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Indian Sugar Sector Cycles Down, Poised To Rebound

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Abstract

A cyclical decline in sugar production is shifting India, the world's second largest producer, from net exporter to net importer during 2009/10 (October/September) and contributing to the current runup in global sugar prices. The downturn in production is primarily due to a policy-induced cycle that has become increasingly pronounced. India is forecast to shift from net sugar exports of 5.8 million tons in 2007/08 to net imports of 2.8 million tons in 2008/09 and a record 6.0 million tons in 2009/10. Sugar production is poised to rebound in 2010/11, as higher government price supports and open-market prices are likely to stimulate plantings and improve incentives to deliver sugarcane to sugar mills. In the longer term, India has the capacity to boost sugarcane output, and the government and the sugar industry are considering policy measures to moderate the increasingly sharp cycles in sugar production and trade.

Keywords: India, sugarcane, sugar, policy, supply, demand, trade, production cycles.

Acknowledgments

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Introduction

A cyclical decline in sugar production is shifting India, the world's second largest producer, from net exporter to net importer during 2009/10 (October/September) and contributing to the current runup in global sugar prices. The downturn in Indian production is primarily due to a policy-induced cycle that has become increasingly pronounced. Large domestic surpluses during 2006/07 and 2007/08 led to lower domestic sugar prices, weakened incentives for sugarcane growers, and sharply reduced plantings for the 2008/09 and 2009/10 crops. Indian domestic sugar prices have now increased sharply since early 2009 because of reduced supplies—and despite large government releases of sugar and liquidation of government-owned buffer stocks. India is forecast to shift from net sugar exports of 5.8 million tons in 2007/08 to net imports of 2.8 million tons in 2008/09 and a record 6.0 million tons in 2009/10.

Indian sugarcane and sugar production are poised to rebound in 2010/11. A combination of higher government price supports and open-market prices will likely stimulate plantings and also improve incentives to deliver sugarcane to sugar mills rather than to alternate uses. In the longer term, India has the capacity to boost both area and yields of sugarcane, and the government and the sugar industry are engaged in an ongoing dialogue on policy measures to moderate the increasingly sharp cycles in sugar production and trade.

Recent Supply and Demand Developments

Indian sugarcane and sugar production are historically cyclical, and the cycle appears to have become increasingly pronounced in the 2000s (fig. 1; app. table 1). After soaring to 30.8 million tons in 2006/07—39 percent above the previous record set in 2002/03—sugar production dropped to an estimated 16.1 million tons in 2008/09 and is forecast at 17.3 million tons in the current 2009/10 year. All of India’s sugar is produced from sugarcane, and the swings in production have been driven primarily by similarly large swings in harvested area of sugarcane (fig. 2). Estimated area of 4.25 million hectares¹ in 2009/10 is about 17 percent below the record amount in 2006/07. Although more than 90 percent of sugarcane area in India is irrigated,² yields are affected by the share of area that is relatively high-yielding first-year growth³ and, to a lesser extent, by variation in rainfall. Relatively small shares of first-year growth in 2008/09 and 2009/10, as well as below-normal monsoon rainfall in 2009, likely contributed to reduced average sugarcane yields in 2008/09 and estimated yields for 2009/10.

In contrast to the volatility of production, Indian sugar consumption has continued to expand relatively steadily due to rising per capita incomes and government interventions to adjust stocks, facilitate trade, and assure adequate monthly availability (see fig. 1). Despite the sharp drop in sugar production in 2008/9 and continued low output in 2009/10, sugar consumption has remained relatively stable and on trend due to monthly releases of “free-sale” sugar into the open market and allocations of subsidized “levy” sugar. However, despite net imports of 2.8 million tons in 2008/09 and an anticipated 6.0 million tons in 2009/10, Indian sugar stocks are forecast to fall to 3.5 million tons by October 2010, the lowest level since 1993/94. Domestic open-market prices of sugar and gur,⁴ the primary substitute sweetener, remain under pressure. For the 2008/09 marketing year, wholesale sugar prices averaged 43 percent higher in real terms than prices a year earlier, while gur prices averaged 53 percent higher (fig. 3).

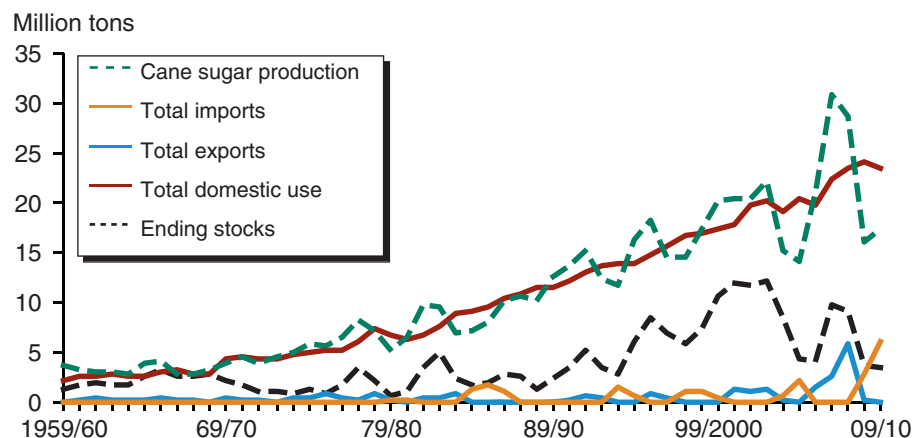
¹One hectare equals 2.47 acres.

²The share of sugarcane area that was irrigated averaged 91 percent during 2003/04–2005/06, the most recent years for which data are available. During 1996/97–2005/06, the most recent 10 years for which data are available, the share of sugarcane area irrigated ranged from a low of 88 percent in 1995/96 to a high of 92.5 percent in 2005/06.

³Each planted hectare of sugarcane is typically maintained for three annual harvests: a relatively high-yielding first crop about 10 months after planting, followed by two lower yielding annual volunteer, or “ratoon,” crops.

⁴Gur, or jaggery, is unrefined brown lump sugar made from sugarcane by farmers and unregulated, small-scale enterprises. It is a preferred sweetener for many rural consumers and is also used to produce illicit liquor.

