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# The Politics of Genetically Modified Food Labeling:

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The Regulatory Structure and Its Effects  
in the United States and the United Kingdom

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### *Introduction*

Many processed foods and produce from the United States today contain genetically modified organisms (GMOs). The United States is liberal with permitting GMOs to be used in food production and does not require GM-food to be labeled to reflect such information; it instead employs a voluntary labeling system. The European Union banned GM-food in the 1990s. The United States considered this a barrier to trade and filed a lawsuit against the EU through the World Trade Organization (WTO). The WTO ruled in favor of the United States after one of its longest and most difficult rulings to date (AgBioWorld, 2006). The United Kingdom soon after adopted a mandatory labeling system.

A popular explanation of why these two states have such different approaches to GM-food is that they are a result of varied public perceptions. Many scholars believe that policies are formed on the basis of consumer preferences. Others insist that divergence results from institutional differences. How the regulatory institution is structured determines which group's interests is most met, business or consumer, since these two groups usually have different preferences. I argue that the divergent GMO policies of the United States and United Kingdom are a consequence of differing institutional structures. The United Kingdom's regulatory system for GM food is multilevel, allowing consumer interest groups to heavily impact policies. The GMO regulatory system in the United States is centralized, limiting access points and making the process more accessible to interests groups for biotechnology companies and food manufacturers.

### *Main Argument*

GMOs are living organisms that have been genetically altered by inserting a gene from one cell into another by using bioengineering techniques such as DNA recombination and gene cloning (*New Scientist*, 1993). Due to an increased desire from the scientific community to

expand research, states faced the necessity of weighing the various pros and cons of permitting bio-technology research and its recent extension to bioengineered food. These include whether the consumption of GM-food is safe, if it is morally and ethically acceptable, potential benefits of countless scientific discoveries and contributions to economic growth.<sup>1</sup>

States approached regulating GMOs in different ways and have formed two distinct policies. To test my argument that divergent GMO labeling policies are a result of different institutional structures, I analyze the GM-food regulatory systems of the United Kingdom and the United States. These countries are similar in many other policies, yet they have been polar opposites on the issue of labeling GM-food. I assert that this is due to varied institutional structures. The United Kingdom has a multilevel regulatory system. The United States has delegated GMO policymaking to only three federal agencies, giving them autonomy in decision making and making its process more centralized. Congress relieved itself from the responsibility of formulating GMO policies. GMO policymaking and implementation are simultaneously handled in these regulatory agencies.

A multilevel regulatory system indicates that there are numerous stages through which a policy is reviewed and evaluated during the policymaking and implementing process (Benz and Zimmer, 2008). Many levels to formulate policies mean many access points for groups to sway policymakers to favor their position. It is through this type of system that consumer interests can best be expressed. A centralized regulatory system is the opposite: policymaking is limited to very few levels, thus restraining the number of access points for groups and giving policymakers an appearance of autonomy in policy formation. Corporate interests dominate in this regulatory system because, since they are the group being regulated, they have more consistent contact with regulatory agencies which often result in strong ties with those who work there.

The independent variable is the type of regulatory institutional structure each state utilizes for GM-food labeling. The dependent variable is the level of stringency of the labeling policy. Additional independent variables are consumer preferences, various non-governmental organizations (NGOs), and the interest groups for corporate interests. I will assess these variables for how they interact with the GMO regulators and how they influence policy formation. I measure consumer preference by using opinion polls and studies, cases of initiatives support of or against GMOs. If there is a high level of consumer preference in the United States and the United Kingdom, then that would suggest a different factor is the cause of the divergent policies. I will measure NGOs and interest groups in a similar way. If certain groups have more success in one type of regulatory system than another, then that will be an indicator that it is the variation in the type of regulatory institution that leads to divergent GM-food labeling policies.

#### *Between Consumer Preferences and the State*

There are two primary theories used to explain the divergence in the GMO regulatory policies of the United States and the United Kingdom. The first is that differences in policies are a direct reflection of the consumer preferences of both states. Chen and McDermott argue that the trend in the GM-food policy of France and Germany follow this assertion (1998: 537). They state that France has little public opposition to GMOs and as a result has policies that are more open to the presence of GM-food in the market. On the other side of the spectrum, Germany has experienced extreme opposition of biotechnology from the Green Party and has especially limiting restrictions on all GMOs throughout the state. Recently, the Green Party has become less hostile towards GMOs and the state is slowly easing up on restrictions (Assouline, 1996: 10).

In order to gain or maintain public confidence on this issue, governments should have a desire to respond to the consumer opinions on labeling GM-food. Kurzer states that the “primary

determinants of policy divergence rest with public perceptions of risk and public trust, or lack of it, in regulatory officials and scientific experts,” (2006: 144). Following Paulette Kurzer’s logic that policy divergence is a result of differences in public perception, it is implied that consumer preference is strong for GM-food labeling in the United Kingdom and weak in the United States.

Some scholars argue that not many consumers are aware of the presence of GMOs in food and therefore the preference should not be construed as weak. Caswell and Mojduszka state that there is an asymmetry of information of GM foods between producers and consumers. They claim that this unequal distribution of information is a market failure and is the government’s responsibility to correct it (1996: 3). Food products can be perceived as a group of characteristics that consumers use to make the best informed purchase: 1) search attributes which are features that can be easily inspected before purchasing: price, color, quality 2) experience attributes which are assessed after one purchases a good, such as flavor, and 3) credence attributes which cannot be easily determined before or after a purchase. These include food safety, the method used to grow and/or process the product, and if it contains GM ingredients.

The concept of GM ingredients as a credence attribute has spurred controversy of whether consumers have a right to know if any are present in a product. The EU expressed its belief that consumers do have a right to this information by making labeling mandatory. The United States does not currently espouse a similar policy. However, there is recent evidence that U.S. consumers have strong desires for mandatory GMO labeling. Streiffer and Rubel (2004) argue that the decision whether to label GM foods should be given to citizens and if the FDA does not make labeling mandatory if the public desires it, then Congress should require labeling (234). This theory stresses that the government has an obligation to respond to consumer desires, following from the idea that policies are heavily influenced by the demands of its citizens.

