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Promoting local foods in small island states: The role of information policies

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ABSTRACT

Ensuring the success of agriculture is at the heart of food security, and it is necessary to examine strategies that tackle agricultural development through the production and consumption of sustainable food products. One way to increase food security in small island states is to develop local food sectors by increasing consumers' awareness about local products with sustainable characteristics. We designed an economic experiment to assess consumers' willingness-to-pay (WTP) for yams with sustainable characteristics: the origin, the intrinsic quality of an alternative variety and the mode of production. The results showed that labelling significantly changes consumers' valuation of the different yam profiles. Consumers' WTP for local yams (2.85 € kg^{-1}) was significantly higher than for imported yams (1.80 € kg^{-1}), while the organic mode of production derives a significant premium if information on production methods has been disseminated. The results also suggested that organoleptic characteristics of new varieties should not be overlooked. We conclude on how the labelling strategy could be facilitated through a policy targeting the development of the local food sector.

Introduction

In many parts of the world, food security is becoming a major issue due to sensitivity to climate change and market volatility in a globalised economy (Mimura et al., 2007; Reed, 2012). Concerns regarding food security are particularly valid for small island states, which have characteristics that make them especially vulnerable to the effects of climate change (for example sea-level rise) and extreme events (Wisner, 2004). From an economic point of view, small islands states have particular economic characteristics that make them more exposed to external shocks (such as extreme events and climate change) than larger countries because many of them rely on limited economic activities such as tourism or fisheries (Grynberg and Remy, 2004).

Whereas the need for improved food security is newly broached by climate change and economic globalisation, the historical shift from subsistence agriculture to agro-exportation has also reduced food security in small island states. Indeed, for centuries, small island states traditionally depended upon subsistence for survival. The colonisation process induced a shift in food production that was oriented towards the development of cash crops for export at the expense of other traditional agricultural sectors targeting local markets. As a consequence, these territories rely heavily on imports for a major part of their food supplies (Delcombel, 2005; Redondo, 2006). In Guadeloupe (French West Indies) for example, the internal market coverage for food is only 20%. Imports from France, Dominican Republic and Costa Rica cover the gap between local production and demand and a third of the 80,000 tonnes per year of the fruits and vegetables that are consumed in Guadeloupe are imported (Chambre d'Agriculture de la Guadeloupe, 2014; Direction de l'Alimentation, de l'Agriculture et de la Forêt de Guadeloupe, 2010). While subsistence agriculture used to ensure food security, cash crops such as sugar cane, banana and forest products, are mostly exported for profit in foreign markets. However, exports depend upon preferential access to major developed country markets, which is gradually eroding. This situation has led many island states to experience a decrease in Gross Domestic Product contributions from agriculture, partly due to the drop in competitiveness of cash crops, cheaper imports from larger countries, and the increased costs of maintaining soil fertility (FAO, 2004). Cheaper imports also compete with local production forcing small-scale producers out of agriculture and therefore undermining island states' capacity to sustain their own food needs

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(Beckford, 2012). Small island states are experiencing a nutritional transition that takes them away from their traditional diets towards western-style ones. As a consequence, food systems of these islands rely more than before on imported products and are less self-sufficient. Additionally, even if it is not the only identified reason for the nutritional transition experienced by island states, imported food conveys western food consumption habits that contribute to the increase in non-communicable diseases such as diabetes and obesity (Hughes and Lawrence, 2005). This increased food vulnerability is particularly true for the Caribbean islands despite the fact that the natural environment offers extraordinary conditions for the development of a rich diversity of flora and fauna that should normally form the basis for balanced diets (Beckford, 2012; Watts, 1984). Because food security partly arises from sustained food production, ensuring the success of agriculture is at the heart of food security.

In small tropical islands, the competition for space between human activities and agriculture is particularly important. The increase of demography generates more food demand but also results in urban expansion which generates a high pressure on agricultural land. Commercial banks consider agriculture to be a high-risk sector and are therefore reluctant to invest in food production (Angelucci and Conforti, 2010). Because small island states often have unique biodiversity through high endemism (that is, with regionally restricted distribution) caused by ecological isolation, the intensification of agriculture through chemical inputs does not appear to be a sustainable way to achieve higher levels of food security. It is therefore necessary to examine strategies that tackle agricultural development through the production and consumption of sustainable local food products.

