

## **REFORMS IN THE RICE MARKET AND ITS IMPACT ON LIVELIHOODS, FOOD SECURITY, AND RESILIENCE TO SHOCKS: THE CASE OF BANGLADESH**

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### **ABSTRACT**

The input and output markets of rice and some other agricultural commodities went through reforms from early 1980s to the mid-1990s. This paper discusses the trade reforms in rice supply chain and its impact on food security at the national level, and also at the micro level for three groups of stakeholders: farmers, agricultural wage labourers and rural consumers; as well as on the capacity of the economy to withstand shocks. The study shows that the reforms led to higher rice productivity, lower prices and better resilience to shocks from domestic natural disasters. However, the liberalization of input markets have made production costs susceptible to unfavourable changes in global prices and lesser government interventions in the rice market has weakened its position to prevent speculative actions. Also, it observed that dependence on the international market to support domestic requirements can make the country vulnerable to international shocks. The study concluded by saying that, although market liberalization has been beneficial for the country in many respects, attaining self-sufficiency in rice production should remain as a long term policy goal for Bangladesh.

**Keywords:** market reforms, rice markets, self-sufficiency, food security, resilience to shocks.

### **1. INTRODUCTION**

Trade reforms can be described as a package of policy measures implemented to achieve specific sectoral objectives<sup>1</sup>. Bangladesh went through a number of reforms in its agricultural production system from early 1980s to mid-1990s<sup>2, 3, 4, 5, 6</sup>. As rice is the staple crop in Bangladesh, this paper discuss the impact of reforms in the rice input and output markets on food security and the capacity of the country to withstand domestic and international shocks. This study has assessed the impact at the national level as well as three main groups of stakeholders: the farmers, the agricultural wage labourers and the rural consumers, who are expected to be most affected by such changes.

The governments of South Asian countries have intervened heavily in food markets for more than five decades since 1940s in a determination to prevent a major famine such as the Great Bengal famine of 1943. So they continued various forms of state procurement, storage and distribution of food grains<sup>5</sup>. Also there were many restrictions on the input and output markets of key foodgrains like rice and wheat. In case of Bangladesh, the government pursued a policy of agricultural modernization based on high yielding varieties of rice and modern agricultural inputs (seed, fertilizer and irrigation) supplied through government agencies and organizations during the 1970s and early 1980s. Ensuring self-sufficiency in food production was the main objective of the agricultural policy during those times<sup>7</sup>. Starting from the 1980s, the country started reforming both its agricultural input and output markets. The reform measures included liberalization of the input markets for fertilizer and irrigation equipment. The government withdrew restrictions on imports of small diesel engines in 1987 and removed the duty on such imports in 1989. These efforts led to a rapid spread of farmer owned and operated small-scale irrigation in Bangladesh<sup>2</sup>. So minor irrigation grew rapidly and local water markets developed, based on privately installed shallow tube-wells<sup>3, 8</sup>. This in turn led to a substantial expansion in the amount of land irrigated, raising the coverage of irrigation to about 65 percent of cultivated land<sup>7</sup>. In case of the fertilizer market, the government legalized private imports of fertilizer in 1992<sup>6</sup>. However, they continued to regulate the procurement and marketing of urea (the fertilizer required in higher quantity for rice production) at administered prices, but the marketing of phosphate, potash and other fertilizers was transferred to the private sector<sup>7</sup>.

There were shifts in policy in the output market as well. Bangladesh historically has been a net importer of rice. But until 1993, all the import was through government channels. The government permitted private import of rice and wheat in 1993 and suspended the 50 year old *anti-hoarding act* barring merchants from keeping inventories exceeding 1 week working stocks without statutory licenses from the Food Department in 1994<sup>6</sup>. These steps significantly increased private import of food grains<sup>9, 10</sup>.

