

Costa, Cinthia; Burnquis, Heloisa; Guilhoto, Joaquim

Conference Paper

The importance of special safeguard tariffs (SSG) for Brazilian sugar exports

55th Congress of the European Regional Science Association: "World Renaissance: Changing roles for people and places", 25-28 August 2015, Lisbon, Portugal

Provided in Cooperation with:

European Regional Science Association (ERSA)

Suggested Citation: Costa, Cinthia; Burnquis, Heloisa; Guilhoto, Joaquim (2015) : The importance of special safeguard tariffs (SSG) for Brazilian sugar exports, 55th Congress of the European Regional Science Association: "World Renaissance: Changing roles for people and places", 25-28 August 2015, Lisbon, Portugal, European Regional Science Association (ERSA), Louvain-la-Neuve

This Version is available at:

<https://hdl.handle.net/10419/124564>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

The importance of Special Safeguard tariffs (SSG) for Brazilian sugar exports

Working Paper submitted to the
2015 ERSa Congress

by

Cinthia Cabral da Costa

Ph.D. Researcher, Brazilian Agency of Agricultural Research (EMBRAPA), XV de novembro 1452, 13560-970 São Carlos, SP, Brazil; email: cinthia.cabral.da.costa@gmail.com

Heloisa Lee Burnquist

Associate Professor, University of São Paulo, Av. Pádua Dias 11, 13400-970 Piracicaba, SP, Brazil; email: hlburnqu@usp.br

Joaquim José Martins Guilhoto

Professor, University of São Paulo, Luciano Gualberto, 908, 05508-010 São Paulo, SP, Brazil; e-mail: guilhoto@usp.br

Abstract

This paper presents a critical analysis of the SSG and a simulation of its effects for Brazilian sugar exports to countries such as the United States (US) and the European Union (EU) bloc. A first stage involved the identification of tariff lines (TL) for the EU and the US sugar imports from Brazil during the period of 1995 to 2013. Next, WTO notifications about SSGs were examined to identify when the measure was applied for sugar by these countries at each year, since 1995. For the years that the price-based SSG applied, the value of this additional tariff was calculated for each of the relevant TLs. This information was used, with price elasticities, to obtain the corresponding change in imports. Finally, the effect of an increase in Brazilian sugar exports in the absence of SSG tariffs was calculated and also the overall impact on Brazilian economy using its input-output matrix. The results indicated that the additional tariff due to SSG catch up 90% for raw sugar in EU and 30% for white sugar in US in years 1999 and 2002, which the additional tariffs were highest. In period of 2010-2013 the SSG did not work once the sugar price was higher than trigger price in both countries. The additional tariffs applied by EU were always higher than those applied by US. We estimated that the impact of the value of sugar that was not exported to the EU and US markets due to application of SSG tariffs in period 1995-2013 was equivalent to BRL 42

billion in the production value for all economy at 2013 prices (or US\$ 20 billion) and almost BRL 22 billion in GDP for this country. This mean that Brazil has failed to produce, in this period, almost 0.8% of its GDP due to the application of this trade policy. Considering that the SSG price-based mechanism is particularly important when international market prices are low, these results suggest that the this policy intervention can be highly perverse as it translates into decreased domestic production in both, exporting and importing countries, and dampened world prices as the excess demand is restricted.

Keywords: Sugar, European Union, United States, input-output matrix

1. Introduction

SSGs constitute a set of WTO provisions through which a WTO Member country can temporarily insulate its domestic market from short-term fluctuations of the international prices by imposing a tariff rate that is higher than the bound tariff rate on the import of a particular commodity. Hence, the SSG mechanism is also temporary and short-term and not meant to insulate countries from long run price signals (Pal and Wadhwa, 2006).

When the multilateral trade agreement was interrupted by the second time in July 2008 - after the 2006 interruption –, advocates of trade liberalization considered that this was not a disaster, since the postponement of a "final" agreement did not mean that the actual degree of liberalization of global trade would be far less than would have been the case if a consensus had been settled at that time. It has been argued that the negotiations were not expected to reduce the actual protection in global trade, since they should establish limits as well as the form of protection that a country could resort to in different areas. The point to note, however, is that an expressive asymmetry remains in the world trading system. This is reflected, on the one hand, by the tariff and non-tariff barriers to which various countries - including the United States (U.S.) and the European Union bloc (EU) - can resort in order to protect their agricultural sectors, whenever their competitiveness is under challenge. On the other hand, the asymmetry is also reflected in the pressure maintained on developing countries for the exposure of their agricultural sector to competition from imports, even though agriculture is a far more important source of livelihood in these countries than the protected agricultural sector is in developed economies.

Safeguards are temporary restrictions on imports adopted under special circumstances such as a sudden expansion of imports (WTO, 2002). This instrument was primarily introduced under the WTO Safeguards Agreement, but the URAA adopted special provisions on safeguards (Article 5) that apply only to agricultural products subject to tariffication. The

safeguard duties for agriculture can be triggered automatically when the import volume of agricultural products rises above a certain level (volume trigger), or if prices fall markedly below historical prices (price trigger). In addition, it does not require demonstration that serious injury is being caused to domestic firms (WTO, 2002).

