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"Trade and protection: the case of GM rice adoption and acceptance"

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ABSTRACT

Rice is one of the most highly protected world food commodities. The dominant form of protection and distortion in world rice trade is through the use of import tariffs and tariff rate quotas. The trade-weighted global average of nominal protection is 43 percent. Rice accounts for 20 percent of global caloric intake and an even higher rate among food-deficit developing nations. As one of the first food commodities to have its genome fully mapped, the potential for GM innovations in rice looms large. Most research in rice biotechnology worldwide has been conducted by the public sector, in contrast to what has happened for other crops. This fact may favor the contribution and finally the adoption and acceptance of this technology once available. To date no GM rice varieties have been commercially adopted, yet China, Bangladesh, and the United States are poised to release varieties that are currently or nearly on the shelf, including innovations such as insect resistance, herbicide tolerance, vitamin fortification and drought tolerance. A global economy-wide model (GTAP) is used to evaluate the effects of adoption and non-adoption in a global rice economy subject to high levels of rice sector protection and various GM regulatory regimes. The costs and benefits of differential GM adoption and dissemination rates, differential trade protectionist rates and differential GM regulatory policies will be identified for producers and consumers and net for both GM adopting/non-adopting, trade protectionist/non-protectionist, and GM accepting/non-accepting countries. The results will highlight strategies that are consistent with various

national objectives such as GDP growth, environmental, farmer, and consumer protection.

The paper will explore the motivation for GM adoption in rice and the divergence in regulatory stance of the countries with respect to GM and rice trade. Relative to a baseline simulation, the paper examines the impact of GM adoption by the likely nations without and then with reactions from other countries in terms of rice trade barriers and GM trade barriers. The potential for rice trade reform to be nullified by GM regulatory policy is viewed as a possibility. The framework of analysis will be the well-received empirical model of the global economy (the GTAP model) to examine the effects on national welfare of some countries adopting GM rice technology. The GTAP 6.0 beta version, which corresponds to the global economy in 2001 is used. This database disaggregates the world into 87 regions and 57 sectors. Two economic sectors defined in this database are related to rice, namely, paddy rice (production), and processed rice (processing). Modifications to the base GTAP model and GTAP 6.0 beta version database would be introduced to account for technological improvements, technology spillovers and specific trade protections on GM rice.