On the other side of this debate, many scholars argue that, while some states' GM-food labeling policies may be influenced by consumer preferences, this level of influence and effectiveness is determined by the institutional structure of a state's regulatory system. How the GMO regulatory process is structured is a crucial determinant of what groups have access to and the ability to persuade regulators (Bernauer and Meins, 2003: 647). A GMO regulatory system that is multilevel has many different access points. This creates more opportunities for a plethora of groups to express their beliefs; therefore, not only one group's agenda is seriously considered. These extensive access points allow smaller organizations a chance to influence regulators. They also increase the probability that a member of one of these groups has connections with a regulator or a person with some authority on policy formation and regulations (Vogel, 2001: 5). These opportunities increase for business groups too but consumer interests seem to prevail the most with this system. Another important aspect of a multilevel system is that the policymakers are not autonomous and are expected to deliberate on the various stances presented to them.

A regulatory system that is more centralized has fewer points of access. The consequence of this structure is that the regulators have more autonomy with which to make decisions and not many groups can voice their positions. The group that this system most favors is business. This highlights the conventional theory of the "privileged position" of business. Businesses have more money relative to consumer groups. This money gives businesses a competitive advantage. Many "think tanks" that conduct research and release statements on various issues are funded by businesses. These think tanks can frame findings in ways that are favorable to businesses and do an excellent job of publishing their results (Hudson, 1998: 170). Sharp notes that there is a distinct difference between *educating* and *manipulating* the public and policymakers (1999: 17).

### *Methods*

This is a comparative analysis studying the causes for varied GMO regulatory systems. I chose the United Kingdom and the United States to evaluate this topic because these two countries usually have similar approaches on many policies, yet how to handle GMOs is a serious point of contention between them. I compiled information on their GMO regulatory institutions from journal articles, books on GMOs, and websites of agencies directly affiliated with regulating GM-food. This data will provide a better understanding of the process used to form and implement GMO policies in each state. The regulatory institutions are defined as multilevel or centralized depending on how layered and extensive the regulatory process is relative to the other state. If there are many points of access, the system is multilevel. If there are not a large number of access points, then it is more centralized. Other independent variables are consumer preferences, NGOs, and interest groups. I evaluate consumer preferences through surveys and studies to see if they are high or low in each state. I measure NGOs and interest groups by the volume of groups that support GMO labeling and those that are against GMO labeling and by the level of action organizations take to achieve their goals. What is important is what variable's position is best expressed through each regulatory system. I evaluate the dependent variable, the stringency of the state's GM-food labeling regulations, by if a state requires labeling or if it does not, with mandatory labeling being the most stringent.

### *Case Studies: United States and United Kingdom*

First, I provide a brief account of the United Kingdom and United States' food labeling history. I then discuss the current labeling requirements of each state, followed by how each regulatory system is structured. Next, I analyze the consumer preferences of GMO labeling and the level of action taken by NGOs and interest groups. Following that, I discuss the history of

each state's food supply as a possible exogenous factor in the divergence of the labeling policies. I will then assess which interests are best expressed through the regulatory systems and give explanations as to why certain systems are best suited for the success of particular groups.

### *Historical Background of Food Labeling*

In the United States and the United Kingdom, concerns for safety and the desire for knowledge of what was in food items led to the labeling of ingredients in the early 1900s. In the United States, Dr. Harvey Wiley was appointed in 1883 as head of the U.S. Division of Chemistry, a branch of the Department of Agriculture. Wiley established a group of volunteers in 1903 for a longitudinal study on the effects of chemical food preservatives and determined that they were injurious to one's health (Center for Food Safety and Applied Nutrition, 2005). Upton Sinclair's muckraking novel, *The Jungle*, in 1906 exposed the sanitation risks and hazards in the United States meat packing industry. These two focusing events were the main impetus for the consumer demand of government regulation for food safety and led to the swift passage of the U.S. Pure Food and Drug Act and the Meat Inspection Act in 1906. The United Kingdom took similar measures, but none as strict as those in the United States (Bernauer, 2003: 44).

General food nutrition and more detailed ingredient labels were not mandatory in either state until recently. In the United States, Congress passed the Nutrition Labeling and Education Act of 1990, which specifically gives the Federal Drug Administration (FDA) the main authority to require nutrition labeling (U.S. FDA, 1995). Under this law, the FDA can also require any food labeling that it deems necessary. In the past two decades, the United Kingdom has become tougher on regulating its food supply by passing more stringent labeling laws (Jordan, 2005: 12). The stringency of their food labeling mandates has surpassed those of the United States in the 1990s, particularly those concerning GM food. The Department for Environment, Food, and

Rural Affairs (Defra) in the United Kingdom explicitly states that the country's main objectives regarding the regulation and labeling of GMOs are to protect human health and safety, as well as to ensure consumer choice (Defra, 2008). There is little evidence in the regulations of the United States that guaranteeing consumer autonomy is a major consideration with its GM food policies.

### *Current GMO policies and Varying Institutional Structures for GMO Regulations*

While the United Kingdom has made GM-food labeling mandatory, it is merely voluntary in the United States. But what is the reason for this glaring difference in policy? Some scholars believe that a country's labeling regulations are a reflection of its consumers' preferences (Kurzer, 2006: 144). Citizens in the United Kingdom, for example, have been hesitant to accept GMOs into their diets, whereas United States consumers have appeared indifferent (Gaskell et al., 1999: 384). Recent evidence indicates this is no longer true and that United States consumers prefer to have food containing GM ingredients labeled (Harrison and McLennon, 2004: 167). Although there seems to be a growing trend in United States citizens preferring GM food labeling, the regulations show no signs of tightening in the near future. I argue that the different policies are a result of varied institutional structures in each state's policymaking process. I will now describe the regulatory structures of each state in detail and the paper will progress to show how each structure is most suited to express the interests of particular groups.

The United Kingdom's regulatory approach to food governance is organized as a multilevel system (Caduff and Bernauer, 2006: 153). The state is a member of the European Union and is therefore expected to follow the minimum guidelines and regulations that the EU proposes. The EU adopted a process-oriented approach using the Precautionary Principle, prohibiting any technology involving serious risks even if the likelihood for harm is unknown or

not yet proven (Weirich, 2007: 226). The EU released a directive in 2003, explicitly stating its requirements regarding GM foods. Regulation (EC) No. 1831/2003 states that it is required for operators of pre-packaged products consisting of or containing GMOs state on a label that “This product contains genetically modified organisms”. For non-pre-packaged products offered to the final consumer, these words must appear on, or in connection with, the display of the product (The European Commission, 2009).

