



AICGS ISSUE BRIEF

AUGUST 2013

44

Who's Afraid of GMOs?

Understanding the Differences in the Regulation of GMOs in the United States and European Union

BY LINNEA KREIBOHM

What areas for compromise on GMOs exist in the TTIP negotiations?

How has risk tolerance affected policies on GMOs on both sides of the Atlantic?

Transatlantic differences in the regulation of genetically modified organisms (GMOs) pose a threat to successful negotiations of the Transatlantic Trade and Investment Partnership (TTIP). While the United States treats GMOs as substantively equivalent to non-GMOs, the European Union applies the precautionary principle to the regulation of GMOs, has imposed limits on the cultivation of GM crops, and requires the labeling of GM products. This has led to a series of yet unresolved trade disputes.

In order to find possible solutions for this contentious issue, it is important to understand the reasons for the different approaches to regulating GMOs. Differences in public opinion, interest group mobilization, and political and regulatory institutions have shaped the regulation of GMOs in the EU and the United States. Reaching agreement on the GMO issue is difficult due to the entrenched nature of the involved interests, but it might be possible to reach consensus on specific aspects of GMOs. In particular, the United States could accept the EU labeling requirements on GMOs and commit to enforcing these requirements on U.S. products. In return, the EU could commit to a greater focus on scientific-based methods to approve new GM varieties combined with an increase in the allowable trace limits of GM foods.

Introduction

Differences in the regulation of genetically modified organisms (GMOs) have led to ongoing trade disputes between the United States and the European Union. While the United States has embraced GMOs and regulates genetically modified foods based on the principle that they are “substantially equivalent” to non-GM food, the European Union regulates GMOs according to the “precautionary principle,” has limited the approval of GMO crops for cultivation, and imposed strict labeling requirements on GM foods.¹ The United States views these EU regulations as non-tariff barriers to trade. Reaching consensus on this contentious issue is vital to successful negotiations of the Transatlantic Trade and Investment Partnership (TTIP).

In order to understand possible avenues through which consensus could be reached, this Issue Brief will explore the reasons for the divergent regulatory approaches in the European Union and the United States. Differences in public opinion, interest group mobilization, and political and regulatory institutions have contributed to the differences in the regulation of GMOs. While there has been strong anti-GMO public opinion in the EU, there has not been similar public opposition to or even awareness of GMOs in the United States. The differences in public opinion are partly due to different historical experiences with food crises, but also due to the effective interest group mobilization of European anti-GMO non-governmental organizations (NGOs), which were able to shape public opinion in the EU. Furthermore, U.S. farm groups and the well-developed biotech industry strongly support GMOs while EU farm groups oppose GMOs, and the biotech industry is underdeveloped in the EU. Finally, the political structures in the EU have allowed green parties to assume greater political influ-

ence and serve as a vehicle through which NGOs and anti-GMO public opinion could affect political decisions on regulation, and European regulatory agencies been affected by negative public opinion on GMOs. In contrast to this, the growing conservatism in U.S. politics has reduced the political willingness to regulate environmental risks, and the regulatory agencies in the United States have a strong history of political independence and a focus on scientific-based risk assessment.

While these factors have led to entrenched interests and policy stances on both sides of the Atlantic that are difficult to completely overcome, there are some possible areas where agreement is possible. Because of the strong anti-GMO public opinion in the EU, it is not likely or feasible for the EU to treat GMOs as “substantively equivalent” to non-GMOs as is the case in the United States. A willingness by the United States to maintain labeling of GMOs in the EU will therefore have to be part of a successful trade negotiation. The EU, in return, could commit to a greater focus on scientific-based regulation in the approval of new GM varieties for cultivation. Additionally, to make it easier for food producers and transporters of food to avoid accidental contamination of food products due to production and transportation reasons, the EU could consider increasing the allowable trace amounts of GMOs. These measures might not be enough to fully resolve this dispute, and the option of excluding GMOs from the TTIP negotiations should be left open as a possibility in order to allow for the successful negotiation of an EU-U.S. free trade and investment agreement.

Transatlantic Differences in the Regulation of GMOs

There is a stark difference in the regulation of GMOs in the United States and the European Union.

The United States approach to the regulation of GMOs was formally established in the 1986 Coordinated Framework for Regulation of Biotechnology.² The key principle of this framework is that of “substantial equivalence,” which means that GMOs should be regulated based on their unique characteristics, and not on their method of production. This means that the agencies that regulate other food and agricultural products—the Food and Drug Administration (FDA), Environmental Protection Agency (EPA), and U.S. Department of Agriculture—are also the key regulators of GMOs in the United States. Because GMOs are treated as equivalent to conventional agricultural products, there are no specific GMO labeling requirements in the United States.³