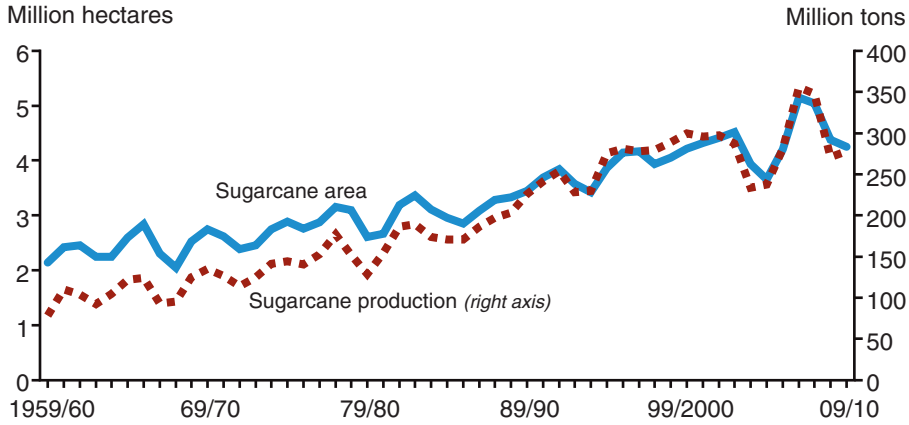
Figure 1
Supply and use of centrifugal sugar in India
(October/September marketing years)



Source: USDA, Economic Research Service using data from USDA, Foreign Agricultural Service, PS&D Online.

Figure 2

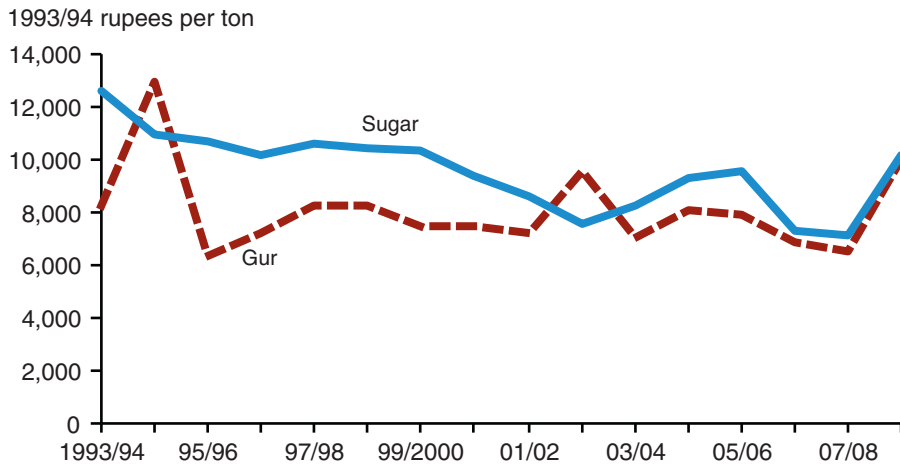
Sugarcane area and production in India



Sources: USDA, Economic Research Service using data from USDA, Foreign Agricultural Service, PS&D Online; and Government of India, Ministry of Agriculture, Directorate of Economics and Statistics.

Figure 3

Real wholesale prices of sugar and gur in India



Source: USDA, Economic Research Service using data from Government of India, Ministry of Commerce and Industry, Office of the Economic Adviser.

Policies Drive Sugarcane Production Cycles

India's sugar area and production cycles are driven largely by policy interventions, including sugarcane support price policies set by the central and state governments as well as sugar storage and trade policies set by the central government. Biological factors also play a role: sugarcane remains in the field for 3 years once it is planted, and area and production adjust downward slowly as price incentives fall, thus prolonging periods of oversupply, weak market prices, and financial distress for sugar mills. The key policy interventions are:

- Central and state government price support policies for sugarcane.
- Central government regulation of releases of levy and free-sale sugar and buffer stocks.
- Central government regulation of sugar trade.
- Other domestic marketing restrictions (e.g., private storage limits).

Central and state government price support policies for sugarcane. Under the system in place through the 2008/09 marketing year, the Commission on Agricultural Costs and Prices (CACP) under the Ministry of Agriculture recommended annual Statutory Minimum Prices (SMP) based primarily on estimated costs of production. State governments in some of the major producing states then set higher State Advised Prices (SAP) that mills in the state are required to pay sugarcane growers. The substantially higher SAPs set by some state governments account for regional variations in the productivity and profitability of sugarcane, as well as pressures from local sugarcane growers.⁵ The central government financed the cost of supporting the SMP, but sugar mills were required to pay the difference between the SMP and the higher SAPs and incur any resulting financial losses. Beginning in 2009/10, the CACP will set Fair and Remunerative Prices (FRP) for sugarcane that, according to the new regulation, will also include "reasonable margins for growers of sugarcane on account of risk and profits."⁶ With the new FRP system, the sugar mills gain some relief because more of the cost of supporting the current SAPs is shifted from the mills to the central government.⁷ The future impact of the FRP system is unclear, however, and it is possible that it will encourage states to set even higher SAPs that are further removed from market conditions.

Data reveal a strong but lagged relationship between changes in the SAPs for sugarcane and changes in area harvested (fig. 4). Drops in area harvested in 2003/04 and 2004/05 were preceded by declines in real SAPs, and higher SAPs in 2004/05 and 2005/06 corresponded with increased area in 2005/06 and 2006/07. Most recently, the drop in area in 2008/09 was preceded by sharply lower real SAPs in 2007/08. The fall in sugarcane area in 2008/09 was likely also influenced by the unusually large increases in Minimum Support Prices (MSPs) for wheat and rice, which compete with sugarcane for irrigated land, in 2006/07 and 2007/08 (fig. 5). Unlike the SMPs for sugarcane, the MSPs set by the central government for wheat and rice are

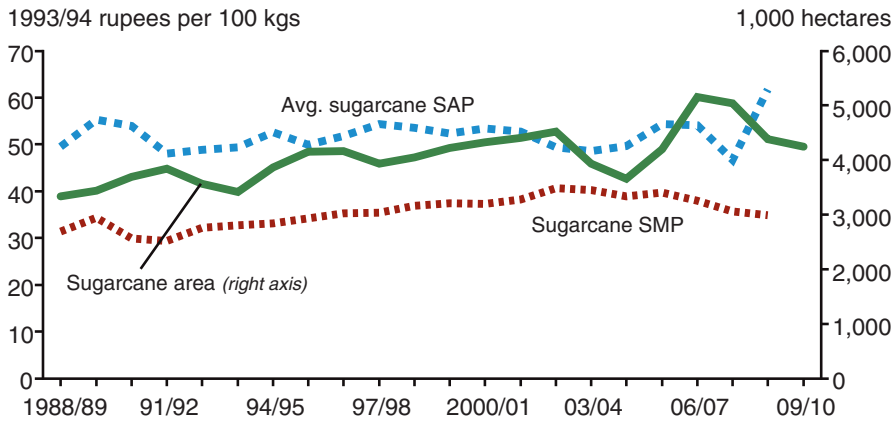
⁵In southern states, average sugarcane yields are higher, and average costs of production are lower, than in northern states.

