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Economic impacts of a U.S. sugar-sweetened beverages tax

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*Selected Poster prepared for presentation at the 2021 Agricultural & Applied Economics Association Annual Meeting,
Austin, TX, August 1 – August 3*

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INTRODUCTION

The sugar-sweetened beverage (SSB) tax policy is considered a key weapon in the quest to discourage unhealthy beverage consumption that is closely related to rising obesity and other diseases in the U.S. (Fig 1)

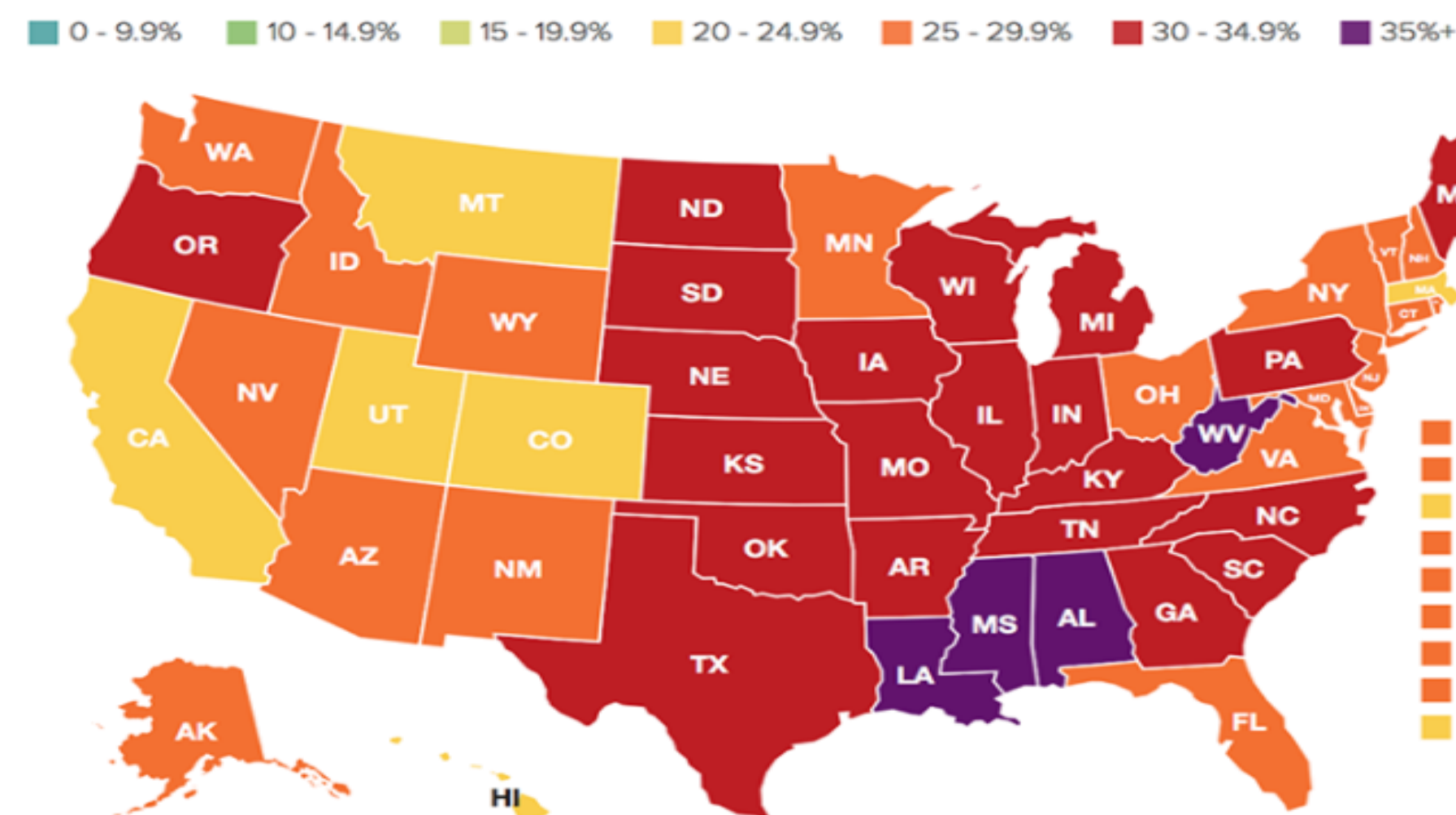


Figure 1. Percent of obese adults (Body Mass Index 30+)¹

A Total of nine cities, including Berkeley, CA, have imposed a sales tax on sugary drinks and experienced the effects of reduced consumption of unhealthy beverages.² The reduced consumption of SSBs can decrease the incidence of diseases and decrease government expenses for public health treatments.

