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Asian rice economy changes and implications for sub-Saharan Africa



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ABSTRACT

Despite significant increases in rice production, sub-Saharan Africa (SSA) still procures about one third of its rice needs through imports, mainly from Asia. Improving the competitiveness of local rice production will be economically sustainable only if production in SSA remains cost-competitive with Asia. Realizing this goal depends not only on conditions in SSA but also on how the rice economy in Asia evolves. Several factors are likely to affect the major Asian rice economies strongly in the coming years: (i) increased diversification of diets as a result of changing age structures and rapid economic growth; (ii) changes in production patterns; and (iii) evolving costs of production in response to higher energy and water costs, and technological change. The aim of the article is to assess the changes in rice-system dynamics of both SSA and Asia and derive their implications for the development of the rice subsector in SSA.

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1. Introduction

Rice is the most rapidly growing food commodity in sub-Saharan Africa (SSA) and is now SSA's second largest source of food energy (Seck et al., 2013). Despite significant increases in rice production, SSA still procures about a third of its rice needs through imports, which account for about 40% of the world's rice exports. Asia (particularly Thailand, Vietnam, Pakistan, and India) is the major source of these imports (USAID, 2009). The 2008 rice crisis provided impetus to expand rice production in SSA, as countries sought to increase rice self-sufficiency rather than rely as heavily as they have in the past on international trade to meet their food-security goals. Such efforts will be economically sustainable only if SSA rice value chains are cost-competitive with their Asian counterparts.

The aim of this article is to assess the changes in dynamics of both SSA and Asian rice economies and derive their implications for the development of the rice sector in SSA. The article provides: (a) a brief overview of the evolution of the world rice market, highlighting the importance of Asia; (b) a description of current trends in the Asian rice economy, highlighting potential changes in the main drivers of supply and demand; (c) a synthesis of major projections to 2020 of world rice consumption, production, and

prices, especially for Asia and SSA; and (d) discussion of the implications of current and future trends in both Asia and SSA for SSA rice promotion strategies.

2. The importance of Asia in the global rice market

2.1. Global rice consumption, production, and trade¹

About 90% of the world's rice is grown and consumed in Asia, with China and India being the largest Asian producers, accounting collectively for nearly half of world production and consumption in 2011. World per-capita consumption of rice is about 57 kg year⁻¹. Most Asian countries consume more than 100 kg of rice capita⁻¹ year⁻¹ on average, with Cambodia (292), Lao People's Democratic Republic (289), Bangladesh (218), and Vietnam (217) having among the highest per-capita consumption levels in the world.

Rice consumption in SSA is about half of world levels (i.e., about 23 kg year⁻¹), with higher levels in West African coastal countries (above 60 kg year⁻¹). Despite significant increases in rice production, SSA only contributes about 3% of world rice production. In fact, rice paddy production in SSA increased from six million tonnes (Mt) to 20 Mt over the period 1980–2011, with West Africa accounting for about 60% of rice production in SSA.

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¹ The statistics used in this section have been calculated from data obtained from the FAO statistical database (FAO, 2013).

Global rice production increased from 409 Mt of paddy to nearly 700 Mt between 1980 and 2011, with a compound growth rate of 1.8% year⁻¹. The overall growth in production over those 30 years was primarily the result of yield increases, especially in Asia, which averaged 1.4% year⁻¹ over the period, while there was little growth in area harvested (0.4% year⁻¹). Although rice yields are still increasing, the rate of growth has been declining for many years from a compound rate of 2.5% year⁻¹ over 1962–1979 to 1.4% year⁻¹ over 1980–2011. The overall increase in production in SSA, however, was primarily led by area expansion, although the share of total output growth due to yield improvement has increased from 26% year⁻¹ over 1980–1990 to 47% year⁻¹ over 2000–2010 (Seck et al., 2013).

International rice trade has expanded rapidly since 1980, increasing more than 2.5 fold by 2010. However, the global rice market remains thin, with trade representing only 7% of total production. With 90% of the world's rice produced in Asia, most rice tends to be eaten in the country where it is produced and does not enter international markets. In the early 1980s, the top five exporters (Thailand, Vietnam, India, the USA, and Pakistan) had about 70% of the world market; this share rose to nearly 80% in the late 2000s. Asia accounts for about 45% of the world's total imports, with over 90% of these imports being procured through regional trade. For instance, over the period 2005–2010, the Philippines, the world's largest rice importer, purchased most of its rice from Vietnam (84%), Bangladesh from India (84%), and China from Thailand (83%). Exports to SSA make up about 20% of the world's rice exports. Nigeria, Côte d'Ivoire, and Senegal account for nearly 40% of SSA rice imports.

