
*EU regulation concerning genetically modified products: an issue of
food security or a measure of disguised protectionism?*

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Abstract

The biggest producers and exporters of agricultural products have been adopting the genetic engineering in order to improve the factors productivity and the firms profits. In the last decade, the United States of America (US) and the European Union (EU) have established a high divergent regulation on production, distribution and consumption of *genetically modified organisms* (GMOs). Apparently, the EU's complex legislative framework related to GMOs was intended to satisfy the European consumers which are concerned about food safety and wish to make more informed choice about the food they eat. The aim of this paper is to understand the potential motivations behind the different policies on GM products adopted by US and EU.

Key-words:

Genetically Modified Organisms; Consumers preferences; Food security; Technical barriers to trade.

JEL codes:

F13 - Trade policy, International Trade Organizations
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1. Introduction

Gene technology allows an organism to be altered by introducing genetic information from another organism, across species boundaries (ANZFSC, 2003). This technology, also called biotechnology, has been used in sectors such as agriculture in order to increase the size of the crop that can be harvest from the same amount of land. For instance, particular traits have been added to the plants` genetic make up to reduce the need for pesticides, to prevent insect and disease damage or to increase crops tolerance to drought (Paarlberg, 2002; Zarilli, 2005).

However, no one has foreseen the widespread opposition or the strong public concerns elicited by the introduction of GM foods that took place especially in the EU markets. While firms with major interests in the sector, such as Monsanto, argue that OGMs protect the environment and reduce the starvation, opponents, such as the groups of consumers and environmentalist, namely the Greenpeace, contest and assure that GMOs damage the environment, are responsible for allergic reactions in humans and increase the monopoly of the multinationals (Ackerman and Richardson, 2002).

According to the *International Service for the Acquisition of Agribiotech Applications* (ISAAA) the global area of biotech crops increased approximately 47 fold from 1996 to 2004 (James, 2004). In 2004, 29% of the global cultivated area was biotech (Zarilli, 2005). So far, the main genetically modified crops are corn, cotton, soybean and canola, being the leading biotech crop countries the US, Argentina, Canada and Brazil. The US is the main producer and consumer of GM crops and the mandatory labelling of GM food is required only where the approved GM food has altered the characteristics when compared to its conventional counterpart (ANZFSC, 2003). In contrast, in the EU, only a few GM crop varieties were approved due to the moratorium imposed from 1998 until April 2004 that has limited the production, imports and sell of the vast majority of GMOs. Since then, strict rules requiring food labelling, traceability and a slow process of approval of new GM varieties has a similar effect (Jackson and Anderson, 2005).

Such high divergent regulatory policies have had a significant negative effect on US exports of food and agriculture products to the EU and led to a GM food US-EU trade dispute (Pew Initiative on Food and Biotechnology, 2003). Apparently, the European consumers behaviour, who exhibit strong uncertainty avoidance towards the unknown, was the main reason behind the EU moratorium and the strict regulation concerning OGMs. However, despite the fact that consumer preferences have a recognized

influence on international trade, an essential question remains: were in fact the European consumers the fuel of the US-EU dispute or were they merely used as pawns of protectionist interests? In fact, despite the economic rhetoric surrounding consumer sovereignty, trade policies have focused on the supply side and on regulations. In addition, some authors suggest that nations are seeking innovative ways to protect their domestic agriculture, namely through non tariff barriers to trade (OECD, 2003).

The objective of this paper is to understand why US and EU have adapted such different policies towards GM food. We aim to explore whether this issue is in fact a question of food security or just a protectionist measure against free trade.

2. The EU legal framework for production and sale of GMO

In Europe, prior to 1998, crops such the GM corn and soybean were viewed as equivalent to conventional varieties, implying that they did not need a separate GM label. This approach, which requires scientific evidence of risk for human health to establish security measures, became unacceptable in the EU following the mad cow disease (BSE) crisis in 1996. This crisis undermined the credibility of official food safety regulators, who had originally assured consumers it was safe to eat meat from BSE diseased animals. As a consequence, consumers after 1996 began to mistrust authorities on GM products and to avoid eat this type of products. Consumer confidence was further undercut when a variety of groups, led by Greenpeace and green party leaders, started to attack GM food (Paarlberg, 2002).

