.3	2.5	4.8	18.6
1966–77	2.8	5.1	5.0	7.3	5.3	2.1	27.6
1977–88	1.7	2.7	5.4	0.7	1.9	4.4	16.8
1988–2000	4.1	1.5	1.8	3.4	2.7	5.6	19.1
Wheat[b]							
1951–66	3.2	3.2	n.a.	2.2	n.a.	n.a.	8.6
1966–77	7.8	7.8	n.a.	6.2	n.a.	n.a.	24.0
1977–88	4.3	4.3	n.a.	3.3	n.a.	n.a.	11.9
1988–2000	3.5	3.5	n.a.	3.2	n.a.	n.a.	10.2
Cereal production (million tons)[c]							
Rice (paddy)							
1960s	15.70	54.00	13.78	2.23	4.26	9.14	99.11
1970s	17.75	67.63	22.73	4.03	6.17	10.80	129.11
1980s	22.71	90.76	38.34	4.93	8.51	15.56	180.81
1990s	28.17	121.03	48.68	6.04	10.29	25.22	239.43
2000–03	33.16	126.43	50.58	6.69	11.76	30.37	258.99
Wheat							
1960s	0.05	12.55	n.a.	4.67	1.49	n.a.	4.69
1970s	0.21	27.33	n.a.	8.03	2.57	n.a.	9.54
1980s	1.12	44.20	n.a.	12.31	3.83	n.a.	15.37
1990s	1.35	62.52	n.a.	16.53	4.38	n.a.	21.20
2000–03	1.62	68.39	n.a.	18.24	4.37	n.a.	23.16
Proportion of undernourished population (percent)[d]							
1979–81	42	38	26	31	27	33	33
1990–92	35	25	9	26	26	27	25
1995–97	38	21	6	19	23	21	21
1999–2001	32	21	6	19	22	19	20
Gross domestic product per capita, purchasing price parity (current international $)[e]							
1970s	418	618	580	495	1802	—	783
1980s	768	1172	1312	1029	2716	940	1323
1990s	1245	2163	2634	1649	3436	1485	2102
2001	1610	2840	2940	1890	3840	2070	2532

NOTES: n.a. indicates not applicable; — indicates not available.

[a]IRRI (2004).

[b]CIMMYT (1998–99).

[c]Calculated from FAOSTAT annual data.

[d]FAO (1999, 2004).

[e]World Bank (2003).

21 percent in India; total wheat production has increased from 12.6 million tons in the 1960s to more than 68 million tons in 2000/01 in India, and from a mere 50,000 tons in the 1960s to 1.6 million tons in 2000/01 in Bangladesh.

These are remarkable successes, but price policy was not the only driving force in achieving them. Arguably, price policy was a catalyst to the main force of agricultural growth: rapid diffusion of new technology. Although technology was the major force behind the success, one has to acknowledge that things would probably have been different in the absence of price policies and complementary investment in agriculture. In 1967, with first time large-scale adoption of HYVs, India harvested 17 million tons of wheat, or 5 million tons more than the previous best of 12 million tons. The challenge of managing such a big harvest was greater than anybody had anticipated. Neither the farming community nor the government was equipped with adequate infrastructure to deal with such a blessing of technology. Many schools in rural Punjab were closed down to store the grain and, while students were on holidays, policymakers confronted the hard work of dealing with the new situation. What would have happened in the absence of a policy to ensure a floor price? There is no counterfactual to answer the question, but one can certainly imagine that prices would have collapsed, farmers would have lost incentives, and technology diffusion would have slowed down, if not stopped altogether.

DISASTER MITIGATION. None of the countries in Asia has had a major food security crisis since their adoption of integrated food and agricultural policies. For example, there has been no famines or major food security crises in India since the great Bengal Famine of 1943—although there have been several episodes of major droughts and other natural disasters. Similarly, despite being hit by several devastating floods, Bangladesh has not had a famine or major food security crisis since the country adopted integrated food and agricultural policies after the 1974 famine. The most striking example is the 1998 flood in Bangladesh, which did not have the devastating effect that many predicted.