Although the SSG mechanism was created to deal with problems that the liberalization of agriculture might create, the provision to ‘remain in force for the duration of the reform process’ indicates that the agreement provides no end date for its use. In legal terms, the SSG mechanism is in place until Members, by formal agreement, decide to end it. A major issue is that this leads countries to impose a tariff in excess of the maximum (bound) rate of tariff permitted under the Uruguay Round commitments. It is also important to note that the SSGs were available only for countries that adopted tariffication/Tariff-Rate Quota (TRQ) in the market access negotiations of the Uruguay Round. Currently, 39 out of all the 160 WTO Members have access to SSGs (Pal and Wadhwa, 2006).

This paper evaluates the consequences of the asymmetry related to the form taken by the special safeguards (SSGs) as introduced by the Uruguay Round Agreement on Agriculture (URAA) in 1994, and the potential problems due to the lack of modifications in its basic rules although there have been important changes in international trade relations since its introduction, and also a forecast for coming years.

The trade relations selected to illustrate this problem are those involving major players in the international sugar market, such as Brazil, the United States (U.S.) and the European Union bloc (EU). This market was selected because it is appropriate to explore the SSG mechanism under the argument to be developed in this research. Brazil is a major exporting country in this market, responsible for about 50 percent of global exports. On the importing side, the United States (U.S.) and European Union (EU) are important players who reserved themselves the right to apply SSG tariffs on sugar (WTO, 2014).

The next section describes the method and data used in this analysis; section 3 presents the results, and conclusions are discussed in section 4.

2. Methods and data

Although, in general, SSGs can be applied based on price or quantity, the sugar market has been subject only to price triggers.

The identification of the incidence of SSG additional tariffs requires an investigation of the notifications presented by the importing countries to the WTO. These notifications inform

whether the measure was adopted or not by the importing countries on a yearly basis. However, there are several shortcomings with respect to the content of the SSG notifications to the WTO. In general, neither importing countries are obliged to specify the rates of additional tariffs applied, nor are the exporting countries that will be subject to the mechanism. Therefore, to identify the impact of SSGs, this study considered an average additional tariff, calculated as the value that could be applied on the Brazilian exports. This average value has also been used to determine how the Brazilian sugar exports would have been impacted if this additional tariff had not been applied.

The following item describes the method used for these calculations. Section 2.1 presents the method to calculate the volume of sugar that Brazil could have been exporting since 1995 if SSGs had not been placed and, finally, the total impact on the Brazilian economy is estimated, as described in Section 2.2.

2.1 Calculation of the impact of SSGs on Brazilian sugar exports

The first stage of this research involved identifying tariff lines (TL) for the European Union (EU) and the United States (U.S.) on sugar imports from Brazil during the period of the analysis (1995-2013). This data was obtained from Eurostat (2014) and USITC (2014).

Next, the WTO notifications were examined in order to verify whether SSGs were placed for those TLs and countries in each year since 1995 (WTO, 2014b), when the SSG system was implemented. For the years when the price-based Special Safeguard was applied, the value of the additional tariff for each of the relevant TLs was calculated. This calculation required the identification of the price that was subject to SSGs. This price could be obtained as the unit value of the Brazilian import for each tariff line on a yearly basis, as the ratio between trade flow value and its volume. However, whenever an SSG was applied to an over-quota tariff on sugar by the EU and U.S. and also depending on the quota management, the price paid to exporters within the quota could be higher than the international price, due to rents from in-quota imports¹. Therefore, if the importing country traded over-quota and paid SSG tariffs as notified, the CIF paid by the importer should be equal to the export price plus freight (this means that the price does not include the in-quota rent, that is what happens to the price of products imported outside the quota). Then, the CIF price (P) in each year was obtained by adding, to Brazilian FOB unit values (obtained in Brazil, 2015), the average

¹ The importing country pays the in-quota tariff (T_{in}) on sugar imports up to a threshold volume (q) per year. Beyond this volume, the importing country pays the over-quota tariff (T_{out}), higher than the in-quota tariff, on sugar imports. Figure 1 describes this behavior. The rents from in-quota imports represent the difference between the import price plus in-quota tariff and the price in the domestic market of the importing country.

freight between Brazil and each market analyzed. The freight in each year was estimated by OECD (2015) and IGC (2015).

Using the trigger price² and the SSG mechanism explained in the URAA (WTO, 2014a), the SSG additional *ad valorem* tariff was calculated for each TL, year and importer. The average additional tariff calculated for the TLs was applied to the Brazilian export unit value for each year when imports were subject to SSGs. Whenever SSG were applied, the import demand curve for this product/country can be represented as *ID* in Figure 1(a). The domestic price for this product is, at least, this total amount paid by the importer. Consequently, as described in the graphic that represents the domestic market of the importer country (Figure 1(b)), the quantity imported equals 0-Q1. However, if SSGs were eliminated, the domestic price, which is defined by the CIF import price (*P*) plus taxes (*T_{out}* for the over-quota tariff and *T_{SSG}* for SSG additional tariff), changes from *P_{dom}* to *P'_{dom}* and the import volume would be 0-Q1 to 0-Q2.