⁶Government of India, Ministry of Consumer Affairs, Food, and Public Distribution, Department of Food and Public Distribution. Order S.O. 2665(E)/EssCom./Sugarcane, New Delhi, October 22, 2009. <http://fcaminic.in/sugar/spf0001.pdf>

⁷When the change in sugar support price policy was first announced in October 2009, the state governments, rather than sugar mills, were required to pay the difference between the new FRPs and the SAPs. With this shift in the financial burden, the major producing state of Uttar Pradesh announced a new SAP (Rs165/100kgs) that was below existing market prices, leading to political agitation by growers. In December 2009, the central government agreed to again make the sugar mills responsible for paying the difference between the FRP and the SAPs. Uttar Pradesh then raised the SAP to Rs190/100kgs, with farmers still demanding that it be raised further to Rs205/100kgs.

Figure 4

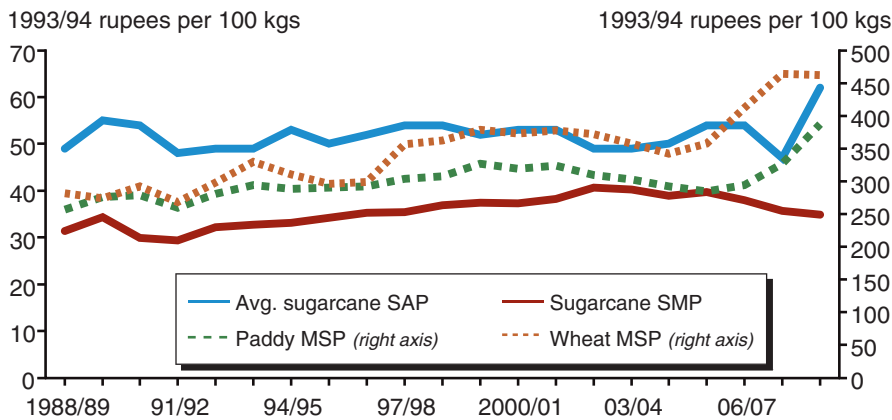
Sugarcane area, real Statutory Minimum Price (SMP), and average State Advised Price (SAP)



Sources: USDA, Economic Research Service using data from Government of India, Ministry of Agriculture, Directorate of Economics and Statistics; and USDA, Foreign Agricultural Service, Attache Reports.

Figure 5

Real State Advised Prices (SAP) and Statutory Minimum Prices for sugarcane and Minimum Support Prices (MSP) for paddy and wheat



Sources: USDA, Economic Research Service using data from Government of India, Ministry of Agriculture and Cooperation, Directorate of Economics and Statistics; and USDA, Foreign Agricultural Service, Attache Reports.

good indicators of prices received by growers because a large share of the marketed surplus of wheat and rice is purchased at the MSPs.

The SAP policy also affects the volatility of sugarcane area when it imposes financial losses on sugar mills that prevent them from honoring the SAP. During periods of surplus, SAPs can continue to rise without any specific link to sugar market conditions. These price hikes catch the mills between the fixed SAPs they are required to pay and weakening market prices they receive for their refined sugar. The resulting financial losses lead to deferral or default by mills on payments to growers that undermine incentives and contribute to volatility in sugarcane planting and production. Most recently, during 2006/07 and 2007/08, the large financial arrears to growers on the part of mills in major producing states reportedly led to both increased diversion of sugarcane from mills to production of khandsari⁸ and gur, and reduced planting of new

⁸Khandsari is centrifugal sugar produced by small-scale, unregulated firms. Production is declining, and khandsari now accounts for about 3 percent of total sugarcane use.

sugarcane area in 2008/09.⁹ With higher open-market sugar prices in 2009, as well as central and state government measures to assist the mills, the financial health of the mills has been largely restored and is not expected to affect processing or grower payments for the 2009/10 sugarcane crop.

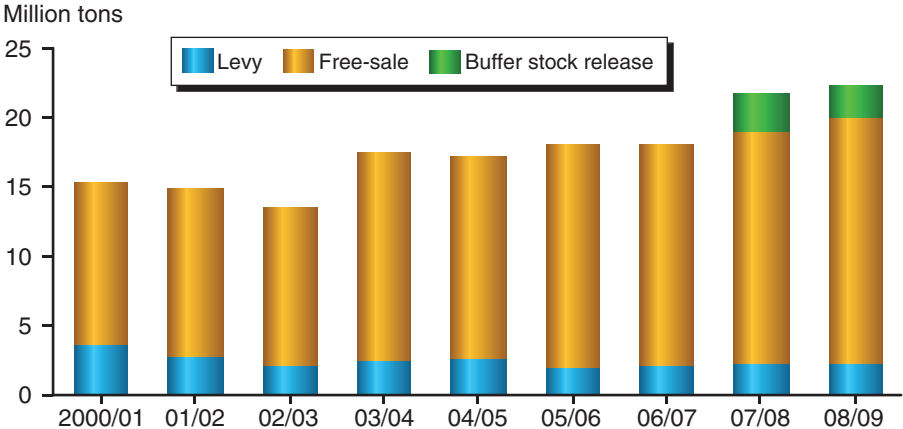
Government regulated releases of levy, free-sale, and buffer stock sugar. The central government regulates all releases of refined centrifugal mill sugar into the market by sugar mills. Marketing of khandsari and gur, which are produced by farmers and small-scale enterprises, is unregulated. Mills are now required to sell 10 percent of their production at a fixed, below-market levy price to the Public Distribution System for sale to consumers determined to have incomes below the poverty line. The remaining 90 percent of mill production is sold at market prices, but the amounts that can be sold are determined by quarterly quotas set by the central government. Finally, buffer stocks accumulated by the government during periods of surplus are later released for open-market sale based on monthly quotas. A 5-million-ton buffer stock accumulated following record output during the 2006/07 marketing year was released during 2007/08 and 2008/09 to augment government supplies of levy and free-sale sugar.