These success stories, although people might argue to what extent they can be attributed to price policies, are in sharp contrast to what many economists had predicted in the 1960s. Forty years ago, many development experts were writing off Asia.[21] The region was termed a "development basket case." "Famine 1975" (Paddock and Paddock 1967), "lifeboat ethics" (Hardin 1974), and "triage" (Ehrlich 1971) were the labels commonly applied to the practices in the countries of the region. The progress has been remarkable; and we argue that the price policies and the parastatals that implemented major components of these policies do deserve some credit, if not all of it.

21. Ironically, they were betting on Africa.

Costs of Operation

Countries with Significant Parastatal Presence

In addition to direct operational costs, food marketing parastatals impose various forms of implicit costs on the society, which include costs due to policy distortions, costs of providing regulatory supports, and costs of special interests and rent seeking. The country case studies suggest that the food marketing parastatals are becoming increasingly expensive, their costs are higher than those of the private sector, the margin of costs between parastatals and the private sector are widening, and the operations of parastatals are increasingly being dictated by special interests.

This evidence is obvious in all major Asian countries that have significant parastatal presence and seems to echo some of the problems that the opponents of price stabilization policies had predicted in their theoretical models. In India the government's subsidy bills for buffer stocking have increased from US$160 million in 1992 to an estimated US$1.6 billion in 2002; in Indonesia total costs of inefficiency in BULOG are estimated at US$2.0 billion over a 5-year period, starting in 1993; in the Philippines, average annual losses to the society from NFA interventions are estimated at more than US$414 million during 1996–98. In Pakistan, food subsidy bills fluctuated between US$49 million and US$245 million during 1990–2003.

A few studies in India and Pakistan have compared unit cost of operation of the parastatals with that of the private sector. The findings are striking. Despite concessional credit and transportation, per unit trading cost of wheat by FCI is estimated to be more than twice as much as private traders' costs (Chand 2002). For rice, FCI's cost is about 20 percent higher than for private traders. Not only have the unit costs of FCI operation been larger than those of private traders, some studies suggest that the gap between the two has been widening in recent years (Jha and Srinivasan 2003). In Pakistan, return on sales of PASSCO was estimated at 2.12 percent, much lower than average return on sales of 10 percent or more in comparable private firms (Farouquee, Ali, and Choudhury 1995). For the provincial agency, the Punjab Agricultural Development and Supplies Corporation (PAD&SC), the estimated return on sales was –7.92 percent, suggesting that it was operating at large losses that were covered by public subsidies. The recent trend in costs of procurement is even more alarming. Procurement costs per ton by PASSCO have almost doubled in nominal terms since 1996, and the PFD in Punjab has incurred even higher costs.[22]

22. PASSCO's procurement costs increased from Rs 1217.59 per metric ton in 1996/97 to Rs 2430.96 per metric ton in 2002/03; and PFD's costs increased from Rs 919.60 to Rs 2350.00 during the same period (Salam and Mukhtar 2003). In real terms, the rate of increase has been even higher, as the inflation rates in the mid-1990s were larger than in recent years.

Evidence of special interest groups' influence on food logistics agencies has also surfaced frequently. For instance, many recent reports indicate that the politicians and farmers in the surplus states heavily influence the minimum support prices in India (Dev et al. 2004). The inherent interests are simple: higher support prices mean more secured markets for farmers, larger procurement for the parastatals, and higher tax revenues for the politicians in the surplus states. Guaranteed markets make farmers happy, especially the larger ones, and the happier the farmers, the greater are the chances for politicians to get re-elected, at least in surplus states.

A simple comparison of price series and land-allocation data will better illustrate how support prices have been influenced. Between 1996/97 and 2000/01, the government's support prices for wheat and rice in India grew about 25 and 10 percent faster than their respective wholesale prices, and the farmers in the surplus states responded to these increases by allocating more land to rice and wheat during the same period. For example, although area under rice increased by about 4 percent at the national level, it increased by 27 percent in Haryana, 21 percent in Punjab, and about 15 percent in Andhra Pradesh during 1995/96–2000/01. In the case of wheat, land allocation has increased by about 10 percent at the national level, 26 percent in the state of Andhra Pradesh, 17 percent in Haryana, 16 percent in Madhya Pradesh, 50 percent in Maharashtra, and 5 percent each in the states of Punjab and Uttar Pradesh.[23] This behavior clearly defies the very notion of floor prices, distorts the incentive structure in agriculture, and in fact slows down the natural process of diversification away from cereals to high-value agriculture.