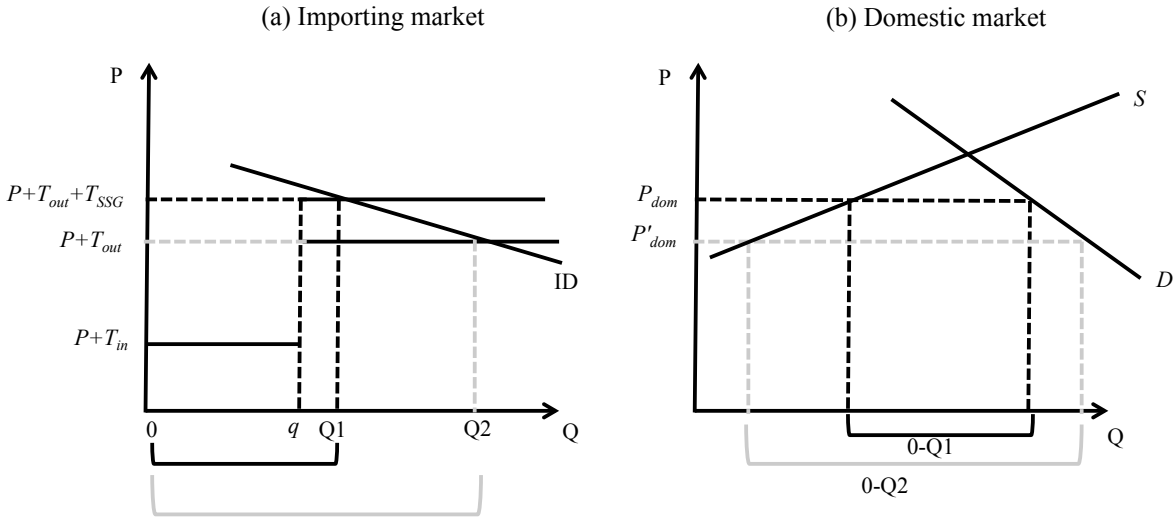


Figure 1. Importing market, which applies an over-quota tariff and SSGs on products, and the impact of SSGs on imports.

Source: Elaborated by the authors.

To estimate the impact caused by the use of this additional tariff (*T_{SSG}*) on production and consumption in the importing country (ΔM), additional information is needed, such as the volumes produced (*S*) and consumed (*D*) on a yearly basis, as well as the estimated price elasticity of supply (ϵ) and demand (η). These volumes were obtained by FAO (2014), and

² The trigger price is based on average import unit values during a fixed reference period (i.e. 1986-88). The additional tariffs due to SSGs (described as *T_{SSG}* in Figure 1) are only introduced when the import price is lower than the value of the trigger.

the elasticities used in this study are those estimated and presented by FAPRI (2014). The sugar volume that would not be imported due to the SSGs was calculated by using Equation 1.

$$\Delta M = [(P_{dom} - P'_{dom})/P_{dom}] \cdot \eta \cdot D - [(P_{dom} - P'_{dom})/P_{dom}] \cdot \varepsilon \cdot S \quad (1)$$

The quantity of the product that could not be actually exported (ΔM_{BR}) is obtained by multiplying the change in total import volume (ΔM) by the share of the Brazilian exports for each of the corresponding years. In equation (1), the first term ($[(P_{dom} - P'_{dom})/P_{dom}] \cdot \eta \cdot D$) represents the impact on demand side and, the second term ($[(P_{dom} - P'_{dom})/P_{dom}] \cdot \varepsilon \cdot S$), indicates the impact on the supply in importer country. When this volume is multiplied by the Brazilian FOB price, the value of exports that could not be traded is obtained. In order to estimate the impact in the coming years, we used the supply and demand quantities, as well the Brazilian share, observed in 2013.

This quantity (ΔM_{BR}) multiplied by the price paid to producers provides a value to be used in the estimation of the impact on the Brazilian economy, using an input-output matrix for this economy. The next section describes the method used in this analysis.

2.2 Calculating the impact of the SSGs on the Brazilian economy

This study sought to analyze the impact of the expected losses in its sugar exports considering the use the SSG mechanism by importing countries on the Brazilian economy. The approach adopted to evaluate the magnitude of these effects involved the relationships among all the Brazilian sectors with the sugar sector, which would be directly affected. The analysis is based on a matrix of technical coefficients derived from the input-output matrix (IOM) of the Brazilian economy.

This matrix (A) represents the relationships between intermediate demands. The production value of the economy (matrix X) can be described as:

$$AX + Y = X \quad (2)$$

where Y is the matrix of final demand. This can be rearranged and expressed as:

$$X = (I - A)^{-1} Y \quad (3)$$

where X represents the output of the economy and $(I - A)^{-1}$ can be used to calculate the direct and indirect impacts of the changes in the Brazilian demand (Y) and is described as the Leontief inverse matrix (Miller & Blair, 2009). These are the type I multipliers.

We can also obtain the income effects caused by an increase in household demand resulting from the direct and indirect effects of changes in economic activity, identified as the

type II multipliers. This last impact is obtained assuming that household activities are incorporated as additional economic activities. In this case, the Leontief inverse matrix is derived from a matrix \bar{A} of technical coefficients, where household consumption is treated as endogenous, hence the sector multipliers are calculated from the matrix $(I - \bar{A})^{-1}$. Thus, the total output of the economy resulting from changes in the final demand is obtained as follows:

$$\bar{X} = (I - \bar{A})^{-1} * Y \quad (4)$$

where $(I - \bar{A})^{-1}$ is the new Leontief inverse matrix.

The impact multipliers, i.e. matrices $(I - A)^{-1}$ and $(I - \bar{A})^{-1}$ were used to calculate the impact on the Brazilian economy of the changes in Brazilian sugar exports (Y). This change in exports represents the shock applied on the Brazilian economy.

