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Can new legislation in importing countries represent new barriers to the development of an international ethanol market?

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ABSTRACT

The use of ethanol as a fuel has been attracting increasing attention in countries that are interested in reducing their dependence on imported oil and lowering their greenhouse gas emissions. Despite this growing interest, the global ethanol market is still incipient because of the small number of producing countries, the lack of technical standardization and the existence of tariff and non-tariff trade barriers. New laws have taken effect in 2010 in the United States and the European Union imposing domestic requirements for sustainable production of ethanol. Although these are generally positive developments, they can create greater difficulties for the development of an international ethanol market. This work examines the technical barriers posed by these new laws and how they can be resolved under the auspices of the World Trade Organization. In addition, this work analyses the Brazilian and Caribbean cases discussing to what extent these new technical barriers will affect ethanol production and exports arising from these countries.

1. Introduction

Since 2004 several countries have announced their intention of mandating the blending of ethanol in gasoline, in percentages ranging from 5% to 10%,[1] with the objectives of increasing energy security by reducing dependence on imported oil and of lowering their greenhouse gas (GHG) emissions (Zah and Ruddy, 2009). As a consequence, many of these countries want to develop domestic production of ethanol instead of importing it (Howse et al., 2006; BID, 2007). However, most of these countries' domestic output is far below the levels needed, so that importation is the only short-run alternative[2] (Zah and Ruddy, 2009).

Although these countries represent a substantial source of possible demand that can spur the development of the global ethanol market in the short term, there are some pecularities of this incipient market that must be resolved to allow this market to reach its full potential.

The first of these is the small number of producing countries, of which the United States (US) and Brazil are the leaders. However, while nearly all US's output is consumed internally, Brazil has excess production, which is exported. In 2008, the US produced 9.2 billion gallons (34.9 million m^3) of ethanol (RFA, 2009) and Brazil 7.3 billion gallons (27.5 million m^3) (UNICA, 2009a), of which 20% was exported, mainly to the US market (30% of total exports) (MDIC, 2009).

The second point is the existence of tariff barriers and subsidies, used by many countries to foster development of their national industries. This distorts the international market by favoring inefficient production and hindering the entrance of ethanol from more competitive producers (Howse et al., 2006). Besides economic losses, there are also environmental ones because of the use of more fossil fuels for production and energy over the product's life cycle (Howse et al. 2006; Zah and Ruddy, 2009).

Of course, import tariffs and subsidies are also utilized to protect other industries, though to a large extent these are limited by international agreements (WTO, 2007). Under the Harmonized System (HS) (WCO, 2008), developed by the World Customs Organization (WCO), the World Trade Organization (WTO) has established tariff limits (bound tariffs) for products traded in the international market, creating a legal obligation not to impose excessive duties and limiting the subsidies that can be granted to a given industry (Howse et al., 2006; WTO, 2007). In relation to ethanol, according to Howse et al. (2006), its classification in the

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[1] As early as 1931, Brazil used gasoline containing 5% ethanol (Santos, 1985). Currently the percentage is 25% (MAPA, 2010a, 2010b).

[2] Various raw materials can be used to produce ethanol. Of these, sugarcane is the most economically attractive because of its high energy content, as pointed out by IEA (2004). It is believed that although cellulosic ethanol will become economically feasible in the medium for long term, sugarcane ethanol will continue to be very competitive (EPA, 2010).

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HS is based on its chemical composition as undenatured (22.07.10) and denatured (22.07.20) alcohol, "but these classifications go to its chemical composition, and there is no separate classification or sub-classification specific to fuel ethanol as opposed to ethanol used for other purposes" (Howse et al., 2006).

Fuel ethanol is an undernatured alcohol, a classification that also includes ethanol used for other purposes besides fuel. Besides this, ethanol is considered an agricultural product, and as such is subject to the WTO Agreement on Agriculture (AoA), which defines rules on the application of tariffs and subsidies. In contrast, biodiesel has its own classification in the HS and is considered to be an industrial product (Howse et al., 2006).

Finally, there are also technical barriers to commerce in ethanol, represented, for instance, by different technical specifications in consuming nations and by differing environmental laws in the US and Europe that took effect in 2010. The existence of different specifications for ethanol among countries is a barrier because it increases the cost of exports. According to the White Paper (2007), the basic difference among the ethanol used in Brazil, the US and European Union is the water content, which is set at different levels primarily "due to the varying ethanol concentrations permitted in gasoline and the gasoline distribution differences". Although these differences are not an impediment to commerce per se, they increase the production cost because of the additional processes needed to satisfy varying standards in target export markets (White Paper, 2007).

The new laws that took effect in the US and Europe in 2010 are examples of barriers related to environmental concerns. Despite the importance of focusing on sustainability, this can represent an important barrier to the development of the international ethanol market if each jurisdiction decides to impose substantially different rules.