Reforms during the early 1990s reduced the operation of the public food grain distribution system<sup>4</sup>. The quantity of food grain which moved through the public food distribution system came down from 2,372,000 metric tons in 1990/91 to 1,245,000 metric tons in 2005/06<sup>9</sup>. Also government subsidy on public food distribution system reduced from BDT 381 crore (about USD 45 million in current value) in 1990/91 to BDT 303 crore (about USD 35 million in current value) in 2003/04<sup>9</sup>. Consequently, the government control over the rice economy reduced over the 1990s and into the mid-2000s.

Overall, by 1993, the policy was changed to one of self-reliance (importing food from the world market when prices are cheaper than growing it at home, so as to release land for other uses for

which Bangladesh has a comparative advantage) rather than self-sufficiency<sup>7</sup>. In the upcoming sections, the effect of such changes will be discussed.

Studies have separately shown that agricultural market reforms have led to increase in farm productivity, increase in food grain production, improvement in food security situation, stabilization of rice markets after flooding, and benefitted the poor in general<sup>2, 5, 7, 11, 12, 13</sup>. However, there has been very little study on how reforms in the rice markets have affected the food security of different sections of the population, as well as the capacity to withstand domestic and international shocks. This study aims to fill that gap.

## **2. METHODOLOGY**

This paper at first, has given a brief description of the trade reforms in Bangladesh related to the rice supply chain. In the next section it will show the effects brought about by these reforms using data from published papers and other secondary sources. Evaluating the impact of trade policy reforms on livelihood and food security is a complex phenomenon because trade policy is implemented at the state level whereas livelihood and food security issues are pertinent at the individual level and are affected by many other complex factors than trade reforms only<sup>14</sup>. However, this research has followed the process mentioned in Thomas and Morrison (2006)<sup>1</sup> and FAO (2003)<sup>14</sup> on assessing the impact of trade reforms on food security by showing the intermediate effects of trade reforms on price and output and then their ultimate effects on livelihoods and food security. Moreover, this study has illustrated the limitations of the post reform structure with the same approach. Finally, this paper has drawn conclusions and made policy recommendations.

## **3. RESULTS AND DISCUSSION**

### **3.1 The Early Success of Trade Reforms**

The reforms brought about some success in attaining food security and other policy goals. Promotion of modern seed-fertilizer-irrigation technology increased the adoption of modern cultivars, contributing to higher rice yields and rice production in Bangladesh<sup>8</sup>. Some impacts of the liberalization have been depicted through Table 1.

**Table 1: Growth rates in pre- and post-liberalization periods (%)**

<b>Growth rates of rice and all-food grains</b>	<b>1980/81- 1992/93</b>	<b>1993/94- 2003/04</b>
Rice production	2.61	4.78
Rice market supply	2.68	4.83
Food grain production	2.46	4.66
Food grain supply	2.3	4.61
Rice supply per capita	0.47	3.21
Food grain supply per capita	0.15	3.06

Source: DAM and FPMU<sup>6</sup>

The net effects of increased rice productivity and lower rice prices have been pro-poor. A study by Klytchnikova and Diop (2006) has stated that, the poorest households emerged as being particularly positively affected by reforms of the 1990s<sup>2</sup>. Here, we will discuss the impact of trade reforms on different stakeholders, although these groups of stakeholders are not mutually exclusive, that is, an individual may fall into more than one category. Then we will also look into how trade liberalization had helped the country to face the severe flood in 1998 successfully.

- **Impact on Farmers:** Over half of Bangladesh’s working population depends on agriculture for livelihood and 34 percent of Bangladeshi rural households can be classified as the net sellers of rice<sup>2</sup>. The total production of rice rose by 42 percent between 1995-96 and 2000-2001<sup>11</sup>. During this time, producer and consumer rice prices have declined by an average of 22 to 27 percent<sup>2</sup>. Farm households who are net sellers of rice usually lose from the price decline, especially large farmers. Interestingly, income of farmers of all sizes has increased by 10.5 percent instead of the decline<sup>2</sup>. This may have happened due to better performance of the input markets after reforms.
- **Wage Labourers:** Half of rural households in Bangladesh are functionally landless, and on average 20 percent are agricultural wage earners<sup>2</sup>. Since the 1990s, there has been an increased mobility of labour from farm to non-farm jobs and an improvement in rural agricultural wages<sup>15</sup>. This rise in agricultural wages had significant impact on the livelihood and food security situation of the poorest households who are concentrated in this segment of the labour market<sup>2</sup>.
- **Rural Consumers:** In rural Bangladesh rice purchases constitute around 22 percent of total expenditures of households in the bottom decile of total per capita expenditures. In addition to purchases, own consumption of self-produced rice accounts for about 6 to 11 percent of total