The shock on the Brazilian sugar exports was calculated as the volume of sugar that the country did not export due to the SSGs applied (ΔM_{BR}), since 1995, multiplied by the producer price in Brazil for the same year of the employed input-output matrix (IOM). The IOM used in this calculation considered the structure of the economy in 2009. It was obtained by Guilhoto (2014), where the sugar sector is distinguished from the whole economy and, consequently, can be used to verify what happens if a shock occurs only in that sector.

The impacts on the Brazilian economy were measured not only in the form of the value of production (X), as described by equation (3). Other impacts, such as the value of remuneration (Z_R), the value of imports (Z_M), the Gross Domestic Product – GDP (Z_{GDP}) and the value of taxes (Z_T) were also calculated. For that, the production value (X) is multiplied by the coefficient for each of these variables, as described in equation (4):

$$Z_{(nx1),k} = [\text{diagonalized}(C_{(nx1),k})]_{(nxn),k} * X_{nx1} \quad (5)$$

where $k = R$ (value of remuneration), M (value of imports), GDP (value of the Gross Domestic Product), or T (value of the government tax collection).

The coefficients C_k were obtained by using the input-output matrix and dividing the value of each variable (C_R , C_M , C_{GDP} and C_T for each of the n economic sectors) by its respective production value (X).

3. Results

The first stage of this research consisted in the identification of the tariff lines (TL) which were relevant in the EU and the U.S. for sugar imports from Brazil, from the year in which SSGs started to be placed, to the last SSG notifications to the WTO, i.e. from 1995 to 2013. Three TLs were identified for each market. In the EU these were identified with an 8-digit tariff line such as: 17011110, 17011190 and 17019910. For the U.S., the relevant tariff lines were identified as: 17011150, 17019158 and 17019950. It must be noted, however, that a change was introduced in the Harmonized System (HS) for sugar in 2012, when the HS6 170110 was changed to HS6 170114. It should be noted that the in and over-quota TLs are not the same in the United States. Therefore, the important TLs identified for the U.S. market are those that represent the over-quota imports of Brazilian sugar.

In both markets (U.S. and EU), these three TLs represented 98% of the total sugar imports from Brazil in the period of the analysis. Additionally, these importers (EU and U.S.) reserved the right to apply SSGs to these three TLs.

Thus, the results are presented in two steps. Firstly, in subsection 3.1, we analyzed the impact of the utilization of SSGs since it was implemented in 1995, up to the most recent notifications given to the WTO. Secondly, we analyzed the possible impacts in the coming years, taking into account the different levels which sugar prices have been reaching and also the forecasted prices in the world market.

3.1 Impact of SSG during the period 1995-2013

An evaluation of the notifications given to the WTO by the EU regarding sugar shows that SSG measures were applied every year since 1995 for all sugar tariff lines (WTO, 2014b). The U.S. market did not apply SSGs only in 1995, 2001, 2007, 2008 and 2012 on raw sugar, and in 2008 this was only done for HS 17019950. We also observed that the import volume of HS 17019158 (for the U.S.) was relatively lower when compared to the other two sugar tariff lines.

Table 1 shows the SSG additional tariffs, expressed *ad valorem*, with respect to CIF prices (which were estimated as Brazilian FOB unit values plus freight) for the EU and the U.S. markets in the three TLs selected within the 1995-to-2013 period. We can see, by looking at this table, the SSG additional tariffs presented similar behavior for TLs and markets: Higher additional tariffs in the beginning of the 2000s and non-use of SSG tariffs in

the last four years of the analyzed period (2010-2013)³. This is expected since the price behavior for raw and white sugars should be the same and, in the most recent years, the utilization of SSGs was inhibited since international sugar prices were close to the trigger price.

As described in section 2.1, in order to examine the impact of the elimination of this additional tariff on production and consumption in the European Union and also in the U.S. sugar markets, the average value of those three additional tariffs was considered.

Table 1. Estimated SSG additional tariff considering the annual average unit value of EU and U.S. sugar imports from Brazil; period considered: 1995-2013

	EU			U.S.		
	17011110	17011190	17019910	17011150	17019158	17019950
1995	4.9%	16.6%	6.4%	-	-	-
1996	7.1%	20.7%	12.4%	-	-	-
1997	10.3%	27.0%	16.0%	0.8%	2.0%	9.3%
1998	22.2%	45.3%	29.1%	7.8%	24.9%	16.9%
1999	53.1%	92.6%	52.6%	25.9%	-	33.5%
2000	41.4%	75.4%	39.1%	18.3%	-	24.3%
2001	25.8%	50.6%	34.7%	0.0%	-	21.0%
2002	52.3%	91.5%	56.0%	25.4%	-	35.5%
2003	41.6%	75.7%	53.8%	22.3%	-	38.0%
2004	44.0%	79.5%	48.6%	20.1%	-	24.9%
2005	23.5%	47.0%	29.3%	8.4%	-	14.8%
2006	3.6%	14.3%	6.0%	-	-	1.5%
2007	10.9%	28.1%	14.0%	0.1%	-	7.9%
2008	3.0%	13.6%	7.1%	-	1.7%	-
2009	0.5%	10.3%	4.5%	-	-	-
2010	-	0.6%	-	-	-	-
2011	-	-	-	-	-	-
2012	-	-	-	-	-	-
2013	-	3.3%	-	-	-	-

