Erika Solem
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The Sugar Reform Act of 2015- An Economic Analysis

Senators Jeanne Shaheen (D-NH), Mark Kirk (R-IL), and Pat Toomey (R-PA) have

sponsored the Sugar Reform Act of 2015 in order to amend the Federal Agricultural

Improvement and Reform Act of 1996[1]. The U.S. government has been protecting the domestic

sugar industry for decades through price guarantees to sugar producers, marketing allotments to

limit the quantity of sugar sold by processors, and import quotas[2]. The price of sugar in the

United States has remained at least double the price of sugar in the international market, which

the supporters of this bill believe greatly harms American consumers[3]. If enacted, this bill will

adjust the currently implemented tariff-rate quotas for cane and refined sugar to provide an

adequate supply of sugar at a more reasonable price in the domestic market[4]. In essence, this bill

hopes to open the U.S. sugar market up to global free trade in order to bring the price of sugar in

the United States down to the average world price.

The Sugar Reform Act of 2015 will affect many aspects of the U.S. sugar market if it is

implemented. In order to analyze its potential impact on price, I will focus on the influence of an

increase in the U.S. import of sugar. Although this is only one part of the proposed bill, I believe

it will have the most traceable and direct effect on the price of sugar. In this paper I define U.S.

supply of sugar as its combined production and imports, while I define demand as total industry

and consumer demand for sugar. Although a change in the U.S. sugar market will likely also

affect the world sugar market, I will only focus on the domestic effects of this bill on the change

in quantity and price of sugar in the United States.

[1] Senate- Agriculture, Nutrition, and Forestry. *Sugar Reform Act of 2015*. S. 475. 114th Congress sess. (2015).
[2] Beghin, John C., and Amani Elobeid. 2015. The impact of the U.S. sugar program redux. *Applied Economic Perspectives and Policy* 37 (1): 1
[3] Sterk, Ron. 2015. **Senators introduce sugar reform act of 2015**. *Food Business News* 2015.
[4] Senate.

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The total supply of sugar in the United States domestic market in FY 2015 was

261,120,552 short tons. The monthly average of sugar supply was 13,743,187 short tons[5]. The

average domestic refined sugar price in FY 2015 was 64.5 cents per pound or $1,290 per ton[6].

Therefore, the equilibrium quantity in the United States sugar market was 261,120,552 short tons

and the equilibrium price was 64.5 cents per pound (see Figure 1). The average global price for

refined sugar in FY 2015 was 17.07 cents per pound or $341.4 per ton[7]. This means in FY 2015,

the U.S. domestic price of sugar was 3.7 times more than the global price. After consulting a

variety of sources and studies, I have found that the elasticity of demand for sugar in the U.S.

market ranges from -0.1 to -0.6[8]. Although this is a wide range, demand for sugar is consistently

inelastic, meaning that demand is not very responsive to a change in price. If the Sugar Reform

Act is implemented some time in FY 2016, I expect that the domestic supply of sugar will

increase due to the lifting of bans on the import of the good.

It is impossible to predict the exact amount that the United States will import in the first

year after the Sugar Reform Act is implemented, but for my analysis I would like to assume that

in FY 2017 (the first full year this policy will be in effect if implemented sometime in FY 2016)

the equilibrium quantity of the domestic sugar supply will increase by 50 million short tons. This

means that in FY 2017, the supply curve of the sugar market will shift significantly outwards

(see Figure 2). Since the literature surrounding this policy suggests there is not enough sugar in

domestic supply, I have framed my estimate to show an optimistically large increase. The

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[5] United States Department of Agriculture. 2015. *Monthly estimates of fiscal 2015 U.S. sugar supply and use.* USDA Economic Research Service, Table 25.
[6] ———. 2015. *U.S. retail refined sugar price, monthly, quarterly, and by calendar and fiscal year.* USDA Economic Research Service, Table 6.
[7] ———. 2015. *World refined sugar price, monthly, quarterly, and by calendar and fiscal year.* USDA Economic Research Service, Table 2.
[8] Wohlgenant, Michael K. July 12, 2011. Sweets for the sweet: The costly benefits of the U.S. sugar program. *American Enterprise Institute*.

resultant equilibrium quantity is then 311,120,552 short tons, which is a 19.15% increase from

the original quantity. In order to determine the new equilibrium price, I divided the percent

change in quantity by an elasticity of demand of |-0.3|[9]. The resultant percentage change was |-

63.83%|, which translates into a new equilibrium price of 23.33 cents per pound—a value quite

close to global price. Since demand for sugar is fairly inelastic, a significant increase in the

quantity supplied results in a comparatively larger decrease in price.

Since my calculation of the new equilibrium price of sugar is reliant on the elasticity of

demand as well as the increase in quantity, I tested this formula for three other elasticity and

quantity values to see the range of effects (see Figure 3). Although each elasticity of demand I

tested is inelastic, the difference in their values shows the magnitude of the effect on price. I used

quantities showing a 10 million short ton increase (3.83% increase), a 25 million short ton

increase (9.57% increase), and the larger 50 million short ton increase. Based on my calculations,

the closer the elasticity of the market is to zero, the greater the percent change in price. For an

elasticity of |-0.2| at the largest quantity, the price of sugar decreased from 64.5 cents per pound

to 2.74 cents per pound. While for an elasticity of |-0.6| at the same quantity, the price of sugar

only dropped from 64.5 cents per pound to 43.91 cents per pound. At the smaller increase in

quantity supplied, the price between the different elasticity values only changed by a few cents.