Invoking the Precautionary Principle¹, which allows measures to be adopted in case of uncertainty or insufficient information, the European Commission (EC) decided in 1998 to place a moratorium on the approval of any new GM crop that lasted until April of 2004. As a result, the production, the imports and the domestic sales of GM crop varieties in the European area were dramatically reduced. Apparently, the pressure of the EU consumers who wanted to make informed choices about what they eat, led the EC to set up a tighter regulation concerning labeling and traceability of food and feed products produced from GMOs. This regulation requires labs for all products that contain GMOs above 1% threshold, and also call for procedure to ensure the traceability of all GM foods through the chain of production and distribution. The traceability requirement obliges the operators to keep a record for five years of all the

¹ The Article 5.7 of the SPS Agreement permits WTO Members to provisionally adopt SPS measures in the absence of sufficient evidence.

individual GMOs that have passed through their hands, including information where they come from, and to whom they were sold or delivered.

According to the EU, the regulation concerning the labeling was designed to enhance consumer confidence on GM foods and to facilitate consumer informed choices by providing on labels more detailed and verifiable information about GM content of foods and feeds. Moreover, the EU hoped this proposal will reestablish consumer trust in official food safety regulators. On the other hand, traceability of GMOs allows the monitoring and checking of information given on labels, the monitoring of effects on the environment and the withdrawal of GMOs which are potentially dangerous for human or animal health (Paarlberg, 2002).

Díez (2005) argued that the EU policy by maintaining harsh standards of food safety is unfairly discriminating against foreign suppliers. Roberts et al. (1999)² who have developed a classification scheme for the analysis of trade barriers in agricultural markets, included labeling in the list of the technical barriers to trade. In fact, foreign suppliers have to pay for different labels and compliance procedures in order to conform to labeling standards that differ across national market. These additional costs can be so substantial that prevent some of them from competing in the market and reduce trade (OECD, 2004).

At the moment, international trade in GMOs has to take place according to the rules of *World Trade Organization* (WTO) in particular those spelt out in the *Agreement on the Application of Sanitary and Phytosanitary Measures*, the *Agreement on Technical Barriers to Trade* and the *General Agreement on Tariff and Trade* (GATT). Since biotechnology is propriety technology, the rules of the *Agreement on Trade-Related Aspects of Intellectual Property Rights*³ have to be taken in account on international trade in GMOs (Zarilli, 2005).

3. Implications of the EU mandatory regulation for OGM on US-EU trade

The EU and US are each other`s main trading partners and account for the largest bilateral trade relationship in the world³. The main US exports on agricultural products are cotton, soybeans and corn. In 2004, about 45% of the corn, 85% of soybean and

² Cited by "Organisation for Economic Co-operation and Development" (OECD, 2003)

³ More detailed information can be found at the Web site of the Directorate of External Trade of the European Commission http://ec.europa.eu/trade/issues/index_en.htm.

76% of cotton planted in US were GM varieties (Pew Initiative on Food and Biotechnology, 2005). Furthermore, in 2003, the US was responsible for 2/3 of the GM crops produced in the world (Pew Initiative on Food and Biotechnology, 2003), which shows the importance of this country as a global source of GMOs.

In this context, the EU moratorium has had a significant negative effect on US exports to the EU. As a consequence of the US loss of market share, the *American Bureau Federation* estimated a global loss of 300 million dollars per year. The decline of corn exports to the EU was dramatic: the EU share of total corn export market had fallen from 4% in 1998 to less than 0.1% in 2004. In the other hand, GM soybean exports to the EU have not been affected by the moratorium because the EU had approved one variety of GM soybean prior to 1998 that American soybean producers planted in exclusive. Since the EU market has a significant share (11.7% in 2004) of US soybean exports, American producers have been reluctant to introduce new GM soybean varieties that have not been approved for the EU market. However, soybean exports to the EU have fallen (from 9.8 million tons in 1995 to 3.6 million tons in 2004). The EC argued that this decline is more likely due to the increased competition from lower cost producers such as Brazil, whose exports have risen from 3.0 million ton in 2005 to 9 million tons in 2002 (Pew Initiative on Food and Biotechnology, 2005).