However, it is permissible to adopt policies that are stricter than those set forth by the EU. Member states must only meet the minimum requirements but not pass individual state regulations that are considered illegal within the EU or important international institutions, such as the WTO (Weale, 1996: 106). The current regulatory policy in the United Kingdom is that the labeling of products containing one percent or more of GM ingredients is *mandatory*. As mentioned in the introduction, the EU initially had an outright ban on all GM-food, but later lifted the ban due to a WTO ruling, subsequently replacing the ban with its current form of mandatory labeling.

The United Kingdom and all other EU member states have been involved in an “intense regulatory reform” for the past couple of decades, especially with issues that fall under the classification of “social regulation,” such as environment, health safety, and consumer protection (Majone, 1996: 2). The topic of GMOs fits under all three of these categories. One reason for this intense regulatory reform is the establishment of the EU supranational authority in 1993 and the aforementioned requirements that come with being a member. This multinational decision-making body adds another level to the United Kingdom’s regulatory procedures and thus more access points for various interest groups. Consumer and environmental groups have yielded the most influence over regulations through these access points, as will be further discussed later.

While these access points are also available to business interests, I will describe next why policymakers in the United Kingdom are more inclined to cater to consumer interests in regards to regulations that pertain to the food supply.

A second reason for this intense regulatory reform is that the EU and the United Kingdom individually have explicitly expressed the desire to respond to the concerns of their consumers (Bernauer, 2003: 10). These public concerns are largely comprised of three widespread beliefs: 1) that testing on GM food has not been extensive enough, 2) that consumers should have the ready ability to make an informed choice when purchasing food, and 3) that the government is incapable of safely managing the national food supply. After an outbreak in the late 1980s of *bovine spongiform encephalopathy* in the United Kingdom, confidence in the food supply plummeted and has yet to significantly recover (Kurzer, 2006: 141).<sup>2</sup> When the United States attempted to ship GM soybeans to the United Kingdom in 1996, well-organized opposition formed and successfully capitalized on this skepticism of food safety (Murphy, Levidow, and Carr, 2006: 144).

This lack of trust in the national government to effectively control and monitor the food supply helped shape the approach taken by the United Kingdom's institutional structure for regulatory decisions (Caduff et al., 2006: 153). In efforts to legitimize and restore trust in the government's authority over the food supply, the United Kingdom molded the regulatory system for GM food—a sensitive issue since it involves tampering with food intended for public consumption—in a transparent way to gather, assess, and respond to consumer's wishes (Sassatelli and Scott, 2001: 236). This purposeful transparency in regulating and responsiveness to consumers has led to the current stringency of GM food policies in the United Kingdom.

The GM food regulatory system in the United Kingdom is structured to be continuous and dynamic (Rogers-Hayden, Mohr, O’Riordan, and Walls, 2005: 26). This is to ensure that no GMO policy is absolute or permanent for an extended period of time. GMO policy permanence could result in an inefficient and unpopular regulation in a topic area that is constantly evolving. Instead, these policies are under constant review by policymakers who analyze new scientific findings, technology, and the current public opinion (26). The policies and how well they fit in with the present society are assessed by different advisory committees such as Defra and the Advisory Committee on Novel Foods and Processes. These committees then present their findings and recommendations to Parliament, where Parliamentary members will deliberate and decide if they will revise the policy in question or maintain the status quo.

Through this multilevel regulatory system, the United Kingdom made labeling GM food mandatory to give consumers the autonomy to choose with ease whether or not to purchase GM foods. The United Kingdom’s regulatory structure allowing a constant evolution of the GMO policies is inherently more permissive and open to consumer interests and opinions. It consists of many levels of government oversight, providing numerous points of access, and imparts onto policymakers a greater sense of responsibility to the consumer. This type of institutional structure for GMO regulations is multilevel and decentralized, especially when compared to the GMO regulatory processes of the United States.

While the United Kingdom forms policies on GMOs by focusing on process-orientation and requiring labels for GM food, the United States uses a product-oriented approach to regulate GM products. This position implies that there is no significant change to food that has been genetically altered and that the resulting product is substantially equivalent to those that do not contain GMOs (Bernauer et al., 2003: 650-651).

With this approach to GMO regulations, the United States has adopted the position of *voluntary* labeling. The FDA has left the decision up to the producer to decide if the company should label its product to reflect if it does or does not contain GM ingredients and has set forth guidelines of what constitutes an appropriate label (Hosanky, 2001). The FDA states that it will assist manufacturers who wish to voluntarily label their products as being made with or without bioengineered ingredients. The agency says that while the use of bioengineering is not a material fact, many consumers are interested in the information and some manufacturers may want to respond to this desire (U.S. FDA, 2000). GM foods are required to be labeled in the United States only if the product is no longer substantially equivalent to the original food item in regards to nutrition, composition, and safety (Degnan, 2007: 27). Each individual state has the authority to enact stricter GMO labeling laws but the U.S. federal minimum requirements set by the FDA must be met, similar to how countries in the EU must comply at a minimum with the EU policies.

The institutional structure for GMO policy formulation and implementation in the United States is described by scholars as centralized and top-down, especially when contrasted to the United Kingdom. “Centralized” is not a term typically used when describing United States government policymaking. However, the policymaking process specifically regarding GMOs is highly centralized (Bernauer et al., 2003: 675). An executive order in 1986 has since required that all United States regulatory decisions be made with a cost-benefit analysis (OSTP, 1986). Using a cost-benefit analysis has often been criticized because if policymakers take a strict interpretation of it, then important considerations—such as consumer preferences—may be ignored or not seriously evaluated (Weirich, 2007: 227-228).

The executive order also designated primary responsibility of regulating GMOs to the United States Department of Agriculture (USDA), the Environmental Protection Agency (EPA),

and the FDA with guidelines for cooperation and management between the three agencies (Murphy et al., 2006: 139).<sup>3</sup> These agencies are self-reliant and do not necessarily have to consult with other areas of the government when making their decisions. Therefore, the executive order limited GMO policymaking to three regulatory agencies where bureaucracy rules all and the officials are appointed as opposed to elected.