Since 2000, the regulated releases of sugar by the central government have supported relatively steady growth in domestic supplies—and consumption—of centrifugal mill sugar (fig. 6). The intent has been to reduce and eventually eliminate the requirement for mills to sell levy sugar at below-market prices. Although the mills have benefited from a reduction in the share of sugar they must sell at levy prices from 40 percent in 2000 to 10 percent by 2002, the government has not been able to deliver on the goal of eliminating the levy.

Government regulation of sugar trade. Trade in raw and refined sugar is tightly regulated through adjustments to import tariffs, export quotas, and, when needed, financial support to the industry to facilitate exports of surplus sugar. With the current shortfall in domestic supplies, the government, in February 2009, relaxed the re-export requirement for the Advanced License Scheme that allows mills to import raw sugar duty free subject to re-export of the equivalent volume of refined sugar. Later, the government announced unrestricted duty-free imports of raw sugar for April 2009-April 2010,

⁹See “Sugar Demand Trends” on page 9.

Figure 6
Releases of levy, free-sale, and buffer stock sugar



Source: USDA, Economic Research Service using data from Indian Sugar Mills Association.

temporarily eliminating the 60-percent basic ad valorem tariff, the Rs950/ton (\$20/ton) countervailing duty, and the 3-percent education “cess” (tax) on the total tariff. Controls on imports of refined sugar were also eased by allowing duty-free imports of 1 million tons of refined sugar during August-November 2009. With these trade policy adjustments, 2008/09 sugar imports by India reached an estimated 2.8 million tons (consisting of about 2.5 million tons of raw sugar and 0.3 million tons of refined sugar), and 2009/10 imports are projected at about 6.0 million tons (consisting of about 5 million tons of raw sugar and 1 million tons of refined sugar).

Other restrictions on domestic marketing. The record rise in domestic sugar prices during 2008/09 led to additional regulatory measures aimed at providing short-term relief for consumers. In addition to the release of government-owned buffer stocks beginning in mid-2008, state governments were empowered in March 2009 under provisions of the Essential Commodities Act to prevent “hoarding” of sugar by imposing stockholding limits and stock turnover requirements for privately held stocks with traders and food processors. Initially, the government imposed stock limits of 200 tons and a required turnover of 1 month, with some large government-recognized dealers and importers exempt from the restrictions. In August 2009, the government set maximum limits of 15 days of stocks for large bulk consumers.

In May 2009, the government suspended futures trading in sugar in an effort to control “speculative tendencies” in the market. This step was also taken in response to rising domestic prices of other commodities, including wheat and pulses, and reflects official unease with the role and impacts of India’s new futures exchanges in domestic commodity markets. The suspension of futures trading in sugar was initially intended to last through December 2009 but remained in effect as of March 2010.

Sugar Demand Trends

In contrast to the volatility of sugar production and prices, sugar consumption in India has grown relatively steadily, increasing about 3.7 percent annually (2.0 percent per capita) since 1990/91 (fig. 7). While policies have been associated with considerable volatility in sugar production, trade, stocks, and prices, government distribution programs have led to relatively stable growth in per capita sugar availability. The stable growth in consumption is also reflective of both the robust growth in aggregate demand (outward shifting demand curves) and the price inelasticity, or unresponsiveness to changes in prices, of sugar demand. These factors stem from sugar's importance as an ingredient in tea, coffee, soft drinks, and traditional sweets that play a central role in Indian diets.

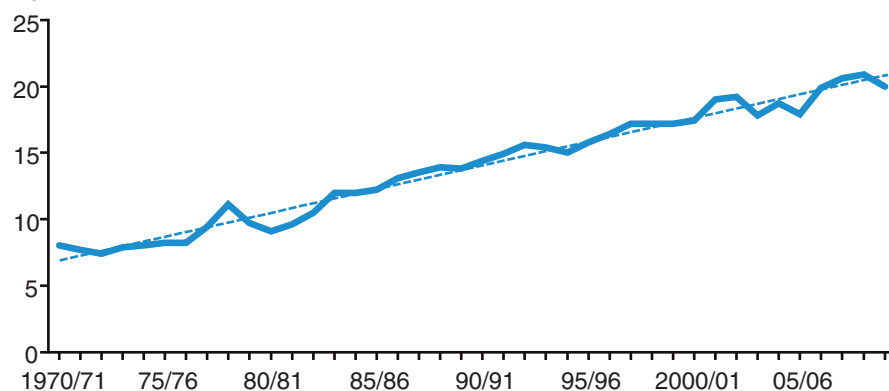
Refined centrifugal sugar from sugarcane is the dominant sweetener in India, with the two traditional sugarcane-based sweeteners, gur and khandsari, accounting for smaller shares of overall use. Khandsari has been declining in terms of production and consumption, and it now accounts for only about 3 percent of the market, but gur maintains a significant, albeit variable, 25-percent share of the market. Gur production and consumption are unregulated and tend to rise in years when higher gur prices or payment arrears by sugar mills create incentives for farmers to divert sugarcane to production of gur. During 2008/09 and 2009/10, gur's share of the market rose to about 35 percent when growers diverted sugarcane from the financially distressed mills, magnifying the drop in centrifugal sugar production caused by reduced sugarcane plantings (fig. 8).

Although India does have an ethanol-petrol blending program using ethanol produced from sugarcane, the program does not, so far, affect the supply of sugarcane for the production of sweeteners. Unlike Brazil, India produces all of its ethanol from molasses, which is a normal byproduct of India's centrifugal sugar milling process. As a result, there is no tradeoff between sugar and ethanol production. India's current goal is to require a 10-percent blend of ethanol with petrol in 20 states and 4 union territories, subject to its