Considering the equation (1) described in section 2, the volume of sugar that the EU and U.S. did not import due to the introduction of SSGs was estimated. The domestic price taking into account the use of SSG tariffs (P_{dom}) or not (P'_{dom}) was estimated for each sugar, market and year analyzed. For this, we also needed to include the over-quota import tariff, which is a specific tariff for all TL analyzed. In the European Union they are: 418 Euros/ton for TL 17011110; 552 Euros/ton for TL 17011190; and 531 Euros/ton for TL 17019910. In

³ The last notification made by the U.S. occurred in 2012 (WTO, 2014b).

the U.S., the specific values for the over-quota tariffs are: USD 330/ton for TL 17011150; USD 480/ton for TL 17019158; and USD 500/ton for TL 17019950.

The results, which represent the volumes of sugar which were not imported by the EU and U.S., is described, respectively, in Figures 2 and 3, for each year since 1995. For the EU sugar market, the price elasticity of demand used was -0.1 and the price elasticity of supply 0.6 (Fapri, 2014). Since price elasticities for the U.S. market were not available from this same source, the EU price elasticity was also used for the U.S.

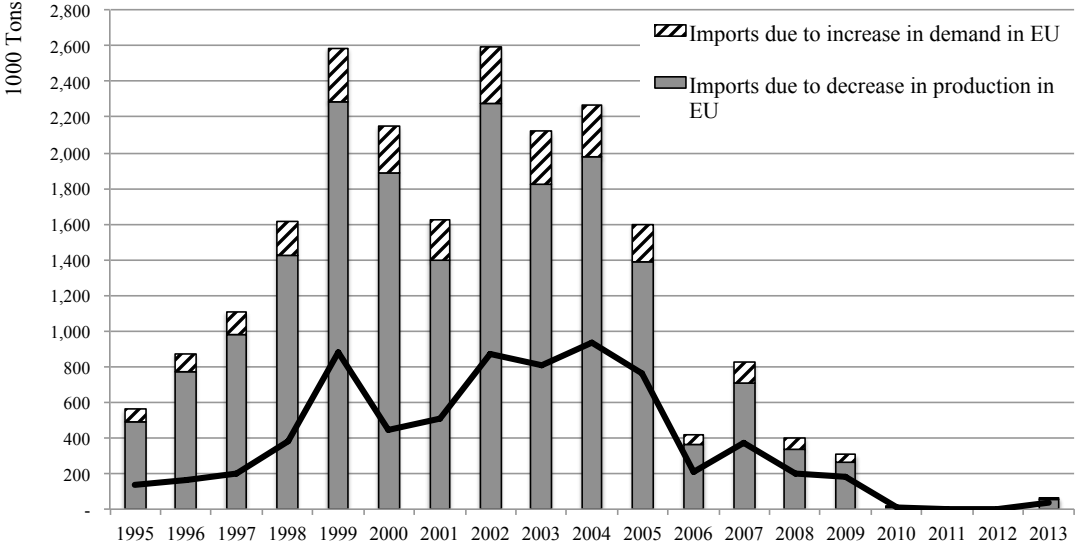


Figure 2. Estimated volume of sugar, which was not imported by the EU, globally and from Brazil, due to the utilization of SSGs in the 1995-2013 period.

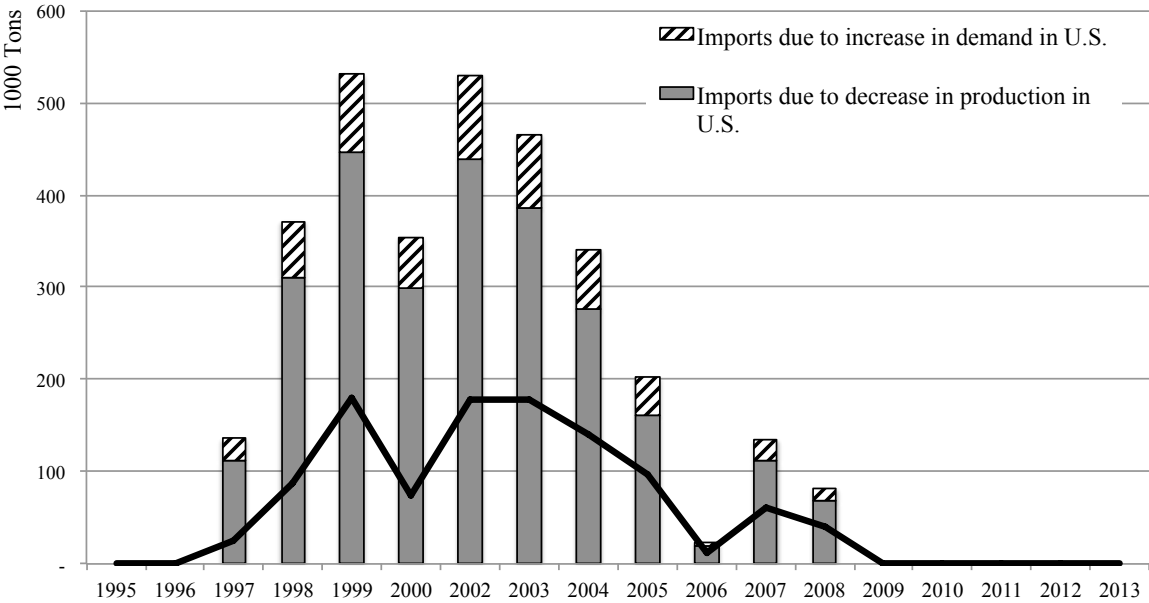


Figure 3. Estimated volume of sugar, which was not imported by the U.S., globally and from Brazil, due to the utilization of SSGs in the 1995-2013 period.