In light of this scenario, this work examines the technical barriers posed by these new legal frameworks and how they can be resolved within the WTO. In Section 2 we discuss the new US legislation, the Energy Independence and Security Act (EISA) of 2007, which, among other provisions, increased the quantity of renewable fuels to be used in the transport sector by modifying the Renewable Fuel Standard (RFS) program. In Section 3 we examine the new European legislation, the requirements determined and the justifications for the adoption of these measures. In Section 4, we look at the WTO, evaluate how environmental questions are treated under its dispute-resolution mechanisms and analyze the new US and European measures under its rules. The importance of standardizing certifications is covered in Section 5, where we argue that this standardization is important to prevent the establishment of unnecessary technical barriers to trade. In Section 6 we focus on the cases of Brazil and the Caribbean countries in this new context of increasing technical barriers to trade in ethanol. Finally, in the Section 7 we present our concluding remarks.

We believe that this discussion makes an important contribution to the existing international debate on the difficulties and importance of developing a global ethanol market, based on the comparative advantages of producing countries, to assure attaining the greatest possible economic, social and environmental efficiency (Rothkopf, 2007; Howse et al., 2006; Verdonk et al., 2007).

2. US legislation

In February 2010 the Environmental Protection Agency (EPA) announced the rules of the new US program for the use of biofuels: the Renewable Fuels Standard 2 (RFS2). It is a revision of the original RFS1, implemented under the auspices of the Energy Policy Act of 2005, aiming to meet the provisions of the Energy Independence and Security Act (EISA) of 2007. The new rules took effect in June 2010. The main differences between RFS2 and RFS1 involve the period where the rules under the program will remain in force, the volume of biofuels that must be used, the classification of biofuels according to the raw material used to make them and consideration of emissions over their entire life cycle.

RFS2 extends the program for the use of biofuels by ten years, from 2012, when the original version was set to lapse, to 2022. Over this period, the volume of renewable fuel required to be used as transportation fuel will be gradually increased to 36 billion gallons (136.30 million m^3) in 2022, nearly five times the volume stipulated by RFS1 for 2012. Morover, the new rules contain three special categories of biofuels, depending on the raw material and the GHG emissions over their life cycle (EPA, 2009a, b, 2010).

These categories are: (i) *advanced biofuels*—those derived from raw materials other than corn and whose total lifecycle GHG emissions must be at least 50% less than the baseline[3]; (ii) *biomass-based diesel*—biodiesel, whose lifecycle GHG emissions must be at least 50% below the baseline; and (iii) *cellulosic biofuels*—those derived from cellulose, hemicellulose or lignin, whose total lifecycle GHG emissions must be at least 60% lower than the baseline. However, these thresholds can be reduced to 40%, 40% and 50%, respectively, under certain circumstances (US Congress, 2007).

Ethanol made from corn is defined as a conventional biofuel. Its lifecycle emissions must be at least 20% below the baseline, though again this percentage can be lowered, in this case to 10% (US Congress, 2007).

The methodology to measure these emissions and determine whether these thresholds are met is being developed by the EPA and will include both direct and indirect emissions. The latter include those derived from changes in land use, including in foreign producing countries. This methodology is coming under strong criticism, mainly due to the high level of uncertainty and the absence of a modeling system able to reflect all the variables involved (UNICA, 2009b; Dinneen, 2009; EPA, 2010; Wang et al., in press).

The main objective of the EISA is to reduce energy dependence and to diversify energy sources, as stressed in EPA (2009c), as well as to guarantee sustainable production of these biofuels to assure their contribution to reducing emissions. But despite the importance of sustainable production of biofuels (a concept that involves environmental, social and economic questions), the rules actually increase costs to consumers because of the granting of subsidies and the trade-distorting effects of tariff barriers to importation: each gallon of ethanol produced in the US is eligible for a subsidy of US$ 0.45 and an ad valorem duty of 2.5% and specific tarrif of US$ 0.54 per gallon are charged on imports (US$ 0.1427 per liter) (Durbin et al., 2010; RFA, 2005; 2010).

This last levy was set to expire at the end of 2010. However, it was renewed until December 31, 2011. Durbin et al. (2010) stress the importance of removing US tariff barriers to achieve the targets for biofuel volumes and GHG emissions, in the latter case since ethanol from corn emits more GHGs than gasoline when considering its full life cycle. They also point out that ethanol from sugarcane from Brazil would contribute greatly to meeting these targets.

The Energy Independence and Security Act, although not restricting consumption of ethanol from foreign sources,

[3] These lifecycle GHG emissions will be compared to the baseline, defined by EISA (US Congress, 2007) as "the average lifecycle GHG emissions for gasoline and diesel sold or distributed as transportation fuel in 2005."