Figure 7

Per capita sugar consumption in India

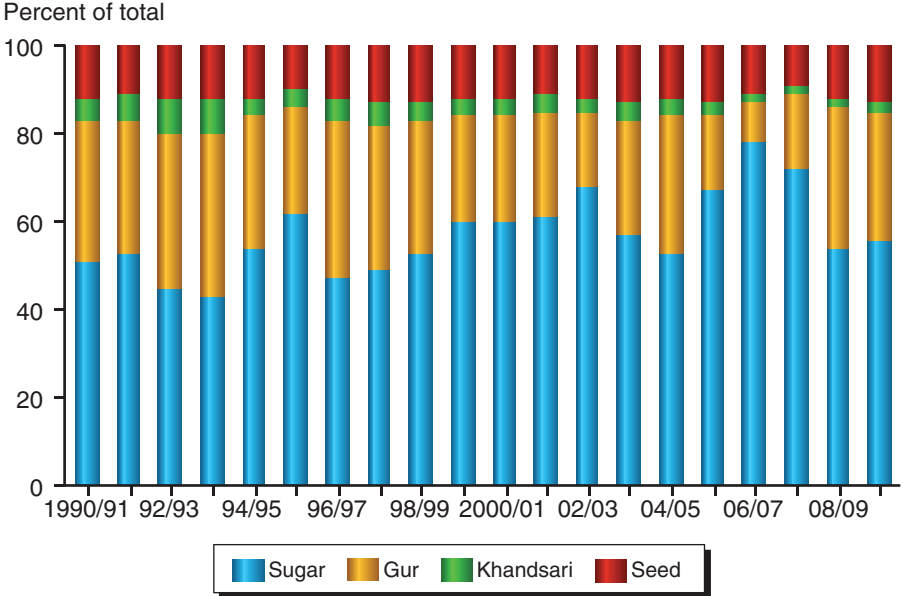
Kgs per capita



Source: USDA, Economic Research Service using data from USDA, Foreign Agricultural Service, PS&D Online.

commercial viability. The drop in sugar production in 2007/08 and 2008/09 has led to reduced supplies and higher prices for molasses, and mills have been unable to deliver ethanol at the currently negotiated price of Rs21.5/liter (about \$1.75/gallon). The ethanol blending program is expected to resume in 2010/11, assuming a recovery in output of sugar and molasses.

Figure 8
Use of sugarcane in India



Source: USDA, Economic Research Service using data from Indian Sugar Mills Association.

Sugar Trade

Like sugar production, sugar trade in India is cyclical, with exports of primarily refined sugar during periods of surplus and imports of mostly raw sugar during periods of deficit (fig. 9). Consistent with the increased volatility of sugar production since the early 2000s, swings in sugar trade have also become more volatile. Since 2000, India's sugar trade has fluctuated between average net exports of 1.3 million tons during 2000/01-2002/03, net imports of 1.2 million tons during 2003/04-2004/05, net exports of 3.3 million tons during 2005/06-2007/08, and forecast net imports of 4.3 million tons during 2008/09-2009/10.

The shifts in India's sugar trade are increasingly significant for world markets, contributing to periods of both undersupply and oversupply. India's record 2007/08 exports accounted for about 11 percent of global exports, and record imports in 2009/10 are forecast to account for 12 percent of world imports (fig. 10). India's current shift to large net importer is further tightening a world sugar market that continues to adjust to European Union (EU) sugar policy reforms begun in 2006. The EU reforms, including reduced price supports, are due to be completed in 2009/10 and have led to sharp declines in sugar production and exports by member nations. During 2006/07 and 2007/08, the EU-25 averaged net sugar exports of 4.6 million tons, but by 2008/09, the EU-27 became a net importer of 2.1 million tons of sugar.¹⁰

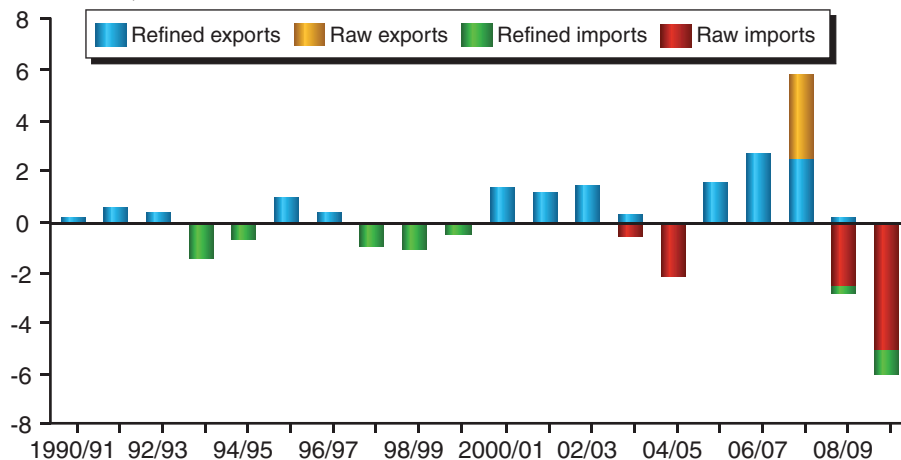
The major sugar import markets affected by the instability of Indian supplies are mostly nearby countries in South and Southeast Asia and the Middle East, including Bangladesh, Sri Lanka, the United Arab Emirates, Pakistan, Malaysia, Indonesia, and Yemen (app. table 2). India is a small supplier of sugar to the U.S. market, with annual exports averaging 8,082 tons during 2000/01-2007/08. Brazil, the world's largest sugar exporter, is India's major supplier during years of deficit.

¹⁰Bulgaria and Romania joined the EU in 2007, which accounts for the use of both "EU-25" and "EU-27."

Figure 9

Indian sugar trade

Million tons, raw value

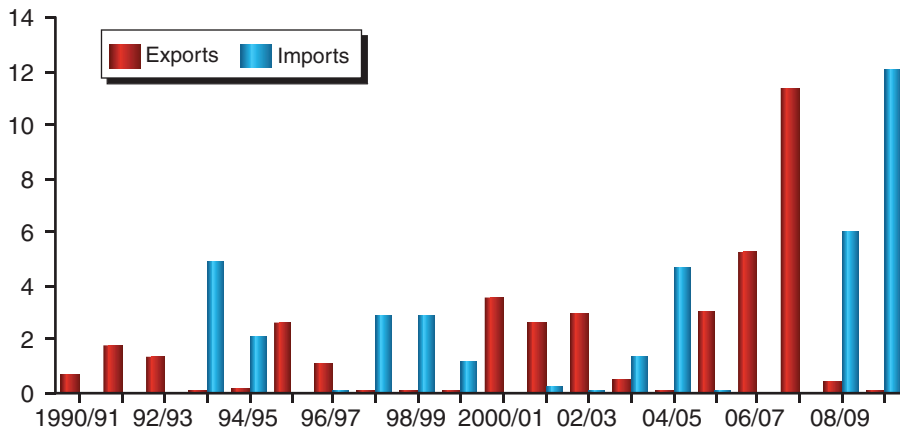


Source: USDA, Economic Research Service using data from USDA, Foreign Agricultural Service, PS&D Online.