Rice continues to be one of the most protected commodities in both developing and developed countries, through high tariff and non-tariff barriers, export restrictions, aid, state trading, and other domestic market interventions. Most industrialized nations heavily subsidize their rice producers, and major exporters such as Thailand, Vietnam, Pakistan, and India have national rice strategies for supporting production and sustaining market prices, although they generally do not heavily subsidize rice exports (Dorosh and Wailes, 2010; Dawe, 2002).

2.2. The performance of global rice markets

Because of these structural characteristics of the world rice market (i.e., thin and highly segmented), a small change in production and consumption brings a relatively large change in total trade, resulting in a high degree of price volatility. Although international rice prices have fluctuated dramatically in both nominal and real terms since the 1980s, the long-term trend of real prices was downward for many years, with real rice prices of Thai rice 5% broken declining by 0.22% year⁻¹ over 1985–2007 (USDA, 2013). However, the large rice price increases in 2007–2008 reversed this trend and called into question the reliability of the international rice market as a source of supply for importing countries. Even before these world price surges, few countries allowed domestic prices to be driven directly by world prices. After these price surges, even fewer countries were willing to rely as heavily on international rice trade. Many of them, including SSA countries, have adopted very aggressive production strategies with the aim of improving their levels of self-sufficiency.

3. Structural change and emerging trends in Asia

The economic transformation that has unfolded in Asia since the 1970s, in part as a result of the Asian Green Revolution, has changed the economic context for agriculture. Sustained increases in average per-capita incomes and urbanization led to

diversification of national diets, with rapid growth in demand for many high-value foods, particularly livestock products, fruits, and vegetables, while the growth in demand for food staples, such as rice, has been slowing (Pandey et al., 2010; Hazell, 2008). Matriz et al. (2010) argue that income elasticities of demand for rice have even become negative for high-income and emerging economies such as Japan, the Republic of Korea, Thailand, Vietnam, China, and India, which accounted for 60% of rice consumption in 2010.² For most lower-income Asian countries, including Bangladesh, Cambodia, Pakistan, Myanmar, and the Philippines, which altogether accounted for 15% of rice consumption in 2010, rice is still a normal good. In this evolving context, the priorities for many Asian countries changed from a narrow Green Revolution-era focus on the productivity of food grains to increasing the productivity and quality of high-value crops, trees, and livestock (Hazell, 2008). Moreover, farmers have been facing increasing shortages of land, water and labor as well as volatile oil and food prices. These challenges are likely to become worse in the coming decades (FAO 2014).

Although there has been improvements in overall agricultural total factor productivity (TFP) since the 1990s, with TFP accounting for nearly three-quarters of the total growth in agricultural output worldwide over the period 1991–2010 (Fuglie 2012), studies conducted in East and South Asia rice bowls suggests that annual growth rates of TFP in rice production, which increased significantly as a result of the Green Revolution, have been declining, especially in India, the world second largest rice producer. Reasons for this declining TFP growth rate include: (1) substantial lessening of investments—particularly public-sector investments, (2) displacement of cereals from better lands by more profitable crops, including horticultural crops; (3) diminishing returns to modern varieties when irrigation and fertilizer use are already high; and (4) falling cereal prices relative to input costs, which makes additional intensification less profitable (Pandey et al., 2010; Hazell, 2008).

Moreover, the Green Revolution introduced new environmental concerns, especially related to the overuse and poor management of irrigation water, fertilizers, and pesticides, which led to the degradation of soils and build up of toxins. The sustainability of intensively farmed systems—which led to off-site externalities, including water pollution, silting of rivers and waterways, and loss of biodiversity—has been increasingly questioned, leading to calls for new approaches to “sustainable intensification” (FAO, 2011; Garnett and Godfray, 2012). Such approaches are much more knowledge- and management-intensive than earlier Green Revolution technologies. Although many Asian countries have taken steps to address these issues (i.e., adoption of improved soil nutrient, water, and integrated pest management), the costs of moving in this direction are substantial, and much more remains to be done (Hazell, 2008; Pandey et al., 2010; FAO 2014).

In many Asian countries, rapid economic growth, fueled by expansion of the industrial and service sectors, which have grown more rapidly than the agricultural sector, has resulted in a shift of labor resources out of agriculture as structural transformation has proceeded and the scope for rural outmigration expanded (FAO, 2014). This shift has induced a substitution of capital, through mechanization, for labor in rice production, as discussed below in section 5. In fact, in many Asian countries, most of the economic

² The income elasticity of demand for a product is defined as the percentage change in consumers' expenditures for the product given a 1% change in the consumers' income. Goods whose income elasticity of demand is positive are termed 'normal goods.' If the income elasticity of demand is negative, consumer expenditures on the product actually fall as per-capita incomes increase, leading economists to term such products 'inferior goods.' The term 'inferior good,' however, does not imply in any way that the good is necessarily inferior in a nutritional sense.

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