expenditures for rural households. So rice price changes have significant impact on the welfare of rural consumers. Using Deaton's (1989) methodology for measuring the overall welfare effect of a rice price decline, Klytchnikova and Diop (2006), have illustrated that rural net buyers' net benefit ratio should improve by 21 percent<sup>16, 2</sup>. Again, using the Taylor series approximation, they have showed that in the long run rural net buyers are supposed have a welfare gain of 6.9 percent as a percentage of total expenditures. In practice, as they have shown through growth incidence curves (which represent the changes in consumption expenditures of particular groups of population in the period between two household surveys<sup>17, 18</sup>), the rural net buyers have experienced a good increase in total consumption (around 7.5 percent on an average), with the poor experiencing particularly strong income growth<sup>2</sup>.

▪ **Resilience to Major Shocks:** The liberalization of trade in the early 1990s made the economy more resilient to domestic shocks to agricultural production and prices. Bangladesh was hit by severe flooding during 1998. Damage to the *aus* rice (one of the wet rice seasons) crop was 300,000 tons, (16% of target production) and to the *aman* (the other wet rice season) crop was, 1.76 million tons (18.5% of target production), making the total rice production loss 2.06 million tons. But in early 1998, the government had taken deliberate steps to encourage private sector imports of rice to stabilize domestic markets including removal of a 2.5 percent tariff on rice imports, expedited clearance of rice imports, and strict limits on government sales of subsidized rice. As a result, during 1998, private sector imports, mainly from India, reached 2.26 million tons. Had the government of Bangladesh imported this grain itself, the average cost of the imported rice would have been above the private sector import costs, due to additional marketing costs totalling almost 100 million USD<sup>19</sup>. If private sector imports were not available then, with no change in government imports, total supply would have been 12.1 percent less and rice prices could have risen by 40–60 percent. So, in spite of the damage to the rice harvest and major disruption of the rural economy and employment opportunities, no major food crisis occurred. Instead, large-scale private sector imports, made possible by trade liberalization, stabilized rice markets.

### **3.2 Limitations of the Post-Reform Structure**

However, the strategy of reliance on trade broke down during the global food price crisis of 2007-08, when Bangladesh faced both internal and external challenges to acquire the desired amount of food. At the domestic level, severe floods swamped large tracts of agricultural land in August and September 2007, and Cyclone Sidr hit the country the on 7 November 2007, causing extensive devastation to crops<sup>20</sup>. This triggered fears of shortages of the staple and a scramble to secure supplies for current consumption and strategic reserves, further pushing up prices<sup>20</sup>. Mounting costs of key inputs such as fertilizers were also a big problem. This was particularly true for phosphate and potash-based fertilizers, which are entirely imported and geared to raising

world prices at that time. While the government had stabilized the price of urea (Nitrogen based fertilizer) at BDT 6/kg throughout 2007/08 by subsidizing it at 75 percent of its cost of production, the price of TSP (Triple Super Phosphate fertilizer) which, along with MP (Murat of Potash), receive only a 15 percent subsidy, was around BDT 35/kg during 2008, compared to about BDT 22/kg just 12 months earlier, implying a rise of nearly 60 percent<sup>20</sup>. Farmers also reported that the price of fuel and electricity went up 60 percent during the same period, despite being subsidized by the Government at the rate 40 and 2 percent respectively<sup>20</sup>.

