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Technical Change and Productivity Growth in the Indian Sugar Industry

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Abstract

This paper applies MPI approach to measure technical change and productivity growth in 40 Indian sugar companies for the period 2004-05 to 2013-14. The empirical findings show that on an average, Indian sugar companies have registered a negative TFP growth rate of 0.7 percent per annum, though it varies considerably across years, indicating to the existence of sugar cycle. Decomposition of TFP growth into technical change and technical efficiency change reveals that the negative growth is only due to technological regress. The study suggests that apart from bringing the technical change, rationalization of sugarcane price policy is need of the hour.

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1. Introduction

Sugar industry, with an annual production capacity of more than 25 million tons, is one of the largest agro-based industries of India. Over the period, this industry has been subjected to strict government controls, regulations and interventions. However, since 1993, the regulatory environment has been constantly easing. The Government of India constituted various committees (Mahajan Committee:1998; Tuteja Committee:2004; and Rangarajan Committee:2012) to de-license and de-regulate the industry. Based on their recommendations, the industry was de-licensed in 1998 and gradually it has been partially de-regulated. Now, sugar mills are free to sell sugar in open market without any restriction and obligation to supply sugar at the subsidized rate for public distribution system.

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However, in spite of these policy changes, the industry still faces a number of regulations, including control over the supply and prices of sugarcane. Government of India fixes Fair and Remunerative Price (FRP) of sugarcane for the farmers every year on the recommendations of Commission for Agriculture Cost and Prices (CACP). Over and above it, some states, such as Uttar Pradesh, also announce State Advised Price (SAP), which is largely governed by politics rather than economics. Sale of molasses, a by-product of the industry, is also regulated.

It is believed that a large number of regulations and controls, along with high order of politicization, have contributed large-scale inefficiency in the sugar industry (Datta et al., 2003). Furthermore, distorted production and trade policies of some industrialized countries, especially during the post-liberalized period, have made the sugar market more volatile, posing a big challenge to the competitiveness of the Indian sugar industry. The studies show that wide-spread interventions and controls in the sugar producing countries have created inefficient pattern of world production, consumption and trade of sugar (Borrell and Duncan, 1992; Devadoss and Kropf, 1996; Larson and Borrell, 2001; Oxfam, 2004). In this situation, the Indian sugar industry has to improve its global competitiveness. As Total Factor productivity (TFP) is the driving factor in improving competitiveness, a study of TFP and its sources is warranted to provide inputs for improving the industry's performance. A high level of TFP growth can result in lower costs to consumers, better remunerations and working conditions to the employees, better returns to the investors, and adequate surplus to the company for its modernization and expansion (Singh & Agrawal, 2006). The TFP growth can be accomplished via improvement in the technical efficiency (catch up) or by the technical change (frontier shift) or by both. A study of these sources of TFP growth is crucial for adopting appropriate measures to improve performance. It is in this context that this paper examines the technical change and the productivity growth in the 40 Indian sugar companies (20 integrated and 20 others) for the period from 2004-05 to 2013-14.

Rest of the paper is organized as follows. The second section briefly discusses profile of the sugar industry; the third section overviews the literature; the fourth section deals with the methodology, data and variables; and results and discussions are presented in the fifth section, followed by conclusions and policy implications in the last.

2. A profile of the industry

India is the second largest producer of sugar in the world after Brazil, with 15 percent share in the global sugar production. The industry plays a vital role in the rural economy of India and also has high potential source of renewable energy. It supports the livelihood of about 60 million farmers and their dependents and also helps in promoting the diversified ancillary activities. The industry's annual turnover in 2011-12 was Rs. 800 billion, with Rs. 550 billion as payment to the farmers (AFSIL: 2013). The Industry consists of more than 500 sugar mills, which are under different ownership and management structure. A majority of the sugar mills in Uttar Pradesh, a leading sugarcane producer state of India, are privately owned, while in Maharashtra and Gujarat (other two main sugar producing states), sugar mills are mostly under cooperative structure.

A profile of the industry is presented in Table 1. As is obvious from the table, area under sugarcane cultivation has increased from 3.84 million hectares (Mha) in 1991-92 to 5.04 Mha in 2011-12. During the same period, production of sugarcane has increased from 253.97 million tons (MT) to 361.04 MT. Yield of sugarcane ranged between 59 to 71 tons per hectare. Number of sugar mills went up from 392 in 1991-92 to 529 in 2011-12; while sugar production has more than doubled from 13.40 MT to 26.34 MT during the same period. It is relevant to note that the entire sugarcane production is not processed by the sugar mills; a part of it is diverted to produce raw sugar (indigenous sugar). Therefore, percentage of cane crushed by the sugar mills largely depends on the differences in sugarcane prices fixed by the government for the mills and the open market prices. Whenever open market prices are higher than the fixed prices, farmers would prefer to sell their produce in the open market and the sugar mills get less quantity to be processed. This is the reason why the percentage of sugarcane crushed by the mills varies significantly across years, ranging from 42.82% to 78.55%. Average crushing duration also varies significantly across years. It ranges from 87 to 181 days. Erratic supply of sugarcane and high variation in the crushing duration are the major problems of the industry. As far as, average sugar recovery is concerned, it is found ranging between 9.42 to 10.55 percent.

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