Despite its potential benefits, the effectiveness and desirability of the SSB tax have been a controversial issue in the literature. Researchers argue that the impact of local SSB taxes on the consumption of sugary drinks is limited because (1) the policy increases cross-border (outside-of-tax jurisdiction) shopping, (2) the pass-through effect is greater for retailers than for consumers, and (3) the demand for sugary drinks is inelastic^{3,4}.

OBJECTIVE

Central to the debate on the desirability of the SSB tax are the market and welfare effects of this policy instrument. The determination of the system-wide market and welfare impacts of the SSB tax is the key objective of this paper.

METHODS

Theoretical Model

The study employs a multi-market framework of heterogeneous consumers and producers, which enables a disaggregation of the welfare impacts of an interest groups involved (i.e., consumers, producers and the suppliers of soda and their substitute products, 100% juices) and the determination of the cross-market effects of the policy.

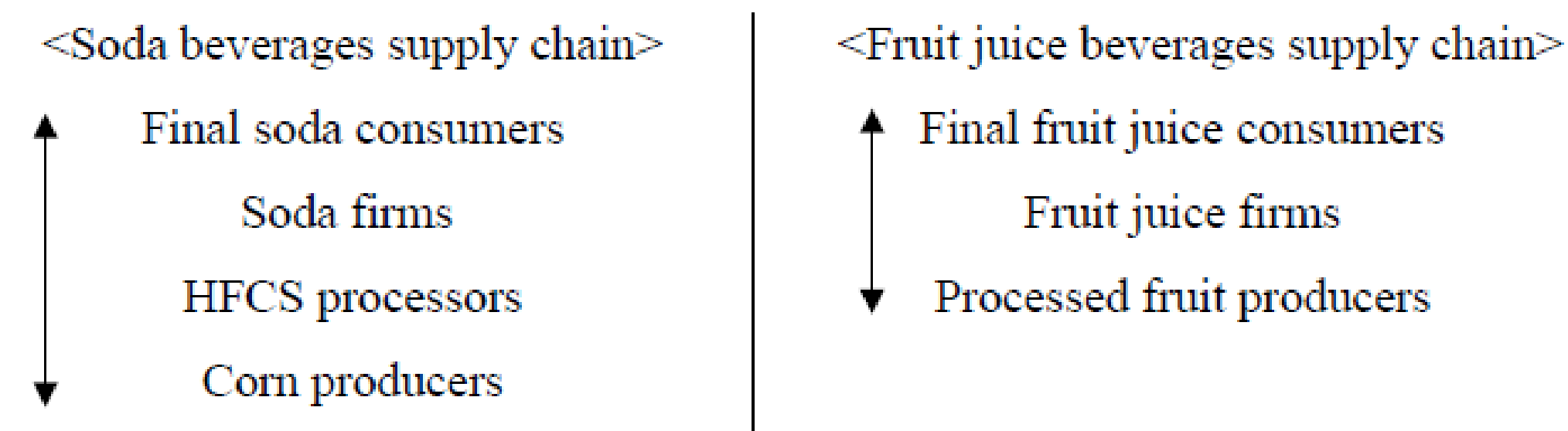


Figure 2. Supply chains of soda and 100% juice

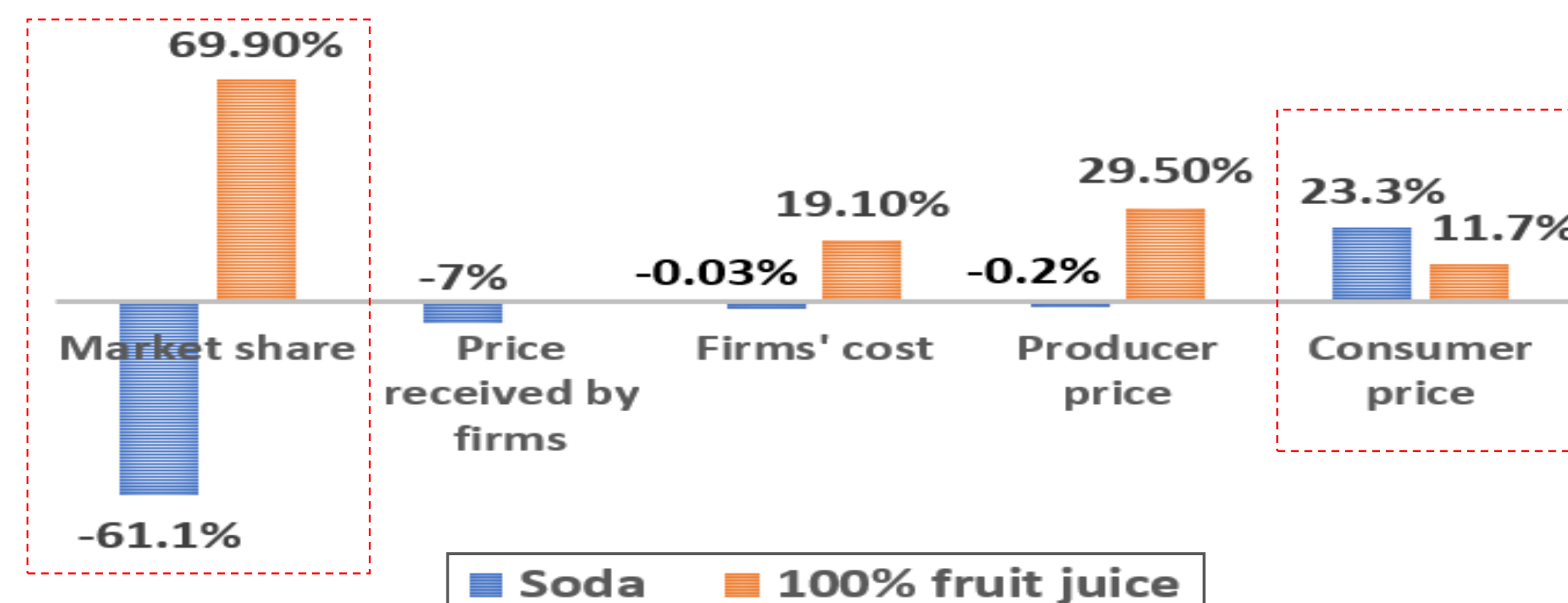
We consider (a) differences in consumer preferences for SSBs (soda) and non-SSBs (100% juice), (b) differences in producer agronomic characteristics, and (c) imperfect competition among soda and 100% fruit juice firms.

Simulation