Figures 2 and 3 also show the impact on import volumes due to an increase in demand, once domestic prices went down, and due to reduced domestic production, once producer prices in the importing country decreased as well. The increase in import volumes due to decreased local production, in both markets, causes most of the impact, since the supply elasticity used (0.6) is greater than the elasticity of (-0.1). As it was described in subsection 3.3, if the values for these elasticities change, the impact on import volumes in these markets also varies. The magnitude of these variations is analyzed in that subsection.

As described in section 2.1, weighing this result in relation to the market-share of Brazilian global exports, the volume of sugar that Brazil did not export to the EU and to the U.S., in each year is described as the black line in Figures 2 and 3.

The results described in Table 1 and Figures 2 and 3 are due to the performance of sugar CIF import prices. The mechanism is: The more sugar import prices decrease, the higher additional tariffs fixed by the importing country are. As a result, the volume of sugar imported by this country decreases and, consequently, the volume of sugar exported by Brazil also decreases. Figure 4 illustrates this behavior, as well as the price of sugar imports and the volume of sugar that Brazil probably failed to export due to the SSGs set by both importing countries in our analysis.

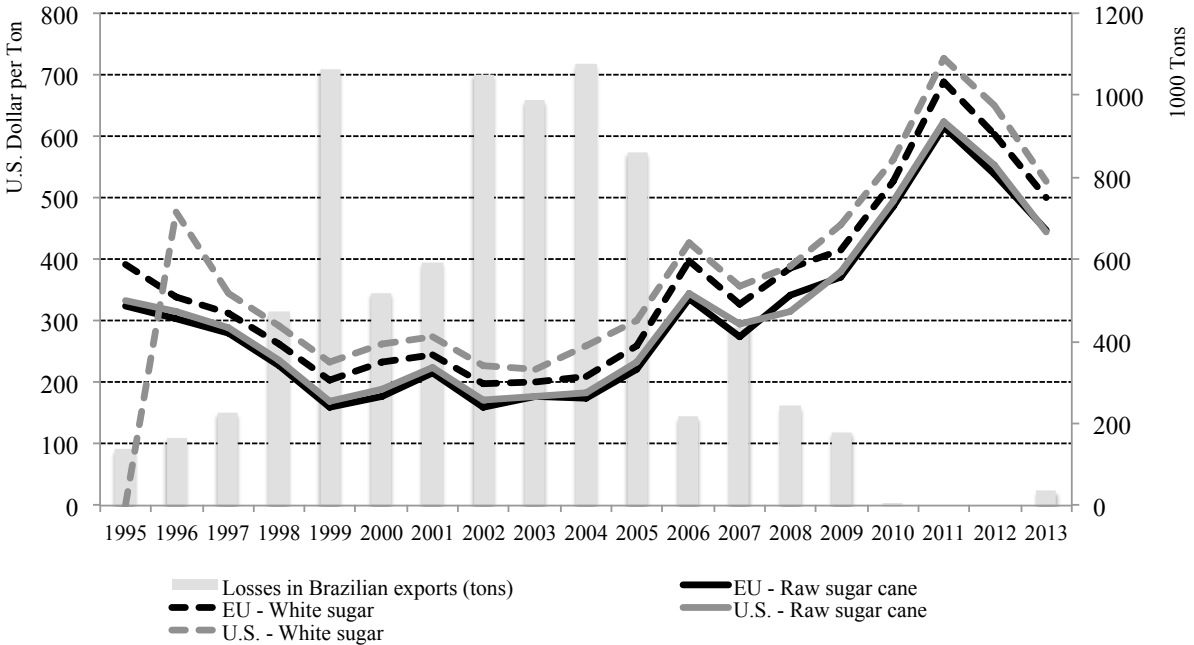


Figure 4. Sugar CIF import prices for the EU and U.S., and estimated sugar volume that Brazil failed to export due to the use of SSGs during the 1995-2013 period.

Finally, all the estimated volume of sugar that Brazil did not export to both the EU and U.S. markets due to SSGs in the 1995-2013 period results in 7,107 thousand tons in the case of the EU and 1,157 thousand tons for the U.S. Figure 5 shows the impact on the overall Brazilian economy due to the increased demand in the sugar sector (which is 8,264 thousand tons). In this figure, we represent the direct and indirect impacts on the Brazilian economy (type-I multiplier) and also add the impact due to income effects related to this first impact (type-II multiplier).

Considering the overall Brazilian economy, this increased demand in the sugar sector (8,264 thousand tons) results in a total (direct, indirect and income effects) impact of BRL 42 billion throughout this period (Figure 5), half of which being due to direct and indirect effects. This represents almost USD 20 billion in 2013 prices. This impact was obtained using the equations (3) and (4), which are described in section 2.2, respectively, in order to estimate type-I and type-II multipliers.