The FDA is the main agency responsible for setting labeling requirements for GM products. Using the cost-benefit analysis approach, the FDA decided that it would not require labeling for GM food because they assert that GM food is a substantial equivalent and mandatory labeling imposes unnecessary costs onto producers. This single regulatory agency has the power to decide for all U.S. consumers what information they need to know and what information is superfluous and not worthy to be printed on a label. A large consequence of not requiring GM food labeling is that this drastic change to the food supply goes mostly unnoticed to the general public—denying them a fair chance to form and express an opinion on the matter. While there was organized opposition to GMOs and campaigns to require labeling in the United States, these efforts seemed to be in vain because they did not generate the level of attention and awareness as they did across the Atlantic (Kurzer, 2006: 144). The United States has had a historically strong level of public confidence in the government regulating the food supply and its legitimacy has never been fundamentally challenged, unlike the United Kingdom (Caduff et al., 2006: 155). It is likely that many citizens chose to ignore these NGOs and maintain their trust in the FDA.

Another point of concern with the centrality of the United States GMO regulatory process is the “revolving door” that is often discussed in U.S. politics. The revolving door describes the common practice of government officials moving to a lobbying position and vice versa (USA Today, 2005). This behavior is limiting to diversity in regulatory institutions and policymaking

and often enhances business interests in regulations. The revolving door is well illustrated in the conceptual iron triangle (see Figure 1). The iron triangle involves interest groups and lobbies, bureaucracies, and Congress. Favors are often granted to one point of the triangle in return for political support and funding, or in the case of business lobbies, low regulations. With this aspect of these “behind closed doors” deals and favors of policymaking in the United States, consumer interest groups and environmental NGOs have difficulty competing against wealthy biotechnology companies and food manufacturers. The U.S. biotechnology companies have essentially been able to make its own rules for GMO regulations due to its close relationship with the primary regulatory agency, the FDA (Meins, 2003: 155).

To reiterate, the United Kingdom formulates its GMO policies through an institutional structure that is multilevel, contrasting with the more centralized GMO regulatory structure of the United States. Through these two polarized institutional structures that each state has adopted to regulate GMOs, two very different labeling policies have been established. I briefly touched on interest groups and consumer attitudes. I will now further delve into how the concerns of each group are considered and evaluated in the regulatory institution of each state and show to what extent these different interests are expressed in the actual regulatory policies.

### *Interest Groups*

It is in the interest of businesses to have no mandatory labeling for GM foods. New labeling requirements would mean extra costs to implement the capabilities to produce packing with labels to adhere to more stringent policies. A recent study by the International Food Information Council (IFIC) Foundation found that three-quarters of U.S. consumers have heard or read at least “a little” about food biotechnology, while only 23% of the consumers polled believed that GM foods are currently available in supermarkets (2007). This fact is disturbing

because over 65% of all products available in grocery stores contains GM ingredients (CBS News, 2008). The study goes on to state that 95% of consumers do not take any action or change their purchasing behavior in regards to GM foods. However, this statistic is inconclusive since their study finds that over 75% of consumers are not even aware that GMOs are currently available in supermarkets. If the majority of consumers are not aware that GM foods are already in grocery stores, then of course a large portion of consumers do not alter their purchasing behavior.

What is important to consider when evaluating this study is the background of the IFIC Foundation. It is the “educational arm” of the IFIC. Its purpose is to provide science-based information to the public, especially health and nutrition professionals, government officials, journalists, educators, and consumers. The IFIC itself is an interest group with the following mission statement:

“...to bridge the gap between science and communications by collecting and disseminating scientific information on food safety, nutrition and health and by working with an extensive roster of scientific experts and through partnerships to help translate research into understandable and useful information for opinion leaders and ultimately, consumers,” (IFIC, 2008).

The IFIC is primarily supported by the broad-based food, beverage and agricultural industries—the businesses which benefit from GMO consumer acceptance and support. Publishing studies which portray consumer opinions as favorable for GM food is one method with which interest groups attempt to mold consumer preferences. This is important to note and consider in all studies in order to determine if there is a chance that the researchers have hidden motives for reporting certain findings.

Consumer advocacy groups insist that consumers should have the choice to decide whether or not they want to purchase food with GMOs—if there is no labeling, how is one supposed to know which food has GMOs and which do not? While some companies see a niche market in labeling food that does *not* have GMOs, this type of labeling is still not required (Lapan and Moschini, 2004: 636). Also, the products in this minority tend to offset the cost of this labeling and charging higher prices than their GM product counterpart.

Since GM labeling is not mandatory in the United States, the interests of wealthy biotechnology businesses are best expressed in the United States' approach to GMO regulations. Their regulations are extremely lenient and permissive to this technology, despite the opposition of the less funded consumer interest groups. The more centralized composition of the regulatory process in the United States allows better access to businesses. In the United Kingdom, business interests are put second to those of the consumer despite their better access to funding.

#### *Consumer Attitudes toward GM Foods and Labeling*

There is a general consensus among scholars on consumer attitudes toward GM foods and preferences in the United Kingdom. Citizens in the United Kingdom have been opposed to the use of GM ingredients in food since the introduction of biotech seeds into the market (Moon and Balasubramanian, 2001: 221). While Europeans have been historically accepting of GM medicines and genetic testing, they show extreme resistance to GM food and prefer to have it labeled (Gaskell et al., 1999: 384). Opinions on U.S. consumer preferences have not been as one-sided. The discourse within the literature for preferences in the U.S. can be divided into two main groups: those who believe that U.S. consumers are generally accepting of GM foods and those who argue that the majority is no longer as accepting.

Consumers in the United Kingdom are generally optimistic about biotechnology applications in medical research but have been hesitant to accept GM foods since they have been available (Dimara and Skuras, 2005: 91). A yearly study conducted by the European Union to gauge citizen preferences is the Eurobarometer. In the past decade, the E.U. has included research on consumer familiarity with and opinions on biotechnology. The latest report released including this information regarding views of biotechnology was in 2006, with the statistics reflecting information from 2005. In regards to GM foods, Europeans as a whole were strongly opposed to its presence in their food supply:

“[Food containing GM ingredients] is widely seen as not being useful, as morally unacceptable and as a risk for society. Overall, Europeans think GM food should not be encouraged. There are mixed opinions on the acceptability of buying GM food. The most persuasive reasons relate to health, the reduction of pesticide residues and environmental impacts. Whether GM food is approved by the relevant authorities or is cheaper are not convincing,” (Gaskell et al., 2006: 28).