We use consumer prices, production and market share data and estimated market power of U.S. soda and 100% juice firms for the period 2010-2018 to calibrate the model and quantify the market and welfare impacts of a nationwide 1 cent/oz tax on SSBs.

RESULTS

Market effects of the SSB tax



Welfare impacts of the SSB tax

Groups	Welfare changes (% of total)	
Consumers	Total	-\$8.9 billion (pre-tax market value: \$105 billion)
	Soda	-\$4.1 billion (45%)
	Switch from soda to juice	-\$3.9 billion (44%)
	100% Juice	-\$0.9 billion (11%)
Producers	Crop	-\$6.8 million (pre-tax market value: \$19.7 billion)
	Fruit	+\$1.8 billion (pre-tax market value: \$14.2 billion)
Firms	Soda	-\$5 billion (-81.7%)
	Juice	\$6.1 billion (+52.9%)

Health externalities

We consider the healthcare costs saving from excessive SSBs consumption. If a penny-per-ounce SSB tax is implemented, the private healthcare cost-savings associated with obesity and cardiovascular disease for ten years would be \$48.1 billion (in 2014 dollars), then, consumer welfare losses from \$74.4 billion to \$54.2 billion (in 2021 dollars) for over a ten-year period would reduce the health costs from the policy. Additional healthcare cost savings from other relevant diseases, such as diabetes, would further reduce consumer welfare losses from increased prices under a national SSB tax policy.

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