In this paper, we make the assumption that one way to increase food security in small island states is to develop local food sectors by increasing consumers' awareness about local products with sustainable characteristics. Labelling is a way to highlight those characteristics. Consequently, we claim that increasing the demand for local products is a way to ensure profitability at the farmer level and therefore to maintain a sufficient amount of land dedicated to food production for local populations. However, defining which food policy will succeed in increasing the willingness of consumers to purchase local products requires first a look at the best options for labelling production. Here, we test for the hypothesis that differentiating products on the market by highlighting their origin, their intrinsic quality and their mode of production is one way to increase consumers' awareness about locally produced food.

Our study is applied to the yam sector (*Dioscorea* sp.) in Guadeloupe, a small island state located in the Lesser Antilles. In Guadeloupe, the yam sector suffers from the following:

(i) Heavy constraints on production, primarily due to parasitism and high production costs, (ii) poor organisation of the sector and (iii) a decrease in yam consumption over the last 40 years due to changes in people's diets and a lack of consumer confidence in the sanitary quality of local yams. This last point is due to the contamination of some areas of the island by a persistent pesticide (Cabidoche and Lesueur-Jannoyer, 2012). This pesticide has been used in the south western part of the island (south Basse-Terre) in order to control the banana weevil (*Cosmopolites sordidus*). Yam cannot be grown anymore on these contaminated soils which represent 10% of agricultural area of the island, but still can be grown on rest of the island. However, lack of information on product traceability as well as the importance of informal market, make consumers suspicious about yam's sanitary quality. In this context and more than ever, promoting yams with sustainable characteristics and information about sanitary quality are critical factors to push production forwards and reduce food vulnerability in Guadeloupe. In our study, local yams participate to the sustainability of agriculture in the following three ways: (i) reviving the agricultural sector by providing local employments, (ii) maintaining cultural diversity since yam, as a traditional dish, is intimately linked to Guadeloupe history and (iii) reducing the environmental impact of agriculture through a reduced pesticide use.

Little literature has focused on yam consumption. Existing studies highlighted the role of consumers' socio-demographic characteristics as determinants of yam consumption (Nwachukwu et al., 2011) and the role of product quality (freshness, size, shape, colour of the flesh) in price formation (Amegbeto et al., 2008). To the best of our knowledge, no study has addressed the question of yam qualification. Our research aim is to examine the way consumers respond to yam characteristics and to different types of labels, in order to define the best food policy options for improving the sustainability of the yam sector in Guadeloupe. This study contributes to the literature by providing an orientation to identify viable value chains with a positive impact on food sovereignty in small island states. It also abounds the field of the genericity of value measurement methods by providing evidence from a tropical insular population, since many of the recorded studies have been conducted on European or North American settings so far.

To achieve our research goal, we conducted an economic experiment to measure the impact of information about the origin of yams, the mode of production and a new variety on consumers' willingness-to-pay (WTP) for local yams. Experimental methods are now frequently used in the literature on applied demand analysis to estimate consumer valuation of specific characteristics. By precisely controlling the information on products, it is possible to compare various levels of consumers' WTP for a small variation in the characteristics of otherwise identical products. This comparison allows one to identify substitution relationships among product characteristics.

The rest of the paper is as follows. In the second section, we introduce the theoretical background and literature survey on consumer choice. The background of the empirical application, the experimental protocol and the econometric strategy used to measure consumers' willingness to pay for different yam profiles are presented in Section 'Background and experimental protocol'. Then, we present the empirical results obtained. Finally we discuss their implications for designing policy options to ensure the sustainable development of the yam sector in Guadeloupe and introduce generic recommendations to foster food security in tropical islands.

Consumer choice and preferences for local food

When making choices about food products, consumers not only respond to their immediate need to sustain themselves, but they also wish to satisfy a set of values and beliefs. Lusk and Briggeman (2009) listed eleven values that govern food consumption and that explain why consumers are sensitive to one particular product over another. Therefore, releasing information about a product that addresses those values, in particular through product labels, is one way to highlight the specific characteristics of that product and to help consumers to notice it.

Few studies have focused on the impact of plant variety on consumers' valuation of food products. In a study about wine, Combris et al. (2009) could not draw a definitive conclusion from a comparison of consumers' willingness to pay for wines from different grape varieties. Rickard et al. (2011) examined differences between varieties of apples but only considered the impact of the name of the variety on participants' WTP: the impact of the sensory component is not addressed. Looking at non-food agricultural products, Davis (1993) showed that consumers give a different value to Christmas tree characteristics across species. Additionally, the people who knew the different species gave a different value to the trees' characteristics than those who did not.