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What is the value of sustainably-produced rice? Consumer evidence from experimental auctions in Vietnam

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ABSTRACT

Little is known about the value of sustainably-produced rice and incentive mechanisms for the adoption of sustainable production standards throughout rice value chains in Southeast Asia. This study tests the feasibility of a market-based incentive mechanism by eliciting consumers' willingness-to-pay (WTP) for rice produced and labeled under a national sustainable production standard in the South of Vietnam through experimental auctions. Domestic consumers are willing to pay a 9% price premium for certified sustainably-produced rice. This premium gradually increases up to 33% when incremental levels of information on certification and traceability are provided. Consumers willing to pay premiums for sustainably-produced rice are more health-conscious, have better knowledge of and greater trust in food quality certification for rice, and tend to be more environmentally conscious and to read food labels before purchasing. Findings suggest that sustainable production labels for rice should be accompanied by supplementary information on certification and traceability to increase consumers' awareness and appreciation of sustainably-produced rice. Promoting certified sustainably-produced rice hence crucially hinges on strengthening consumers' knowledge of and trust in food quality certification. Communication strategies are recommended to focus on the environmental and health benefits of sustainably-produced rice.

1. Introduction

Since the publication of the Sustainable Development Goals by the United Nations (UN) (2015), sustainability has been in the forefront of international debates on agricultural production and trade. Whilst most of the discussions have focused on higher-value commodities, the rice sector has generally been neglected, despite its crucial role in providing global food security. In response to this gap, the Sustainable Rice Platform (SRP) released in 2015 the world's first standard for sustainably-produced rice (SRP, 2017). The SRP is a multi-stakeholder platform convened by the UN Environment and the International Rice Research Institute (IRRI) to promote resource-use efficiency and sustainability in the global rice sector. So far, the SRP devoted substantial efforts to developing a standard and a set of performance indicators for sustainable rice cultivation. However, there is still a research gap on the incentive mechanisms that can be deployed to encourage the adoption of sustainable production standards throughout rice value chains.

Different market-based incentive mechanisms have been proposed to encourage the adoption of sustainable production standards throughout rice value chains; i.e., embodying, internalizing, and disembodying sustainability (Demont and Rutsaert, 2017). Sustainability can be embodied in rice products through labeling if farmers comply with sustainable production standards and have their products certified by a third party. The success of a market-based incentive mechanism based on embodying sustainability not only depends on farmers' awareness and willingness to adopt sustainable production standards, but also crucially hinges on consumers' awareness, acceptance and willingness-to-pay (WTP) for rice certified as being "sustainably-produced." However, little is known on consumers' valuation of sustainable production labels in the rice sector, especially in Southeast Asia.

Vietnam is the world's third-largest rice exporter (FAO, 2014). Hence, its rice production significantly contributes to regional and global food security (Shrestha et al., 2016). However, the latter has

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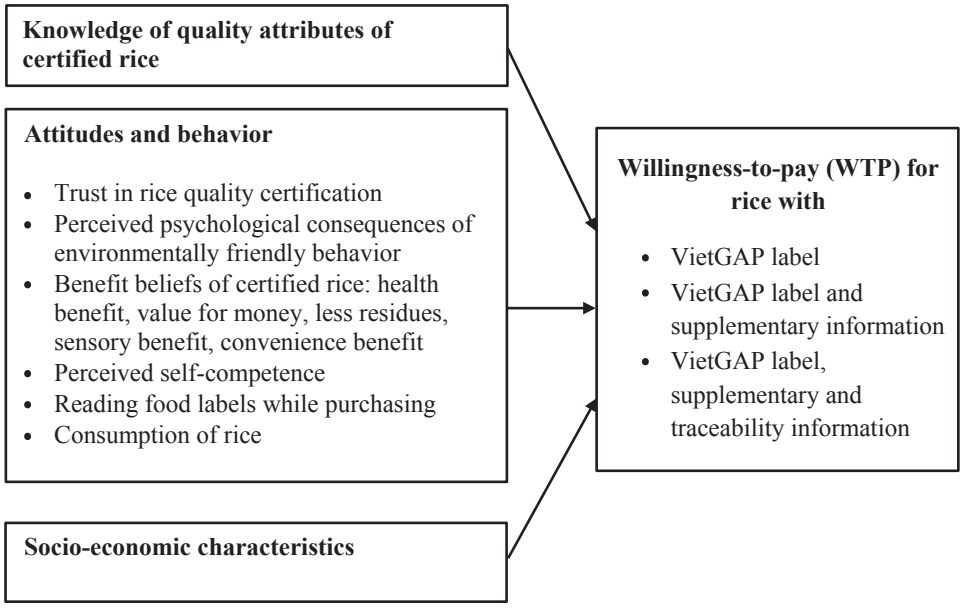