More specifically, the study found that 92 percent of United Kingdom citizens were familiar with GM foods and that only 30 percent supported GM food technology (16, 19). While large concerns about GM food included environmental risks and questions of morality, another major concern was the risk to human health. A large portion of the 30 percent support for GM food technology reflected desires to perfect the methods use and to make the products containing GM ingredients safer. Also revealed was that while 27 percent of U.K. citizens support the current regulations on GM food and plants, the majority thinks that regulations should be stricter (27).

One can confidently deduce that consumers in the United Kingdom prefer labeling GM food based on their strong resistance to GM food. If they are so opposed to GM food, then it would logically follow that U.K. consumers would support labeling. This sentiment is accurately reflected in the United Kingdom’s mandatory labeling policy. The way the regulatory process

for GM food is structured allows consumer interests to be expressed in the United Kingdom's approach to GM food.

The level of consumer awareness is vastly different in the United States. If the saying "you are what you eat" is true, then the majority of United States consumers might suffer from an identity issue. Over 70 percent of processed foods in its grocery stores today contain GM ingredients, yet approximately 75 percent of United States consumers are not even aware that GM food is currently available or do not know what constitutes a GMO (IFIC Foundation, 2007). In a 1999 survey, United Kingdom citizens show negative support for GM foods whereas United States citizens exhibit strong support (see Figure 2). However, given the evidence of a lack of familiarity of GMOs in the United States, it is quite likely that this "strong support" may be a phantom opinion and not based off of actual knowledge or facts.

The FDA did an investigation in 2000 on consumer awareness and opinions of GM foods. The majority of those polled were not familiar with GM foods but they were able to note some popular benefits, such as increasing the food supply and enhancing the nutritional value of certain products (U.S. FDA, 2000). However, nearly all noted concerns that GM foods have not been tested for a sufficient length of time. The researchers also informed participants of the amount of food currently in the market that contain GM ingredients. An interesting attitude revealed through this study was an expressed suspicion and distrust in the regulatory agencies and food producers.

"They were mainly disturbed by the lack of public information and public input to a major development in the quality of their food supply. This information about prevalence served to reinforce the most negative and cynical views some participants held about food biotechnology. Some participants saw this as evidence of a conspiracy to keep consumers in the dark, that is, the rationale for not informing the public must be that there is something to hide," (U.S. FDA, 2000).

This finding illustrates the fact that the GM regulatory process in the United States is highly centralized. The majority of the citizens that were polled by the FDA had little familiarity with GM food and articulated their shock that such a drastic change to their food supply could occur without public consent or a genuine interest to inform consumers of the use of this technology.

To counter the FDA's finding that a small portion of the country is aware of GM ingredients in their food, what is significant is that they acknowledge that when citizens are educated on GMOs, a large majority prefers labeling (see Figure 3). The preference arises from wanting the *autonomy* to choose whether to consume food containing GM ingredients (Bernauer, 2003: 169). Nearly half of U.S. consumers would prefer to eat food that was GM-free, while about twenty-eight percent said they need more information on GM foods to form an opinion (Moon and Balasubramanian, 2001: 227). The only method to ensure consumers would have the option to discriminate between products containing GM ingredients and those that do not is if labeling was mandatory.

Lusk et al. (2004) studied how information on the benefits of GMOs shape or change, if at all, consumer acceptance of GM food. They measured a subject's willingness to accept GM food. Subjects read a statement about GMOs to provide basic, "objective" information (see Figure 4). In this experiment, participants underwent an "information shock" about the positive benefits of GMOs.<sup>4</sup> The study concluded that positive information on GM ingredients decreased the participants' price to accept GM food. Therefore, the subjects were more willing to consume food with GM ingredients after being made aware of its potential benefits to society (199).

What Lusk et al. failed to address is the influence that the negative aspects of GMOs have on consumer preferences. Some of the arguments against GM food include unintended harm of other organisms, gene transfer to non-target species, and unknown effects on human health due to lack of long term testing (see Figure 5).<sup>5</sup> Harrison and McLennon (2004) conducted a study similar to Lusk et al., correcting this critical flaw. Their results are drastically different—that the majority of U.S. consumers support mandatory labeling of GM foods when educated on the positive and negative aspects of GMOs. More specifically, they conclude that “80 percent of the respondents indicated that they favored a mandatory labeling policy for biotech foods” (167). This finding directly supports the findings of the FDA that U.S. consumers prefer GM food labeling.

However, the United States does not require any kind of GM food labeling. Instead it is voluntary for producers and only a small percentage of companies choose to label their food. Those products that do have labels indicate that there are *no* GM-ingredients. In order to accurately address consumer desires in the United States, labeling GM food should be mandatory. However, the structure of the United States regulatory system is better suited to conform to the interests of businesses and not consumers.

### *Past and Present Food Crises*

An exogenous factor that could contribute to divergent labeling policies is the history of a state’s food supply. If there are instances of drastic health scares threatening the safety of citizens then the government and public may be more cautious and vigilant in regulating their food. A major incident can cause a *focusing event* where policymaking and regulations concerning that matter are considered a top priority (Kingdon, 2003: 95). Afterwards, issues

related to these focusing events still resonate with policymakers and consumers and may still be considered serious topics (98).

Various health scares in the history of a country's food supply are examples of focusing that draw attention, discussion, and scrutiny of the current regulatory structures and mandates of that state. In the 1980s, there was a huge health scare in Europe with *bovine spongiform encephalopathy* (BSE), more commonly known as mad cow disease.<sup>6</sup> Its origin was pinpointed to the United Kingdom (*Nature*, 2007). While these scares may not be directly linked to GMOs, instances like them create a desire for transparency in the food supply. The disease takes many years to fully develop into its most commonly recognized form. Once BSE was detected in humans and took its first known victims, panic erupted. While farmers and scientists were aware of BSE, no one knew that it could affect humans who consumed affected beef. Due to the long length of time it takes for the disease to be noticed and in an effort to quarantine the disease, millions of the cattle in the United Kingdom were destroyed (CNN, 2003). This crisis in the United Kingdom's beef supply has left behind a sour taste in the mouths of U.K. citizens. As a result, their trust in officials responsible for setting food standards and "science" in general has significantly eroded (Dimara and Skuras, 2005: 90). U.K. consumers are now known for their preference of the food supply to be as transparent as possible.