Figure 10

India's share of world sugar trade

Percent of world total



Source: USDA, Economic Research Service using data from USDA, Foreign Agricultural Service, PS&D Online.

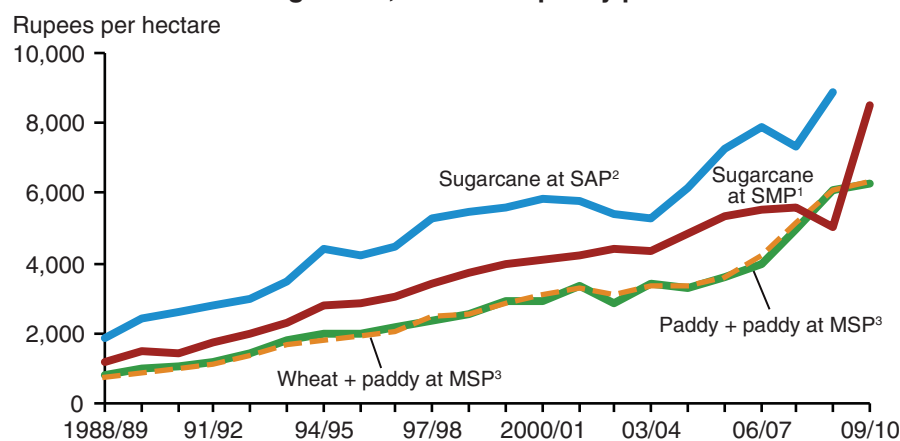
Sugarcane Production Potential

India likely has significant potential to expand sugarcane production by increasing both planted area and yield. While India's area planted to sugarcane, averaging about 4.5 million hectares per year of primarily irrigated land, is the second largest in the world (to Brazil), it accounts for a relatively small share of India's cropped area (about 142 million hectares) and net irrigated area (about 60 million hectares). Sugarcane, however, is a year-round crop that typically remains in the field for 3 years, and returns to sugarcane production must be competitive for irrigated land on which two, and in some areas three, crops are taken in one year. Figure 11 provides gross returns from sugarcane, wheat-paddy double crops common in irrigated areas of north India, and paddy-paddy double crops common in irrigated areas of south India over a 10-year period. A comparison shows generally higher returns to sugarcane, based on both average SAPs and the lower SMPs, although there has been a convergence in recent years due to the relatively large increases in wheat and paddy MSPs. However, cost of cultivation data indicate that labor costs for sugarcane are roughly double those for wheat and paddy, suggesting that labor availability and costs may be constraints to growth in sugarcane area.

India also appears to have the potential to improve sugarcane yields, and the average sugar content of harvested sugarcane, through a continued shift of planted area from northern states, where the climate is subtropical, to southern states, where the climate is tropical and conducive to higher sugarcane yields and sugar recovery rates. Sugarcane yields in India average about 68 tons per hectare, about the same as China but below other major producers, such as Australia, Brazil, and Mexico (fig. 12). But, an increasing share of India's sugarcane is being planted in southern states, where yields average about 83 tons/hectare, rather than in north India, where yields average about 58 tons/hectare (fig. 13). Although the northern state of Uttar

Figure 11

Gross returns from sugarcane, wheat and paddy production in India



¹Gross returns at Statutory Minimum Price.

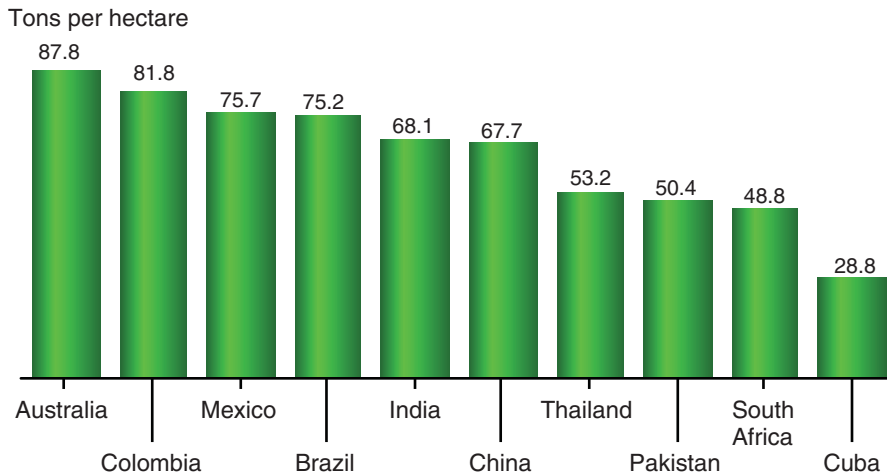
²Gross returns at average State Advised Price.

³Gross returns at Minimum Support Price.

Sources: USDA, Economic Research Service using data from USDA, Foreign Agricultural Service, PS&D Online; and Government of India, Ministry of Agriculture, Directorate of Economics and Statistics.

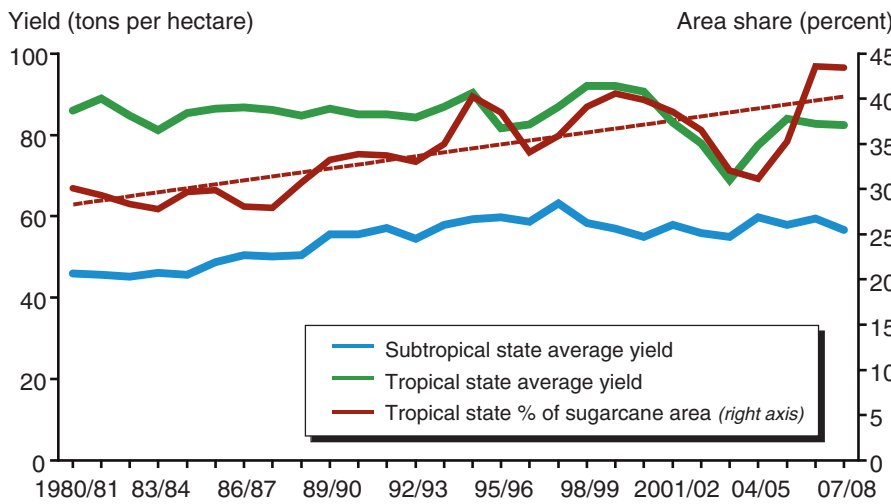
Pradesh—the historical center of the Indian sugar industry—still accounted for about 46 percent of sugarcane area and 39 percent of output during 2005/06-2007/08, the southern state of Maharashtra, where both average yields and the sugar content of sugarcane are higher, is now the largest producer of sugar. Most Indian sugarcane is grown under irrigation in all major producing states, providing favorable conditions for improving average yields (fig. 14).