Similar stories are also common in other countries. In the Philippines, NFA has used its monopoly power to import food grain, even when the country had enough stock to meet its food security. Special interest groups succeeded in reversing liberalization policies, such as re-instituting monopoly control over international trade in both Indonesia and Pakistan and reviving movement restriction in Pakistan.

Experiences of Reduced Intervention and Liberalization

The experiences of trade liberalization, carried out under structural adjustment programs, also support the contention that reduced intervention can contribute to efficiency gains and market development. Countries in Asia that have pursued this route (especially Bangladesh) have been able to allocate more resources to development and antipoverty projects, increase competition in domestic markets, maintain price stability, and enhance overall social welfare. In Bangladesh, the share of public food in antipoverty and development programs has increased from as low as 32 percent during the pre-reform period (1971/72–

23. The price figures are from a high-level committee report (GOI 2003); land allocation figures are authors' calculations based on GOI (2001).

1991/92) to as high as 85 percent during the postreform period (1992/93–2002/03); private-sector participation in international trade has resulted in reducing the government's costs by an estimated US$190 million per year; more importantly, despite distributing a larger proportion of food to the poor, annual food subsidy bills have declined from US$122 million in the 1980s to about US$65.4 million in the 1990s (Ahmed, Haggblade, and Chowdhury 2000; Ali and Jahan 2003). In Vietnam, where parastatals had absolute control over production and distribution of agricultural products until 1981, market liberalization has greatly contributed to increasing production, enhancing technology adoption, and improving overall social welfare. Rice production grew at a rate of 5.6 percent between 1988 and 1995, transforming Vietnam from being a chronic food-deficit country to a leading exporter of rice in Asia (Goletti and Minot 1997; Minot and Goletti 1998).

Not only did liberalization reduce subsidies and save public resources, it contributed to strengthening private markets as well. Private marketing has strengthened appreciably in both Bangladesh and Vietnam. In Bangladesh, the number of traders has risen by tenfold between the 1970s and 1990s. The number of millers doubled from 6,155 in the 1960s, to 11,592 in the 1970s, and then increased more than fourfold by the 1990s to nearly 51,000. Liberalization of rice and wheat imports in the early 1990s, removal of the import tariff on rice, and expedited clearance of private sector foodgrain imports in early 1998 have provided clear signals to the private sector of government support for the marketing trade. As a result, wholesale markets for both rice and wheat are spatially integrated, with more than 80 percent of price changes transmitted between pairs of markets within 2 weeks (Del Ninno et al. 2001).

In Vietnam, the number of private traders increased at an amazing rate after liberalization. Tens of thousands of traders handle millions of tons of rice every year, channeling it from surplus farmers to urban consumers, rural rice-deficit areas, and exporters. The channels are numerous and differ from one area to another. Although the monopoly status of VINAFOOD and the establishment of an export quota are argued to be mechanisms to ensure adequate domestic supply and price stability, the country does not have price stabilization in the conventional sense. In particular, SOEs (or other public agencies) neither procure any significant amount from the farmers nor respond to seasonal and regional price swings (Son and Thang 2003). Vietnam's impending entry into the World Trade Organization (WTO) is likely to motivate re-examination of some of its policies, specifically, the rice export quota.

So What?

The evidence presented in this section suggests that the costs of public agricultural price stabilization—in terms of direct costs and rent seeking—have been high and are increasing. The price stabilization mechanisms, which were initially cost effective, have become expensive and have outlived their usefulness.

The reformers have demonstrated that there is much to gain—in terms of saving public resources and enhancing market development—by reducing public intervention in grain markets.