The United States has not had a health scare of this magnitude until recently. In the summer of 2008, the FDA issued a national advisory against the consumption of certain tomatoes. The types of tomatoes listed in their report were linked to the 145 reported cases of salmonellosis caused by *Salmonella* Saintpaul that were reported since April 2008 (U.S. FDA, 2008).<sup>7</sup> This outbreak resulted in at least twenty-three hospitalizations, some of which were fatal.

Another scare was the melamine tainted pet food and animal feed supply in 2007. The FDA discovered in March 2007 that certain pet food was killing cats and dogs. They found that vegetable proteins in pet food from China were contaminated with melamine (U.S. FDA, 2007-8).<sup>8</sup> Melamine has been used in the past as a filler material for various processed foods because it shows up as a protein— so manufacturers can use the compound to make their products appear more nutritious (Time, 2008). It is not toxic, but inside the body it has the potential to cause kidney stones and renal failure. In 2007, certain Chinese manufacturers shipped material containing melamine — but labeled as wheat gluten and rice protein —to pet food companies in the U.S., with some of it being used as animal feed (U.S. FDA, 2007-8).

The *Salmonella* Saintpaul outbreak in tomatoes and the tainted pet food and animal feed were a shock to the United States. With unsafe tomatoes, many family pets dying, and the fear of animals used for the public food supply having consumed the tainted product, many U.S. consumers became wary of what they ate. While these crises are not directly linked to GM ingredients, they still raise consumer doubt in the safety of the food supply and the capability of the U.S. government and federal agencies to properly monitor and regulate the supply.

A third crisis was the accidental release of corn into the U.S. market that was produced using Starlink corn in 2001. The EPA only permitted the use of Starlink corn in animal feed. However, due to cross contamination as a result of unclear guidelines for use, traces of the Starlink GM-trait entered the food supply, largely in the form of taco shells (Prakash and Kollman, 2003: 628). The FDA recalled the corn products containing this specific GM ingredient—resulting in the first health scare cause by a GM ingredient.

*Current Action in the United States*

There are numerous laws that have been passed and that are currently being discussed on local, state, and federal levels in the United States that are increasing the level of regulation on GMOs. One example of a law passed on a local level is when a GMO ban was placed on the 2004 ballot in Mendocino County, California. Despite the efforts of biotech lobbying groups such as Croplife (a group sponsored by biotech company giant, Monsanto) and spending more than \$600,000 to defeat the measure, voters passed the ban (Metroactive, 2005).

The most compelling arguments for voters to support the ban were from evidence of ease of cross-contamination from farms with GMO crops to organic farms. Recent research has shown that cross-contamination is a common side-effect from GMO crops (Quist and Chapela, 2001: 541).<sup>9</sup> If organic farms in Mendocino were contaminated with GMOs traits, the crops from those farms would lose their organic label. This compelled many voters to support the ban.

Maine and North Dakota have also passed bills which address limiting the possibilities of cross-contamination of GM and non-GM crops. Maine requires manufacturers or seed dealers of GM plants to provide written instructions on how to plant, grow, and harvest the crops to minimize cross-contamination of non-GM crops.<sup>10</sup> The North Dakota requires the segregation of GM-crops from non-GM crops (Prakash and Kollman, 2003: 230).<sup>11</sup>

On another note, Alaskan Governor Frank Murkowski signed a bill in 2005 stating that all genetically engineered fish must be “conspicuously labeled to identify the fish or fish product as a genetically modified fish or fish product,” whether packaged or unpackaged (New Rules Project, 2005). Not only was this bill the first piece of legislation passed in favor of GM labeling, but it was passed unanimously by the Alaska state House and Senate. While this may be just a

way for Alaska to protect its wild salmon market, it makes a statement to other areas in the nation that mandatory GM food labeling can be accomplished in the United States.

A bill introduced on July 2008 in the U.S. House of Representatives is the “Genetically Engineered Food Right to Know Act.”<sup>12</sup> Ohio Representative, Dennis Kucinich, and others called for the amendment of several acts delegating food labeling decisions to the FDA.<sup>13</sup> The bill would require that food containing “a genetically engineered material, or that is produced using genetically engineered material, be labeled accordingly” (H.R. 6636, 2008). Adopting a bill even remotely similar to this one would be an immense step to convergence with the policies of the United Kingdom. No federal bill regarding the labeling of GM food has yet been passed in any part of the U.S. Congress.

In the meantime, many local food co-ops have taken it upon themselves to extensively research what products in their stores contain GM ingredients and what products do not. One such co-op is the Brattleboro Food Co-op in Vermont which has 2,500 members. Customers are able to identify non-GMO foods from ones containing GM ingredients with a yellow label that explicitly states “Non-GMO” or “Organic = Non-GMO,” (Cooperative Grocer, 2005). The co-op began this labeling project when many of its members began questioning them about what products they can purchase that were GMO-free. The Food Action Co-op team from the store wrote letters to the 200 producers from whom they receive goods and labeled the products based on the responses. The co-op notes that it has been satisfied with the labeling because, not only were they able to give its customers what they wanted, but they are able to educate those who are not aware of GMOs.

*Conclusion*

The differences in GMO labeling of the United Kingdom and the United States are a result of differences in the regulatory structure each state uses when approaching genetically modified organisms. The multilevel GMO regulatory structure of the United Kingdom is designed to best express the interests and preferences of consumers. The state has a desire to reestablish its citizens' trust in its ability to maintain the food supply, especially after disastrous food crises such as mad cow disease. Due to this system, labeling GM food is mandatory in the United Kingdom. On the contrary, labeling GM food is voluntary in the United States, despite evidence that U.S. citizens would prefer some type of mandatory labeling. The GMO regulatory system in the United States is far more centralized and top-down in its decision making than one would typically think. Therefore, big businesses such as food manufacturers and bioengineering companies have the most influence over the resulting GMO regulations in the United States.