Fig. 1. Conceptual framework of the study: determinants of consumers' willingness-to-pay for sustainably-produced rice with different levels of information.

largely come at the expense of the environment, questioning the long-term sustainability of this strategy. The Mekong Delta (MKD), the primary rice-producing region supplying more than half of the national rice production and providing 90% of national rice exports (Hauge, 2016), has been identified as highly impacted by climate change[1] (Smajgl et al., 2015). Additionally, the MKD is reported to be suffering from negative impacts of human activities; it is facing severe environmental challenges due to overuse and misuse of agrichemicals (e.g., pesticides, fertilizers) in agricultural activities (Berg and Tam, 2012; Sebesvari et al., 2011) and subsidence and rapid coastal erosion due to negative impacts of dams' constructions in the upstream of the delta (Anthony et al., 2015). Hence, one of the important components of Vietnam's restructuring policy strategy for the agricultural sector is promoting sustainable rice production in the MKD (Demont and Rutsaert, 2017).

Demand for food quality labels is growing in the context of Vietnam's rapid economic growth and fast urbanization (Wang et al., 2014). In response to this demand, several food quality labels are appearing in the domestic food market, such as Hazard Analysis and Critical Control Points (HACCP), good agricultural practices (GAP), and organic food labels.[2] Due to food quality and safety concerns, the Ministry of Agricultural and Rural Development of Vietnam (MARD) issued the national sustainable production standard "VietGAP" (Vietnamese Good Agricultural Practices) in 2008, which applies to different crops and products, including rice. VietGAP certification integrates different aspects of food production including safe food cultivation practices, handling and processing, promotion of environmental sustainability and workers' welfare. GlobalG.A.P. (Global Good Agricultural Practices) is another popular GAP standard for rice in the Vietnamese food market. It is the world's most widely applied farm certification scheme (GlobalG.A.P., 2017). Meanwhile, the organic rice market is still a niche market in Vietnam, mainly serving the metropolitan areas.

In Vietnam, the private sector tends to underinvest in labels signaling quality attributes such as food safety, traceability and sustainability of rice production (Demont and Rutsaert, 2017). To assist the private sector's investment in rice value chain upgrading towards increasing sustainability, this study investigates the feasibility of embodying sustainability through a national production standard. More specifically, we elicit domestic consumers' WTP for VietGAP-labeled rice through experimental auctions. The contribution of this study is twofold. First, to the best of our knowledge, it is the first study which provides evidence of (i) the value of sustainably-produced rice; (ii) the information attributes suppliers and value chain actors need to provide in order to capture that value; and (iii) the characteristics of the market segment of potential buyers of sustainably-produced rice in Southeast Asia.

The insights can be deployed by value chain actors and policy-makers in terms of developing a food quality certification system for sustainably-produced rice that is reliable, traceable, signals good quality, and has the ability to communicate these credence attributes effectively to consumers. Secondly, this study provides evidence on the feasibility of a market-based incentive mechanism to encourage the adoption of sustainable production standards throughout rice value chains in the context of Southeast Asia. This provides crucial information for the SRP in its mission to promote sustainability in the global rice sector and contributes to achieving the Sustainable Development Goals.

2. Conceptual framework

This study embeds consumer valuation of sustainably-produced rice in a conceptual framework, based on the existing literature on consumers' WTP for quality food, including rice (Fig. 1). A substantial amount of this literature is situated in the domain of organic food. Besides the information that is provided to consumers, the main determinants of WTP are related to cognitive, attitudinal and behavioral, and socio-economic factors.

First, knowledge and awareness of food quality attributes were found to positively affect WTP for quality food in several previous

[1] About 39% of the MKD is predicted to be flooded if there is a one-meter rise in the sea level (Schmidt-Thomé et al., 2015).

[2] While the HACCP scheme focuses on safety-related quality aspects, GAP schemes (e.g., VietGAP, GlobalG.A.P.) refer to more than just safety-related aspects as GAP in itself is a broader and more encompassing concept. The GAP schemes distinguish themselves from organic production by allowing the proper use of chemicals in the cultivation practices (MARD, 2008) while the use of synthetic fertilizers and pesticides is prohibited in organic farming (FAO, 1998).

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