Figure 12
Top 10 world sugarcane producers ranked by 2005-07 average yield



Source: USDA, Economic Research Service using data from Food and Agriculture Organization of the United Nations, FAOSTAT.

Figure 13
Tropical and subtropical state sugarcane yield and tropical state share of area in India

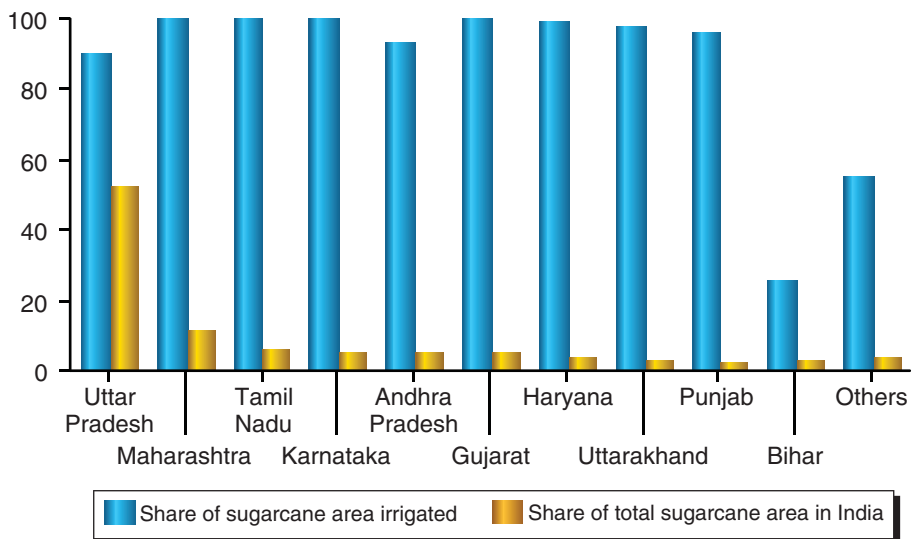


Source: USDA, Economic Research Service using data from Indian Sugar Mills Association.

Figure 14

**Share of sugarcane area irrigated for major Indian states
(2003/04-05/06 average)**

Percent of total



Source: USDA, Economic Research Service using data from Government of India, Ministry of Agriculture and Cooperation, Directorate of Economics and Statistics; and USDA.

Sugarcane and Sugar Output Poised for Rebound

With the 2009/10 Indian sugarcane harvest largely completed, sugarcane and sugar production will fail to recover from the poor 2008/09 outturn. Despite positive price signals, including a 32-percent real increase in the average SAP for sugarcane, the recovery in sugarcane area appears to have been impeded by financial distress in the sugar milling industry that led to large payment arrears to growers during 2008. A recovery in sugarcane yields was likely also slowed by a reduced share of relatively high-yielding first-year plantings, as well as shortages of irrigation water in some areas following the below-normal rainfall in 2009. With sugar stocks depleted by government releases of levy, free-sale, and buffer stock supplies in an effort to stabilize domestic prices, 2009/10 sugar imports are forecast at a record 6 million tons.

For 2010/11, the outlook is for a potentially strong recovery in sugarcane and sugar output that could sharply reduce or eliminate the need for additional imports. With the financial condition of the sugar mills strengthened by high prices for free-sale sugar in 2009, growers may be more responsive to price support policies announced during 2009/10. Although the change in price policy triggered some initial uncertainty among growers, the new FRP for sugarcane for 2009/10—Rs130/100 kgs, 60 percent above the SMP announced for 2008/09—will transfer more of the burden of supporting higher SAPs from the sugar mills to the central government. So far, nominal increases in the SAPs for sugarcane have been announced in the major state of Uttar Pradesh (28 percent) and in Punjab and Haryana (21 percent). Smaller nominal hikes have been announced in the MSPs applicable in all states for paddy (11 percent) and wheat (2 percent). Sugarcane SAPs for southern states have not yet been announced for 2009/10.

On top of the large relative increases in sugarcane SAPs in 2008/09, the announced support prices suggest a strong recovery in sugarcane area in 2010/11. Most planting of new cane area will occur during March-May 2010 and will not necessarily be affected by the poor monsoon rainfall in 2009. With a return of normal weather patterns in 2010 and a surge in new plantings with relatively high yields, average yields are also likely to improve in 2010/11. A return to the average area (5.1 million hectares) and yield (69 tons/hectare) achieved during the most recent cyclical peak years of 2006/07-2007/08 would provide a sugar outturn of 29-30 million tons, likely sufficient to meet consumption and stock-building needs without significant additional imports. A return to longer term average area and yield would suggest an outlook for substantially lower production and higher imports in 2010/11. But, given the cyclical behavior of prices and output in the sector, the recent cyclical peaks may be a more suitable reference for forecasting 2010/11 prospects.

The government and the sugar industry in India are engaged in an ongoing debate on potential policy reforms to stabilize the profitability of sugarcane production and processing and reduce the increasingly volatile cycles in the sector. There appears to be agreement that the key problem is a lack of alignment between administered prices for sugarcane on the one hand, and the

administered and market prices for sugar and other byproducts on the other. Ideas that have been under discussion for a number of years include a shift to formula-based pricing that links sugarcane prices to prices for sugar and other byproducts, removal of the monthly release mechanism, establishment of strategic sugar stocks along with a price-band mechanism, and removal of nontariff restrictions on sugar trade. However, the two sides have not reached consensus on any specific reforms. The recent shift to the concept of supporting FRPs for sugarcane appears to provide states with the scope for setting SAPs for sugarcane that are further delinked from domestic and world market conditions, suggesting prospects for continued volatility.