In August 2003, the US, Canada and Argentina challenged the EU moratorium in the WTO, since food industry and farms of these countries have seen the moratorium as a clear infringement of WTO trade rules. In September 2006 a WTO dispute panel has decided against the EU`s application of its approval process for GMOs. The panel rejected the EU`s defence of the national-level bans as precautionary measures, arguing that enough scientific evidence was in fact available to carry out an adequate risk assessment (Bridges Trade BioRes, 2006).

4. Public sentiment about OGM in US and EU

Why has the EU not followed American adoption of GM food? The conventional wisdom is that Europeans have less trust in their food safety regulators than Americans (Jackson and Anderson, 2005). In fact, public opinion polls revealed that Europeans, in particular those of the North of Europe, tend to trust consumer and environmental groups while screening little trust in institutions such as government (Zechendorf, 1998). This is important since groups of consumers and environmentalists have been actively involved in campaigns against OGMs. In an opposite way, Americans tend to trust scientific and academic sources of information while tending to have very little

trust in consumer and environmental groups (Lang e Hallman, 2005). Similarly, Loureiro and Hine (2004) suggested that whereas American consumers say they would like GM foods to be labelled, they remain confident in the policy of the *Food Drug Administration* (FDA) that does not require such labelling. This is also consistent with the historically high level of trust American consumers have had for regulatory agencies like the FDA.

Some authors have suggested that EU rejection of GMOs is linked to fear of the unknown and risk averting (Gaskell et al., 2003; Laros and Steenkamp, 2004). According to Vogel (2001), Europeans are more risk averse than Americans, especially with respect to issues of public health. However, the *Pew Initiative on Food and Biotechnology* (2005) argued that concerns on food safety are not the only factor influencing EU public opinion about GM crops and food. This research project pointed out that historically Europeans have a deeper cultural connection to their food than do most Americans. In Europe, in spite of the increasing of the supermarkets, they have not entirely replaced the traditional markets and the local specialized providers, such as bakers or butchers. In the other hand, most American consumers have little relationship with the food production process and acquire food from big supermarkets.

The GMOs issue is not a major source of controversy in the US. This is partially explained by the fact that Americans remain relatively unaware of agricultural biotechnology itself (Pew Initiative on Food and Biotechnology, 2005). Hallman et al. (2004) stressed that less than half of Americans realize that foods containing GM ingredients are sold in supermarkets and less than one in three believe that they have personally consumed GM foods. These authors argued that it is unlikely that many Americans are aware that there is a worldwide controversy surrounding the OGMs: little more than a third of Americans have heard of European demonstrations against GM foods, and less than a quarter were aware of the refusal of African nations to accept US GM food aid.

Though Americans claim they are interested in various topics related to agricultural biotechnology, only about one in five Americans say they have discussed the topic more than once or twice with anyone (Hallman et al., 2004), a figure comparable to that of the United Kingdom, Greece, Portugal, Spain, and Belgium, though considerably less than Europe as a whole and substantially less than such countries as Germany and Denmark where reported discussion is at its highest (Gaskell et al., 2003). In general, Americans are more optimists about biotech products than

Europeans and see the technological progress as a positive sign of economic and social development (Gaskell et al., 2003).

The differences on the agriculture scale and structure in the US and Europe may be another important influence on the EU public opinion towards GMOs. In the US farms are private property and often posted against intrude. Besides, agriculture in the US typically occurs on farms that are set apart from the urban centres. In contrast, in many parts of Europe, farms are much smaller and located closer to the urban centres and often adjacent to or in natural areas. Furthermore, the agricultural lands, in spite of being private property, may be crossed by hikers in some countries. These differences may help to make clear why many in Europe see what happens on farms as occurring in nature and why many in US see farming as something separated from nature (Zechendorf, 1998).