This time, unlike the 1998 crisis, Bangladesh faced serious limitations in supplementing domestic crisis by importing from the international market. India, the main rice exporter to Bangladesh since 1995, imposed minimum export prices (MEP) for rice in 2007. India initially fixed the MEP of non-*Basmati* rice at USD 425 per tonne on 25 October 2007, but this was gradually increased to USD 1,200 per tonne on 28 March 2008. Finally, it introduced a ban on rice exports on 1 April 2008. Other countries, including Vietnam, Cambodia, and Egypt followed India in banning rice exports. Since the global trade of rice is very little, the domestic price of rice in Bangladesh increased sharply with the announcement of MEP set by India<sup>7</sup>.

It should be noted that, the abnormal rice price rise during 2007-08 was mainly caused by speculation rather than production shortfall when Bangladesh found it difficult to import the food it needed and domestic food prices rose rapidly as traders, farmers and consumers, anticipating higher prices, stored rice<sup>7</sup>. This fact was also supported by the survey for WFP where more than a quarter of the traders blamed hoarding or stock holding as the major cause of food price increase<sup>21</sup>.

Now we discuss the impact of this crisis at the aggregate and some sectoral levels.

- **At the National Level:** An FAO/WFP study estimated that the number of food insecure people (with an intake of less than 2,122 kcals/person/day) in Bangladesh increased by 7.5 million as a result of rising food prices and general inflation<sup>20</sup>. Moreover the study also found that the mean reported household expenditure on food during year 2008 was 86 percent, compared to 70 percent in 2007. The disproportionate spending on food meant contraction of household expenditure on other necessary things. Even then, some households had reduced the size of the meal and some were eating less times a day to cope with the crisis<sup>20</sup>.

- **Impact on Farmers:** The farmers suffered during the 2007-08 crisis because of the increase in input prices although they are also supposed to gain from the increase in prices. However as speculation or hoarding played a part in the price hike<sup>21</sup> and most farmers in Bangladesh are small scale or subsistence level farmers, it less likely that greater number of farmers were benefitted by this phenomenon. Rather few large farmers and middlemen who trade large quantities of rice may have gained from the substantial increase in price of rice.

- **Wage Labourers:** The nominal wages of both agricultural and non-agricultural labourers increased, the real wages trend was flat or slightly downward trending (WFP 2009). So their purchasing power decreased. In March 2007, daily labourers were able to purchase five to seven kilograms of rice for one day's work. One year later, the same amount of work earned them 3.7 to 5 kilograms of rice<sup>21</sup>. Although this amount of rice may be sufficient to feed a family of five, maintaining consumption levels meant less money being spent on other necessities.
- **Rural Consumers:** Due to the price spike, households had to spend higher proportion of their income behind food items. While households had been spending nearly half of their income behind food before the crisis, the rural and urban households had to allocate 61 and 62 percent of their budgets on food respectively<sup>21</sup>. Since, the largest share in food expenditure is for rice and cereals (31.3 percent), increase in rice prices contributed significantly to this increase in food expenditure. A study by FAO/WFP estimated that the poorest four deciles of the rural population were facing daily calorie gaps of 373, 305, 301 and 260 Kcal after the price shock<sup>20</sup>.

#### **4. CONCLUSION**

This paper presents evidence that the trade reforms in rice input markets and liberalization of trade has led to increase in production, greater resilience against food insecurity in times of natural disasters and other pro-poor outcomes. However the 2007-08 price rise has shown that liberalization of input markets have made production costs vulnerable to global crisis and lesser government role in the rice market has weakened its position to guard against domestic speculative actions. Hence, the too much reliance on the world market in times of crisis can be dangerous as the policies of large exporters can influence world market prices. Therefore, we can conclude by saying that although trade reforms have generally increased welfare for the country in general by increasing availability of food not only during normal years but also in times of domestic shocks on production, attaining self-sufficiency in rice production should remain as a long term policy goal for Bangladesh in order to protect itself from external shocks in case of its most important food crop.

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