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Appendix table 1

Production, supply, and use of sugarcane and centrifugal sugar in India (October/September marketing years)

	Sugarcane			Centrifugal sugar								
	Area	Yield	Production	Production	Imports			Exports			Domestic consumption	Ending stocks
					Raw	Refined	Total	Raw	Refined	Total		
	1,000 ha.	Tons/ha.	1,000 tons	----- 1,000 tons, raw value -----								
1980/81	2,670	57.8	154,250	6,542	0	0	228	65	0	65	6,373	1,058
1981/82	3,190	58.4	186,360	9,727	0	0	0	408	0	408	6,823	3,554
1982/83	3,360	56.4	189,510	9,508	0	0	0	441	0	441	7,622	4,999
1983/84	3,110	56.0	174,080	7,042	0	81	81	765	0	765	8,900	2,457
1984/85	2,950	57.7	170,320	7,071	0	1,298	1,298	20	0	20	9,116	1,690
1985/86	2,850	59.9	170,650	8,149	0	1,732	1,732	39	0	39	9,493	2,039
1986/87	3,080	60.4	186,090	10,153	0	1,020	1,020	0	21	21	10,352	2,839
1987/88	3,280	60.0	196,740	10,591	0	76	76	0	19	19	10,886	2,601
1988/89	3,330	61.0	203,040	10,177	0	0	0	30	0	30	11,433	1,315
1989/90	3,440	65.6	225,570	12,575	0	53	53	0	32	32	11,535	2,376
1990/91	3,690	65.3	241,050	13,707	0	0	0	0	239	239	12,281	3,563
1991/92	3,840	66.1	254,000	15,249	0	0	0	0	590	590	12,977	5,245
1992/93	3,570	63.9	228,030	12,447	0	0	0	0	390	390	13,800	3,502
1993/94	3,420	67.2	229,660	11,704	0	1,500	1,500	0	30	30	13,900	2,776
1994/95	3,870	71.2	275,540	16,410	0	685	685	0	40	40	13,841	5,990
1995/96	4,150	67.7	281,100	18,225	0	0	0	0	940	940	14,820	8,455
1996/97	4,170	66.6	277,560	14,616	0	27	27	0	422	422	15,697	6,979
1997/98	3,930	71.1	279,540	14,592	0	1,000	1,000	0	21	21	16,700	5,850
1998/99	4,050	71.3	288,720	17,436	0	1,075	1,075	0	10	10	16,977	7,374
1999/00	4,220	70.9	299,320	20,219	0	438	438	0	25	25	17,296	10,710
2000/01	4,320	68.5	295,960	20,480	0	0	0	0	1,360	1,360	17,845	11,985
2001/02	4,410	67.4	297,210	20,475	100	0	100	0	1,130	1,130	19,760	11,670
2002/03	4,520	63.6	287,380	22,140	10	0	10	0	1,410	1,410	20,260	12,150
2003/04	3,930	59.5	233,860	15,150	550	0	550	0	250	250	19,115	8,485
2004/05	3,660	64.8	237,080	14,170	2,135	0	2,135	0	40	40	20,385	4,365
2005/06	4,200	66.9	281,170	21,140	50	0	50	0	1,510	1,510	19,870	4,175
2006/07	5,150	69.0	355,520	30,780	0	0	0	0	2,680	2,680	22,425	9,850
2007/08	5,040	69.1	348,190	28,630	0	0	0	3,330	2,500	5,830	23,500	9,150
2008/09	4,380	61.9	271,250	16,130	2,500	300	2,800	0	190	190	24,200	3,690
2009/10	4,250	65.4	278,000	17,300	5,000	1,000	6,000	0	10	10	23,500	3,480

Sources: U.S. Department of Agriculture, Foreign Agricultural Service, PS&D Online; Government of India, Ministry of Agriculture and Cooperation, Directorate of Economics and Statistics.

Indian sugar exports and imports by major partner (October/September)

Country	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09 ¹
<i>1,000 tons, raw value</i>									
Exports									
Bangladesh	187.4	72.4	243.9	120.8	0.3	177.9	266.5	917.8	0.3
China	38.9	0.1	2.6	0.0	0.0	0.3	107.2	229.3	0.0
Djibouti	2.0	3.4	9.4	0.0	0.0	13.7	93.0	188.1	14.4
Egypt	0.5	0.0	49.6	0.1	0.0	0.0	33.0	206.8	0.0
Indonesia	196.3	166.1	114.3	24.0	2.0	38.3	200.6	175.8	0.3
Iran	5.0	12.8	5.4	0.0	0.0	0.0	51.0	221.5	0.6
Kenya	0.6	0.1	2.4	0.4	0.0	0.0	44.5	117.0	6.8
Malaysia	50.4	332.4	330.2	70.2	6.2	18.6	14.0	356.8	8.4
Pakistan	342.2	23.0	34.8	6.4	3.9	783.9	254.2	63.4	9.7
Saudi Arabia	2.5	0.4	0.7	0.6	0.9	0.7	25.4	245.9	19.4
Singapore	27.2	35.9	45.7	6.1	0.4	10.4	34.9	21.5	0.5
Somalia	9.5	15.1	101.4	16.2	1.6	27.7	152.4	292.1	7.2
Sri Lanka	152.5	278.6	354.7	100.1	15.4	149.0	309.7	549.7	71.3
UAE	32.9	63.8	72.5	12.5	1.8	20.3	94.1	1,289.2	23.5
United States	1.5	11.1	13.9	9.1	1.4	12.7	12.5	2.4	2.0
Yemen	22.6	8.0	146.8	0.2	0.1	26.3	346.0	269.9	1.4
Other	134.2	111.4	299.5	37.5	45.2	88.9	483.9	704.6	46.9
Total	1,206.4	1,134.7	1,827.7	404.1	79.2	1,368.7	2,523.1	5,851.7	212.7
Imports									
Australia	0.0	0.0	0.0	42.0	25.0	0.5	0.0	0.0	0.0
Brazil	0.0	0.0	4.7	206.9	1,075.8	0.1	0.0	0.0	985.7
Mozambique	0.0	0.0	0.0	0.0	21.0	0.0	0.0	0.0	0.0
Pakistan	33.9	0.3	0.0	0.0	0.0	3.6	0.0	0.0	0.0
South Africa	0.0	0.0	0.0	73.0	101.4	0.0	0.0	0.0	29.6
Other	0.6	0.0	0.6	2.2	11.8	3.3	0.5	0.2	73.4
Total	34.4	0.4	5.3	324.0	1,235.0	7.4	0.5	0.2	1,088.7

¹October/August data.

Source: World Trade Atlas.