Finally, the media are the main way to convey information about the scientific knowledge, like agricultural biotechnology, to the majority of the consumers. The presence or absence of an issue within the media plays an important role in public awareness and participation in that topic. The American press has not covered the GM foods topic extensively. That explains, probably, why so many American consumers seem apathetic toward this topic. The European press, however, has covered the biotechnology issues rather extensively, and this may have had an effect on public awareness and opinion, driving European consumers to be both cognizant of the technology and wary of it (McInerney et al., 2004).

5. Is there a market for GMO in Europe?

Since April 2004 a tough labelling law for GM food has been in force in the EU. However, and contrary to the expectations, consumers rarely find labels indicating the use of genetic engineering (GMO-Compass, 2006). Most the EU food companies have expressed their confidence in the safety of biotechnology. Nevertheless, they have pointed out that they avoid putting GM label on their products because consumers perceive label as health warnings rather than a way of conveying information about the application of genetic engineering.

The results of a Eurobarometer poll suggested that the opposition to the crops and the food GM has been decreasing gradually in the last years among the Europeans, though the majority of those inquired confirmed that they will continue to reject GMOs despite any potential benefit associated to them.

Trade association, representing the EU food companies (CIAA), stated that the new labelling rules do not have a helpful effect in terms of facilitating consumers informed choices, as it was the announced objective of the EU, since there are very few GMO labelled products on the market and, therefore, customers have no opportunity to exercise choice. The CIAA stressed that food industry and retailers are avoiding products displaying GMO labelling in response to consumers` preferences for non-GM products. Apparently, no firm wants to take the risk of suffering competitive disadvantage due to lobbying moved by anti-GMO activists. As a result, CIAA argued that industry will take all measures to guarantee that products on the market are derived from conventional plant material (ASA, 2006). Many producers have already changed the composition of their products replacing, for instance, soy lecithin by emulsifiers. Other producers are paying out a premium for soy with a written guarantee that GM content does not exceed the 0.9% threshold (GMO-Compass, 2006).

The CIAA suggests that if it was the intention of the EC to create an OGMs market in Europe, then the EU needs to go over the scope of the regulation or undertake a massive consumer education programme. This is because consumers` behaviour does not change rapidly but over time. Some authors secure that the old consumer`s habit has to be "unfrozen" before a new one is acquired (Lewin, 1958 cited by Magnusson, 2004). The educative campaigns have an important role in this process since they may reverse the impact of media scare stories and the undermining of confidence in the safety of GM derived food products engendered by anti-GM activists.

6. What`s behind the regulation concerning OGMs in EU and US?

A first step in solving the GM food US-EU trade dispute is to understand the true EU policymakers` motives. What is behind this trade dispute? The EU moratorium and strict regulation concerning OGMs was intended to satisfy consumers` desires to make informed decisions about the food they eat or was a hidden protectionist measure?

Consumer groups such as the *European Consumer Organization* (BEUC) and the *European Organization of Consumer Cooperatives* (EuroCoop) have, certainly, influenced EU policy. Furthermore, environmental groups opposed to GM foods have flourished at the same time. However, that is unlikely to be the main reason for the policy difference between the counterparts, since both groups have been active in America as well (Jackson and Anderson, 2005).

Thornsbury and Fairchild (2004) argued that as consumer preferences become more important in international trade, some groups of interests will attempt to influence those preferences. Therefore, and despite the dignified goals of the consumer groups, their pursuits may have been manipulated and influenced by political and economic interests of the EU.

So far, there is no evidence that GM food can be more toxic or carcinogenic, result in more allergies, or be less nutritive than GM-free food. Moreover, no evidence was found that the modified genes may survive digestion and alter the genome of the person or animal consuming them. A report issued by eminent scientists and published by the UK government found no adverse effects anywhere in the world. Like other reports it concluded: "the risks to human health are very low for GM crops currently on the market". Moreover, no theoretical reason or empirical evidence was found in the study to suggest that GM crops "would be any more invasive or persistent, or toxic to soil or wildlife outside the farmed environment than conventional crop varieties, or spread their genes to other plants" (King, 2003).