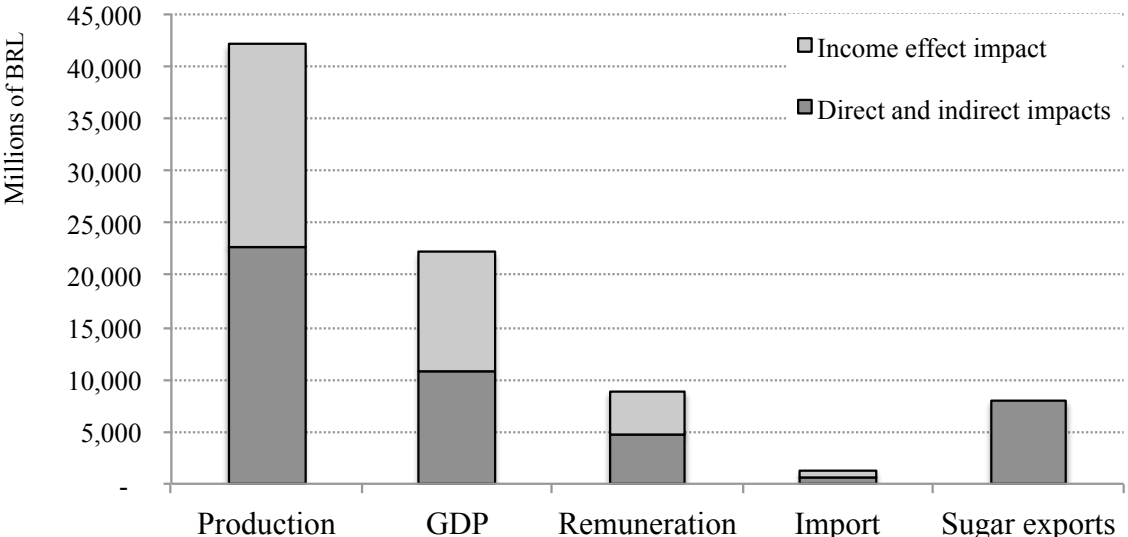


Figure 5. Estimated impact on the Brazilian economy due to the volume of sugar that the EU and U.S. declined to import from Brazil in the 1995-2013 period.

Using equation (5), we can also verify the impact of SSGs on other variables, such as GDP, remuneration and Brazilian imports (Figure 5). Figure 5 also includes the magnitude of the impact on sugar demand due to the increase in exports to the EU (6,873 million Brazilian Reais – BRL) and to the U.S. (1,119 million Brazilian Reais – BRL), in revenue for producers. The total impact on GDP throughout all these years was 22 billion Brazilian Reais, nearly half of which corresponds to increases in remuneration. In order to form an idea of the scale of this impact, let us consider that the total impact on production value and on

GDP for the analyzed period represents 0.8% of those values in the Brazilian economy of 2009. The increase in the value of imports can be negative for the Brazilian economy because it affects the trade balance. However, as it is shown in Figure 5, the impact of the increase in sugar exports caused by the elimination of SSGs is greater than the increase in the value of imports. Thus, this impact caused by the increase of imports is not enough to reduce the trade balance.

The results for the Brazilian economy described in Figure 5 reflect the impact for the nineteen-year period that was analyzed. However, as we can see in Figures 2 and 3, the additional tariff due to SSGs caused almost no impact after 2010. Thus, the annual impact on the Brazilian economy, disregarding the last three years, was BRL 2.8 billion in terms of total production value, and BRL 1.4 billion in terms of GDP.

This investigation is important to the Brazilian government because it indicates how serious the damage caused by the introduction of SSGs has been and, consequently, points out the importance of negotiations with the WTO concerning a system reform. However, despite the fact that in recent years this mechanism has not been of much relevance, the analysis done in the next subsection shows how significant SSGs could become in the coming years, strengthening the conclusion that negotiations should be conducted, by WTO members, for the elimination of SSGs.

3.2 What can we expect in the coming years?

In 2014, the sugar price in the world market decreased, reaching the levels observed in 2009. In this subsection we analyze the impact of two possible outcomes that the price level for sugar in the world market could achieve in the coming years, and evaluate the annual impact on the sugar trade and the Brazilian economy.

Table 2 shows the two potential sugar prices and their impacts. The forecast for free-market sugar prices made by the International Monetary Fund (IMF, 2015) shows that, in 2015, the average price will be 14% lower than the average price observed in 2014. Thus, we may consider two possible price behaviors for the coming years: one more optimistic, with prices becoming 10% lower, and another pessimistic, with prices becoming 20% lower than the average import prices observed in the EU and the U.S. in 2014.

We observed that the value of the annual average impact on the Brazilian production previously described (BRL 2.80 billion, discounting the 2010-2013 period) is between the annual effects on the Brazilian economy for the optimistic (which was BRL 1.90 billion) and pessimistic (which was BRL 2.87 billion) sugar price scenarios. However, we can also

observe that the additional tariffs due to the SSG mechanism for these forecast prices were lower than the majority of tariffs paid by the EU and the United States. While the average additional tariffs paid by the EU and the U.S. in the 1995-2009 period for the three TLs analyzed were 32% and 14%, the average tariffs estimated for the forecast price were 6.7% and 1.3%, respectively. These mean that, if there was a repetition of the past sugar prices, we could observe an even higher annual impact on the Brazilian economy than the one described in the aforementioned pessimistic scenario. This pessimistic scenario entails that, if the CIF sugar import prices drop 20% in relation to those observed in 2014, the EU and the U.S. would reduce their sugar imports by 791 and 149 thousand tons, respectively. Consequently, the reduction in Brazilian sugar exports would inflict the following annual losses on the Brazilian economy: BRL 2.87 billion in terms of total production value; BRL 1.5 billion in terms of GDP; BRL 0.6 billion in remuneration, and 42 thousand jobs.

