Sugar as a Biofuel: Implications for Philippine Agriculture and Food Security

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This paper examines the economic impacts of using sugar as feedstock for biofuels on agriculture and food security in the Philippines. In particular, it focuses on the impacts on prices, outputs, consumption and trade of industries in the agricultural and food processing sectors. The tool used in the study is computable general equilibrium model of the Philippines. The analysis was implemented by replacing inputs with crude petroleum with bioethanol, which is sourced from the sugar industry, in the petroleum refining industry.

The study found that the initiative raises the output of the ‘Agriculture, Fishery and Forestry sector’. However, this is driven mostly by the expansion of the output of the sugar industry, with a large proportion of the industries in the sector experiencing a contraction in output. The analysis also shows that promoting sugar as a biofuel feedstock can have adverse effects on food security. This conclusion is drawn mainly from the projected decline in the consumption of products from the agricultural and food processing sectors.

Key Words: agriculture, biofuels, Computable General Equilibrium models, food security, Philippines

Abbreviations: CGE – Computable General Equilibrium, SAM – ‘Social Accounting Matrix’

INTRODUCTION

Republic Act 9367, otherwise known as the Biofuels Act of 2006, requires the mandatory mixing of bioethanol and biodiesel in gasoline and diesel, respectively. Apart from reducing the country’s dependence on imported fuels, the law is also justified on the argument that biofuels offer a cleaner source of energy relative to fossil fuels.

The use of agricultural commodities as feedstock for biofuels has the potential to affect the agriculture sector and food security. It is likely to stimulate the demand for agricultural crops which are used as feedstock. This, in turn, tends to raise the price and production of such crops. Farmers engaged in the production of the commodities are also expected to have higher incomes. However, such changes have the potential to draw resources away from the production of other agricultural commodities. This means that the impacts on the agricultural sector need to be evaluated in detail. The net effect depends on the strength of the increase in the output of the commodities used as feedstock relative to other goods. Moreover, the use of agricultural crops as feedstock for biofuel production has implications for food security. This arises because agricultural commodities are used directly as food and as inputs in the food processing industries. Price changes among agricultural crops therefore influence the costs of producing food. Moreover, changes in income affect the capacity of consumers to spend on food.

This paper examines the potential impacts of using sugar as feedstock for ethanol on the prices, production and consumption of agricultural and food products. It presents the aggregate results for the said sectors and identifies key industries that are likely to gain and lose from such an initiative.

Sugar is an important export commodity and a major input to the domestic food processing industries. As an export product, it has been subject to volatile price movements in the world market, and thus, the domestic biofuels program offers an alternative option for domestic sugar producers. As an input to food processing, the increased demand for sugarcane as biofuel feedstock may have an adverse effect on the domestic food processing industry. The quantities involved are significant. The Department of Agriculture (2007) estimated that the 10% blending require-