This suggests the need to consider the influence of producers and economic interest on the EU policy towards GMOs as well. Anderson et al. (2004) developed a political economy model that takes into account the political influence of special interest groups, namely, farmers. Their results showed that consumers or environmentalist opposition to GM crops were not the only reasons behind the EU moratorium and the strict EU regulation concerning OGMs. These authors suggested that difference in comparative advantage in the adoption of GM crops might have been sufficient to explain the different trans-Atlantic GM policies.

On the one hand, the optimal response of farmers in a country with a comparative advantage in GM technology may be to lobby for lax controls of GM production and usage. On the other hand, farmers in a country with a comparative disadvantage in GM adoption can obtain cost advantage by lobbying for more strict GM standards.

The US farmers have strong interest in a lax GMO regulation of production, in order to exploit the new technology before it is disseminated beyond the US. They also have a strong interest in a low degree of GMO consumer regulation either at home either in their export markets, given that they supply more than half of global exports (Jackson and Andersons, 2005). In fact, US producers will be less competitive if they have to comply with EU labelling and traceability rules since they drive up prices. International

financial consultancy, KPMG, estimated that mandatory labelling in Canada would result in an increasing cost equal 35-41% of producer prices. It is important to stress that KPMG study did not include any cost estimates for the numerous products recalls that will inevitably occur annually due to accidental "GMO" mislabelling (ASA, 2006). As Holm and Kildevang (1996) pointed out, price is a powerful determinant of consumer choices.

The US agricultural biotechnology firms, also have a clear boost for promoting GM adoption. Since they were more prevalent, more politically influential, and/or more advanced in the US than in the EU, that would be an additional reason for the observed difference in GM policies (Anderson et al., 2004).

In contrast, EU farmers have strong interest in a high degree of GMOs regulation of production and distribution. Even if they could benefit from a more productive technology, the first-available GM food crops (corn and soybean) are not of major importance to them. Besides, GM technology would be less profitable in the European landscape since non-GM crops and nature areas are much closer than in US. That would required more buffer zoning per hectare of GM crop in Europe than in the broad-acre landscapes of US. As a consequence, for EU small farmers, the potential productivity gains may be offset by the management cost of buffer zoning. Therefore, there would be a higher number of EU than US farmers that will continue to produce just non-GM. That proportion would be higher as greater would be the opposition against the environmental and consumer groups to the selling GM foods in Europe. Other important issue that probably European farmers are taking into account is the extent to which their crop products are internationally competitive. Since the US and other countries have already adopted GM technology, EU producers may be more competitive in their own and in third country markets due to the fact that consumers in those markets are GM averse, and more so the stricter are policies towards GM foods. The EU livestock producers are unlikely to benefit as much from the GM technology as the more corn and soybean intensive livestock producers. Therefore, they also could support anti-GM policies (Jackson and Anderson, 2005).

Jackson and Anderson (2005) suggested another possible reason for the EU`s strict GM food policy. They hypothesized that government is giving EU biotech firms time to catch up with American competitors so that intellectual property rights are paid to domestic rather than foreign patent holders. The slow approval process of new GM varieties in EU may, probably, support this idea.

7. Final remarks

The controversy surrounding the GMOs continues to be emotional due to the lack of conclusive scientific evidence on the current or potential impact of agricultural biotechnology on human and animal health and on environment. The EU and the US have adopted domestic regulation on the approval, labelling and documentation requirements for GMOs that varies substantially. Apparently, the EU tight mandatory labelling and traceability of GMOs was intended to satisfy the European consumers who are concerned about food safety and wish to make more informed choice about the risks related with the food they eat. However, some authors suggested that this regulation just meant to protect the interests of some agents of the EU. The discussion presented above takes us some way towards arguing that, apparently, in the case of OGMs the European consumers were used as pawns of protectionist. The exploratory nature of this paper stressed the importance of consumer preferences on international trade disputes and how those preferences can potentially be manipulated by organized groups of interests.

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