Table 2. Forecast global sugar prices (USD/ton) and expected annual sugar volumes that the EU and the U.S. declined to import, and their annual impacts on the Brazilian economy, due to the use of SSGs.

		Unit	Optimistic (prices 10% below those observed in 2014)		Pessimistic (prices 20% below those observed in 2014)	
			EU	U.S.	EU	U.S.
In importing countries	SSG additional tariff*	%	3%; 13% and 4%	0%; 0% and 4%	7%; 20% and 6%	0%; 0% and 5%
	Volume left to import	1,000 tons	536.6	98.7	791.7	149.7
	Value left to export	USD 1,000	123,054	22,639	161,376	30,526
Total impact (direct, indirect and income effect) on the Brazilian economy	Increase in Brazilian production value	BRL million	1,937		2,871	
	Increase in Brazilian GDP		1,023		1,516	
	Increase in employment	Number	28,530		42,276	
	Increase in remuneration	BRL million	407		604	
	Increase in Brazilian imports		61		90	

Note: *the additional tariffs here described correspond, respectively, to: 17011110, 17011190 and 17019910 for the EU; and 17011150, 17019158 and 17019950 for the U.S.

In the optimistic scenario, with sugar import prices dropping 10%, the persistence of SSGs could cause an annual damage to the Brazilian economy of BRL 1.9 billion in terms of

production value and BRL 1.02 billion in terms of GDP. 28 thousand jobs could be lost per year. Such negative impacts on the economic variables correspond, in percentages of the Brazilian economy in the year of 2009, to approximately 0.03% and 0.05% (in the optimistic and pessimistic scenarios, respectively).

4. Discussion of the Results

The purpose of this study is to illustrate some consequences of the interruption of the multilateral negotiations under the Doha Round of the World Trade Organization (WTO) concerning the access of competitive developing countries (exporters) to commodity markets such as the sugar market in developed countries. This issue is relevant for discussions on the global sugar market, given the facts that it is one of the markets which have been most distorted by protectionism, and that it has been left out of most multilateral and preferential trade agreements.

This research identified that additional tariffs associated to the SSG mechanism applied by the EU resulted in a relatively strong restriction on their sugar imports throughout the period ranging from 1995 to 2013. Bearing in mind that Brazil is the largest sugar exporter in the global market, the restriction on Brazilian sugar exports was also substantial and became even greater when the impacts on the rest of Brazilian economy were considered. During this entire period, the Brazilian GDP could have grown by the equivalent of the sugar industry GDP in 2009. Moreover, some assumptions made in this study may have underestimated the results (the tariffs as well as the impacts caused by them). This may have occurred for two important reasons: Firstly, it should be considered that SSGs are only placed when the commodity price is below a certain threshold (trigger price), and thus when its price is relatively low. However, in this study, in order to calculate the additional tariffs, we used the average value of the imported units, resulting in values that are lower than the ones effectively used. Secondly, Brazil's share of global exports, which was used to allocate the volume by which Brazil exports could increase if SSGs were eliminated, is also underestimated, due to the considerable subsidies to exports that the EU provided in the analyzed period, as well as other trade barriers imposed to sugar imports.

References

BRAZIL. Brazilian exports. Available at: <http://aliceweb.mdic.gov.br/>. Accessed: January 20th, 2015.

- EUROSTAT – European Commission. International trade. Data. Database. Available at: http://epp.eurostat.ec.europa.eu/portal/page/portal/international_trade/data/database. Accessed: September 20th, 2014.
- FAO – Food and Agriculture Organization. FAOSTAT. Food Balance. Available at: <http://faostat.fao.org/site/291/default.aspx>. Accessed: September 24th, 2014.
- FAPRI – Food and Agriculture Policy Research Institute. Tools. Elasticities database. Available at: <http://www.fapri.iastate.edu/>. Accessed: September 20th, 2014.
- GUILHOTO, J.J.M. Database. Matrices. Available at: <http://guilhotojjmgen.wordpress.com/>. Accessed: September 14th, 2014.
- IGC – International Grains Council. Freight rates. Available at: <http://www.igc.int/en/grainsupdate/igcfreight.aspx>. Accessed: January 10th, 2015.
- MILLER, R.E., BLAIR, P.D. Input-Output Analysis: Foundations and Extensions. Second Edition. Cambridge: Cambridge University Press. 2009.
- OECD – Organisation for economic co-operation and development. Available at: <http://stats.oecd.org>. Find in themes: Globalization. Maritime Transport Costs. Accessed: January 10th, 2015.
- USITC – United States International Trade Commission. Trade DataWeb. Available at: <http://dataweb.usitc.gov>. Accessed: September 20th, 2014.
- WTO – World Trade Organization. Available at: http://www.wto.org/english/docs_e/legal_e/14-ag_01_e.htm#articleV. Accessed: September 14th, 2014a.
- WTO – World Trade Organization. Notifications. Available at: https://docs.wto.org/dol2fe/Pages/FE_Search/FE_S_S003.aspx. Accessed: September 18th, 2014b.