More recent literature suggests a slow convergence of GM food labeling between the United Kingdom and United States. Convergence in labeling is most desired by manufacturers as to limit the diversity in packaging for distribution. With the stringent policies in the United Kingdom and the EU, manufacturers are finding it more costly to have separate facilities for production. Not wanting to lose this wealthy market, scholars posit that more labeling somewhat similar to those in the EU is on the horizon to decrease production costs.

What I hope to garner from this paper is not anger towards or to instill a fear of GM food, but instead create awareness of this change in the food supply. The presence of GMOs is far more realized in the United Kingdom than in the United States, and I believe it is important that people are cognizant of what is in their food and the politics behind the regulations that affect our everyday lives.

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Notes

<sup>1</sup> The issue of whether or not to allow GM food is such a highly contentious issue amongst states that some African countries have even refused to accept food aid that contained GMOs. Zambia was in an extreme drought-induced food emergency in 2002 yet denied US maize known to contain GMOs (Paarlberg, 2006: 85).

<sup>1</sup> The BSE outbreak and its consequences are discussed in more detail on pg. 21.

<sup>1</sup> The USDA oversees the transportation, growing, field testing, and propagation of GM crops, as well GM crops not intended for human consumption, such as animal feed. The EPA is the authority over pest-resistant GM crops and other crops which may pose environmental threats; the EPA requires the strictest testing from producers out of the three GMO regulatory agencies. The FDA has the most influence over GMO regulatory policy because it is responsible for GM foods, additives, biotechnology medical products, and any other products for human consumption. The FDA is also responsible for determining labeling regulations for these products (Bernauer et al., 2003: 663).

<sup>1</sup> The benefits mentioned were environmental and health (e.g. reducing pesticides) and world (e.g. increasing food supply would help third world countries).

<sup>1</sup> Pollen from biotech corn has been linked to high mortality rates in monarch butterfly caterpillars (Biotechnology, 2004).

<sup>1</sup> BSE causes the brain of a cow to waste, becoming spongy and pockmarked. Infected animals slowly get unstable and behave in an erratic and violent manner—hence the more colloquial term “mad cow,” (Nature, 2007)

<sup>1</sup> *Salmonella* Saintpaul is an uncommon form of *Salmonella*. *Salmonella* is a group of bacteria that can cause diarrheal illness in humans and can be particularly harmful to children and elderly adults (CDC, 2008).

<sup>1</sup> Melamine is a nitrogen, carbon and hydrogen compound used to make some plastics and laminates.

<sup>1</sup> Mexico has a ban on growing GMO crops. However, maize in Mexican farms near the border of the United States has shown traces of transgenic DNA, a result of GMO cross-contamination.

<sup>1</sup> Maine bill LD 1266

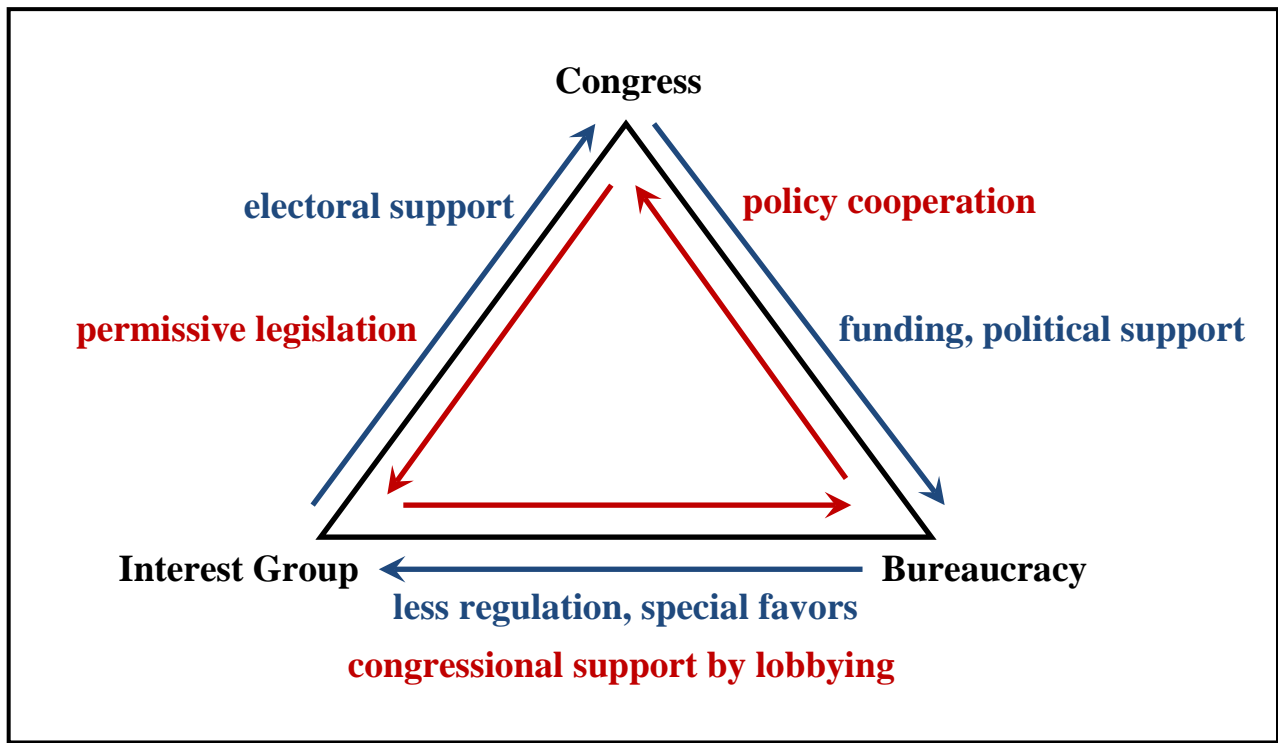
<sup>1</sup> North Dakota bill SB 2235

<sup>1</sup> House of Representatives Bill 6636

<sup>1</sup> The bill called for adding amendments to the following acts: the Federal Food, Drug, and Cosmetic Act; the Federal Meat Inspection Act; and the Poultry Products Inspection Act.