This regulatory approach stands in stark contrast to the precautionary principle applied by the European Union for

regulating GMOs. The precautionary principle is based on the concept that if scientific evidence is insufficient or inconclusive regarding potential dangers to human or environmental health, the product should be regulated or prohibited if there are reasonable grounds for concern.⁴ Due to the precautionary principle, the EU has been hesitant to approve new GMO varieties for cultivation in the EU. Farmers of GMO crops are also liable for cross-pollination of other crops with GMO varieties, even if farmers are not directly responsible for this.⁵ Strict labeling and traceability means that products that contain GMOs must be labeled in the EU even if they no longer contain detectable traces. The tolerance level for unintended presence of GMO products is set at 0.9 percent of the total product, a level which has made it prohibitively difficult for U.S. producers to export processed products to the EU.⁶

Cultural Approaches to Explaining Differences in Regulation of GMOs

Why do the transatlantic partners regulate GMOs so differently? One commonly expressed view holds that Americans have a culture that makes them more willing to take risks while Europeans are culturally more risk averse.⁷ This cultural explanation is not consistent with observed trends in regulation in the United States and Europe, however.

One argument against deep-seated cultural differences is the “flip-flop” hypothesis advanced by the political scientist David Vogel and others. They have observed that regulatory stringency in the United States and Europe has shifted over the past thirty years. While in the 1970s and 1980s, the United States was a leader in regulating environmental, health, and social risks, in the 1990s the European Union became a stricter regulator in these domains.⁸ If there were deep-seated cultural reasons for the differences in American and European regulation, such a shift should not have taken place within a span of only thirty years.

Not all researchers share this observation. Legal scholar Jonathan Wiener, for example, believes this to be too much of a generalization. Rather, he finds that the EU has been more precautionary in regard to certain threats (for example in the case of GMOs and beef hormones), while in other cases the United States has followed a more precautionary approach (for example, in the case of mad cow disease in blood).⁹ Understanding the regulation of GMOs in the scope of general risk cultures is therefore difficult, as it does not appear there really are different risk cultures on both sides of the Atlantic.

The following analysis will therefore focus on the specific factors affecting the regulation of GMOs: public opinion, interest group mobilization, and political and regulatory institutions.

Public Opinion

Public opinion on GMOs is substantially different in the United States and the European Union countries. While in the United States there is general apathy toward GMOs, there is pronounced opposition toward GMOs in the European Union.

While there is limited directly comparable U.S. and EU public opinion data on GMOs,¹⁰ the polling data does suggest that in general Europeans are more skeptical and fearful of GMOs than Americans. In 2003, 37 percent of Americans viewed scientifically altered fruits and vegetables as good, while in the four EU countries surveyed (France, Germany, Italy, Great Britain) only 18 percent of respondents viewed them positively.¹¹

More recent survey data highlights that this schism in public opinion persists. In 2012, 20 percent of Americans viewed

GMOs “not favorably”¹² while 61 percent of Europeans surveyed in 2010 felt “uneasy” about GM food.¹³ The phrasings in these questions are not directly comparable, but the surveys highlight that differences in opinion on GMOs remain.

Evidence from opinion surveys and focus groups indicates that the driving factor behind these differences in opinions is a difference in trust in regulatory institutions. In particular, several high-profile food policy scandals in the European Union led to a loss in public confidence in national and European food safety regulators. There have not been similar cases in the United States where trust in food safety regulators remained high.

PUBLIC OPINION IN THE EUROPEAN UNION

Public opinion in the European Union against GMOs has been shaped by past scandals affecting food safety. In particular, the outbreak of mad cow disease, also known as BSE, in Europe in the 1990s shaped the public’s view of food regulators as well as of GMOs. Vogel and Lynch (2001) summarize the importance of BSE in shaping public opinion in Europe by stating that it “is impossible to exaggerate the significance of regulatory failure associated with BSE on the attitude of the European public toward GM foods.”¹⁴ Because British and European food regulators initially claimed that there was no risk to consumers from BSE, when the link between BSE and Creutzfeldt-Jakob did become known, the public lost confidence in the regulators. In 2002, trust in national regulators in regard to food safety was very low in Europe, and only 12 percent of Europeans trusted their national regulators on food safety.¹⁵

Evidence from focus groups in Europe supports this link between the failure of EU regulatory policy in regard to mad cow disease and general public distrust of new food technologies and regulation of new food technologies. While individuals do realize that there is a scientific difference between mad cow disease and GMOs, they have acknowledged that such crises shape their views on GMOs.¹⁶ A systematic analysis of reasons for opposition to GMOs in France, where opposition to GMOs is among the highest in the European Union, also highlights the key role trust in institutions plays in shaping public attitudes toward GMOs. A lack of trust in institutions is closely related to rejection of GMOs.¹⁷

An analysis of Europe-wide opinion poll data also highlights that GMOs are “nodal points” that act as surrogates for other societal concerns. Support for or opposition to GMOs is highly correlated to trust in national governments and the EU to effectively regulate biotechnology in general. Across multiple specifications, trust in institutions is the clearest predictor of support

for or opposition to GMOs. In addition, Europeans are also opposed to GMOs not only because of biological reasons, but also because of the perceived negative economic and social effects of the patenting of seeds by large companies. While there are some differences among EU member states, there are no systematic differences based on time of joining the EU.¹⁸