In the most inelastic market, the price only dropped from 64.5 cents per pound to 52.15 cents per

pound, while in the least inelastic market, price only dropped from 64.5 cents per pound to 60.38

cents per pound. The difference in these two values compared to the prices in the market with the

50 million short ton increase is much less dramatic. Although with a more moderate increase in

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[9] I chose an elasticity of |-0.3| for the calculation in my graphic because it is in the middle of the range. Formula used for calculations is the formula for elasticity of demand: $Ed=\%\Delta Qd/\%\Delta P$

quantity there is still a notable decrease in price, it is not as momentous as a market with a greater increase in quantity supplied. It is important to note that the change in price is a direct result of the change in quantity, rather than the change in elasticity of the market.

Although these calculations are based on an estimate of the policy's impact on supply, it is clear that the inelastic quality of the market plays an important role in determining the magnitude of the effect. If it is highly inelastic (elasticity of 0 to |-0.25|), a significant increase in quantity supplied could result in a drastic drop in price of sugar. And if the market is only slightly inelastic, a significant increase in quantity supplied will result in a smaller drop in the price of sugar. The steeper (and more inelastic) the demand curve is, the greater the price will drop relative to an increase in quantity supplied. Therefore, the most dramatic drop in sugar price will result from a significant (greater than 10%) increase in the sugar supply in a highly inelastic market. When policymakers consider the best mode of implementation for this policy, they must assess the elasticity of the domestic demand along with predicted increase in supply to determine the magnitude of the potential effect on sugar price.
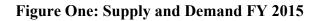
The U.S. sugar market is extremely complicated because it is integrated with a diverse range of domestic and global industries. A change in the price of sugar will affect the markets for processed foods, sugar substitutes, plastics, and even fuel[10]. If we allow the quantity of sugar imported to go unchecked, many domestic producers could have trouble competing with the cheaper world price. Sugarcane and sugar beet farmers are price takers, and could therefore be the most negatively affected by this policy. Refined sugar also has many substitutes like high fructose corn syrup or sucralose, which are industries likely to be impacted by a more affordable

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[10] Beghin, John C., and Amani Elobeid. 11.

and abundant sugar supply[11]. Furthermore, sugar is a global commodity. Any changes in the U.S. market will likely affect the global market in a multitude of ways that are difficult to predict. It is hard to determine all of the economic influences this policy may have, but it is important that policymakers consider its potential impact on related markets before it is enacted. Although a significant increase in the sugar supply will lower domestic price in an inelastic market, there are a variety of unintended economic consequences that could result.
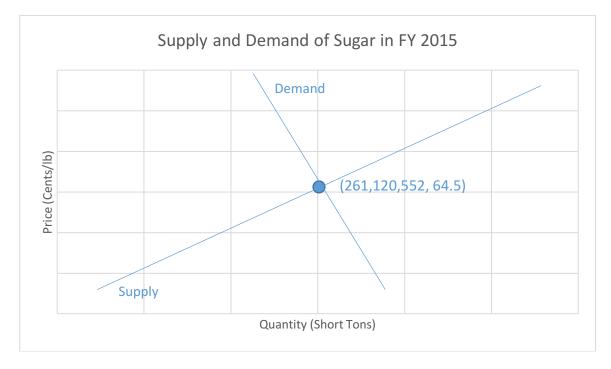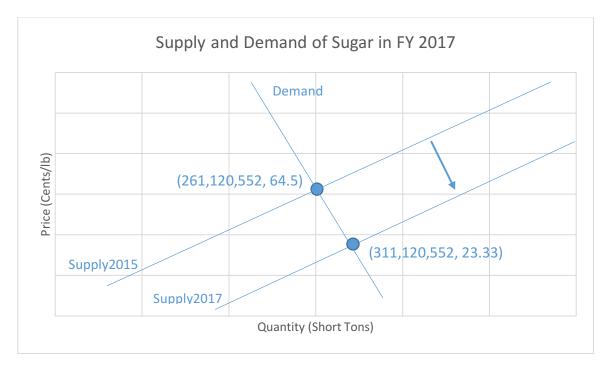
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[11] Wohlgenant.

Figures

Figure One: Supply and Demand FY 2015

Supply and Demand of Sugar in FY 2015

Demand

(261,120,552, 64.5)

Supply

Price (Cents/lb)

Quantity (Short Tons)

Figure Two: Supply and Demand FY 2017

Supply and Demand of Sugar in FY 2017

Demand

(261,120,552, 64.5)

(311,120,552, 23.33)

Supply2015

Supply2017

Price (Cents/lb)

Quantity (Short Tons)

Figure Three: Price with Varying Quantity and Elasticity

Quantity (short tons)	Elasticity		
	0.2	**0.4**	**0.6**
271,120,552	52.15	58.32	60.38
286,120,552	33.64	49.07	54.21
311,120,552	2.74	33.62	43.91

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