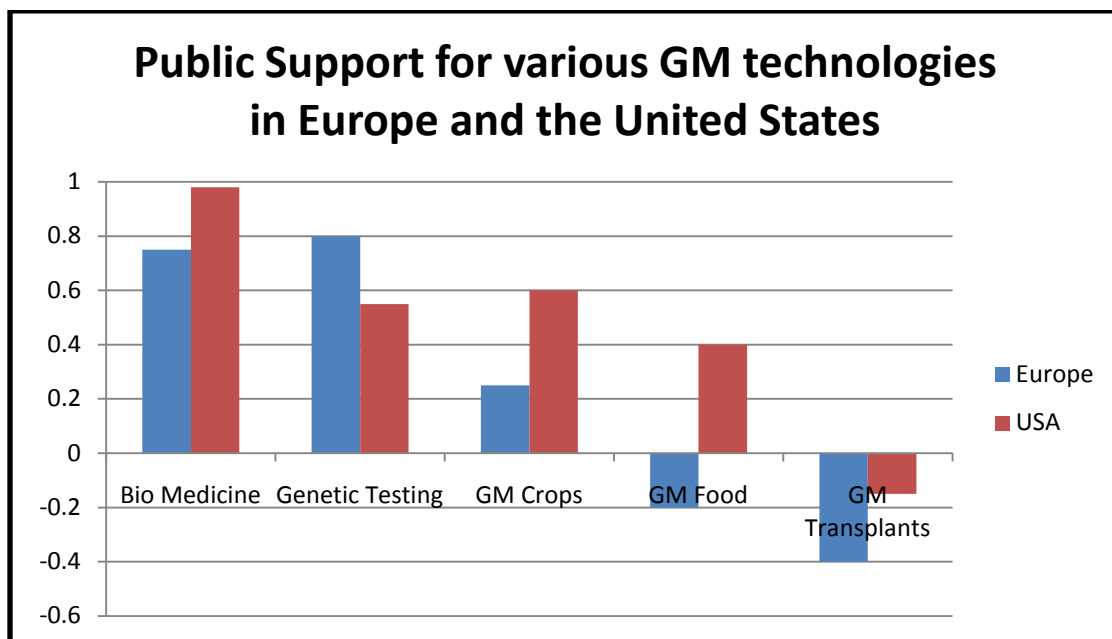
Appendix

Figure 1. "The Iron Triangle"



Source: NationMaster. 2005.

Figure 2.



Source: Gaskell et al. 1999.

**Figure 3. U.S. Consumer Desire for Labeling Genetically Modified Foods.**

	<b>Percent stating:</b>
<b>Want mandatory labeling with only GM foods labeled</b>	<b>46</b>
<b>Want mandatory labeling with all foods labeled</b>	<b>42</b>
<b>Want voluntary labeling with only non GM foods labeled</b>	<b>7</b>
<b>Want mandatory labeling with only non GM foods labeled</b>	<b>4</b>

**Note: Out of 2387 respondents, 85% said they would prefer labeling. This is how that 85% would like to see GM food labeling approached.**

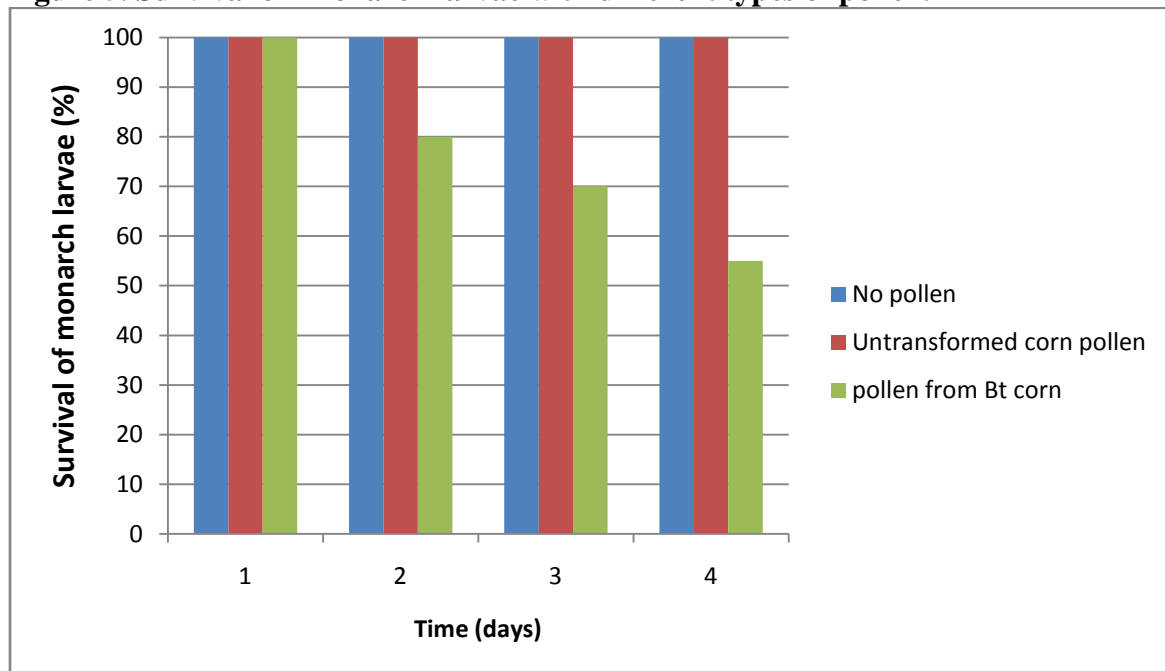
Source: Teisl, Mario F., Luke Garner, Brian Roe, and Michael E. Vayda. 2003.

**Figure 4. “Objective Information Statement” provided to subjects in the Lusk et. al experiments:**

The purpose of this study is to better understand consumers’ thoughts about genetic modification in food production. Genetic modification involves new methods that make it possible for scientists to create new plants and animals by taking parts of genes of one plant or animal and inserting them into the cells of another plant or animal. This is sometimes referred to as biotechnology or genetic engineering.

In food production, genetic modification can be used to make fruits and vegetables taste better, last longer, or be resistant to certain pesticides. Genetic modification can also be used to alter plants in a manner that results in increased crop yields. Animals can also be genetically modified to make them grow faster and be resistant to certain diseases.

Source: Lusk et al. 2004.

**Figure 5. Survival on Monarch larvae with different types of pollen.**

Source: Losey et al. 1999.

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