It is time to learn from the reformers and recognize that public funds have alternative uses. The returns to some alternative investments are high—perhaps much higher than the returns to public policies of price stabilization as currently practiced (Roumasset 2003). Recent studies on India and China suggest that those rural public investments most effective in increasing agricultural productivity are agricultural research and development, roads, and education; rural public investments most effective in decreasing poverty are roads, agricultural research, education, rural development, soil and water conservation, health, and irrigation in India and education, agricultural research and development, roads, electricity, telephones, irrigation, and poverty loans in China (Fan, Hazell, and Thorat 2000; Fan, Zhang, and Zhang 2002). That is, agricultural research, roads, and education, rank among the top three public investments in terms of their returns—no matter whether evaluated against increasing agricultural productivity or decreasing poverty.

There are other areas where public funds can be justifiably used. Two issues are of particular importance. First, even if markets can be relied on for efficient allocation of resources, given the level of poverty, the need for social safety nets will remain, although such safety nets do not have to be implemented as part of the framework of procurement-stocking distribution. Second, given the high levels of agricultural subsidies in industrialized countries and relatively higher price variability in the world market than in the domestic market, complete government withdrawal will not be a politically feasible reform option. A compromise might be to enforce a reasonable price band that allows arbitrage opportunities and encourages private-sector participation in the grain market. However, this strategy will require a shift from the existing paradigm to a new set of policies and institutions. How such a shift can be made is beyond the scope of this chapter but is addressed elsewhere.[24]

Summary and Implications

Drawing from the country case studies, this chapter synthesizes diverse experiences of grain-market intervention policies in selected Asian countries. The main focus has been on (1) providing a critical overview of the evolution of food and price policies and the parastatals agencies entrusted to implement those policies, (2) assessing the underlying rationales justifying government interventions in grain markets, (3) documenting policy responses to changing conditions, and (4) comparing experiences of countries that liberalized (or reduced

24. Because each country has different characteristics and policy environments, this issue is taken up in the country papers as well as in the concluding chapter of this book.

government intervention) with the ones that continue to have a significant parastatal presence.

Five major conclusions emerge from the synthesis. First, the four commonly agreed rationales—poorly integrated domestic markets, technology promotion, thin and volatile world markets, and international liquidity constraints—for public intervention in foodgrain markets are no longer convincing. Second, although rationales have lost their significance, many countries continue to practice their old set of policies and provide regulatory supports to the parastatals, including monopoly control over international trade, preferential access to transportation, restrictions on movement of foodgrains, and cheap or interest-free credit. Third, the costs of price stabilization, especially as implemented by parastatals, have been high and are increasing relative to those of the private sector. Available estimates of food subsidies and the costs of system inefficiencies are staggering in all countries that continue to have significant parastatal presence. Fourth, the food marketing parastatals are being increasingly dictated by special interests and rent seekers. This influence is manifested in trade-policy reversals in Indonesia and Pakistan, government's wheat-import decisions in the Philippines, and manipulation of ceiling and floor prices in India. Finally, liberalization of grain markets appears to have beneficial effects on the economy. In Vietnam and Bangladesh, both of which have implemented extensive reforms over the past 15 years, food subsidies have declined, private markets have strengthened perceptibly, the number of private traders has increased significantly, and more public resources are now available for alternative public investments (notably for poverty alleviation programs).

The central message of the synthesis is that times have changed: policies and public agencies that may have been appropriate 30 years ago are not optimal today. Private institutions have strengthened significantly and should now be entrusted with many of the functions that parastatals or other government agencies have traditionally performed. However, this conclusion does not imply that there will be no role for the government to play. The legitimate roles will be protecting that part of the population that is vulnerable to climatic shocks and resides in resource-poor regions. The Bangladesh experiences suggest that, to accomplish those objectives, parastatals and the regulatory environment have to be reformed.

Such reforms will release public funds for alternative investments that have higher returns—most likely higher than the returns to public price stabilization as currently practiced. Recent studies have demonstrated that returns to public investments—such as agricultural research, roads, and education—rank very high, in terms of increased agricultural productivity or decreased poverty. The early reformers have demonstrated that reduction of government control can promote competition in the domestic markets, reduce subsidies, and release funds for development and antipoverty programs—all without jeopardizing price stability or food security. Thus, changing the old ways of attaining food secu-

rity and price stability is perhaps overdue, and holding on to the old practices can only mean holding back from reaping the benefits that updating current policies can offer.

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