Additionally, the BSE crisis shaped the way the media reported on food safety issues. While initial reports on GMOs were scientifically neutral, by the late 1990s, the media was focusing on the risks associated with GMOs.¹⁹ As a result of this, Europeans are very aware of GMOs and also feel strongly about the issue—in 2010, 74 percent of Europeans felt strongly about the issues of biotechnology.²⁰ This combination of lack of public trust in institutions through food safety scandals in the 1990s and critical media reporting on GMOs helped shape public opinion against GMOs in Europe.

There are signs that with the BSE crisis receding from memory, and possibly also due to the stringent regulation of GMOs by the European and national regulators, there is greater trust in regulatory bodies. In 2010, 60 percent of those surveyed trusted the EU to regulate biotechnology and 55 percent trusted their national governments on the issue of biotechnology.²¹ Maintaining this trust in the regulatory institutions will be an important component of successfully reaching consensus on the GMO issue.

PUBLIC OPINION IN THE UNITED STATES

In contrast to the European Union, public opinion in the United States has not been shaped by food scandals. Because the United States adopted much stricter regulation of BSE and there was no public BSE crisis as in the EU, general trust in regulators in the United States is significantly higher than in the European Union.²² In 2002, 90 percent of Americans trusted the USDA's statements on biotechnology (in contrast to 12 percent of Europeans trusting their national regulator in the same time frame).²³ Government agencies ranked as the most trustworthy actors on food safety by 19 percent of Americans in 2012, and 50 percent ranked them in their top five most trustworthy actors.²⁴ This is in line with 69 percent of Americans being very trusting in their food supply as well.²⁵

Consumers in the United States are also less aware of GMOs than European consumers. This is partly due to lack of consumer awareness on the issue as well as different perceptions of the threat of GMO. Even though an estimated 60 percent of grocery store food was genetically modified in 1999, at the same time only 33 percent of Americans were aware of the existence of GMO foods.²⁶ This awareness of GMOs has increased somewhat since then, and in 2012, 42 percent of American consumers surveyed had heard “a lot” or “some” about GM foods.²⁷ This is still rather low in contrast to the 74 percent of Europeans who felt strongly about GMOs in

2010.²⁸ This highlights that in addition to public opinion being different due to lack of food scandals, there has also simply been little awareness of the GMO issue in the U.S. public.

There is public opinion survey evidence that there is strong consumer interest in the United States in the labeling of GMOs, possibly caused by the reporting on the ongoing trade dispute with the European Union. More recent polls show even higher percentages of Americans supporting GMO labeling on their foods, an MSNBC poll from 2011 indicated 96 percent of Americans were in favor of labeling of GM food and a 2010 Reuters/NPR poll showed that 93 percent of Americans wanted GM food labeled.²⁹ Public opinion in the United States thus cannot serve as an explanation for the lack of a labeling requirement for GM foods. Other factors, such as interest group mobilization and political and regulatory institutions, need to be considered to fully understand the regulation of GMOs in the United States.

Interest Group Mobilization

The reasons for these differences in public opinion are partly due to differences in interest group mobilization. In the EU, NGOs and farm groups opposed to GMOs have dominated the public discourse. In the United States, there was no similar anti-GMO NGO mobilization while the biotech industry and the farm industry are powerful political actors in favor of GMOs.

INTEREST GROUP MOBILIZATION IN THE EUROPEAN UNION

In the European Union, NGOs were successful in dominating the public discourse and framing GM foods as “creepy” based on early studies showing adverse effects.³⁰ Greenpeace, which employed fifteen full time anti-GMO activists in the late 1990s, and other environmental NGOs mounted large-scale anti-GMO public relations campaigns in response to the first shipments of GMO crops from the U.S. to the EU in the mid-1990s.³¹ NGOs were also able to effectively frame the GMO issue in relation to other food-related scandals and make the link to BSE and food scares, which they argued were related due to shared scientific uncertainty.³² The effectiveness of NGOs in influencing public opinion led to increasing public opposition to GMOs from 1996 to 1999, the time when anti-GMO NGOs were most active.³³

In addition, anti-GMO regulations were also supported by large portions of the agricultural and retail industry. Because the farming industry had not widely adopted GMOs in Europe in the 1990s, interest groups that represented farmers (CopaCocega) and the European retail industry (Eurocoop and EuroCommerce) supported anti-GMO regulation.³⁴ In contrast, the pro-GMO lobby in the European Union, represented by the umbrella organization for biotech firms Europabio, was small and underdeveloped at the time when the EU regulations to GMOs were formulated.³⁵ As most large

biotech firms, chief among them Monsanto, are American or based in America, their interests were not as well represented in the EU either.³⁶

The reason for the anti-GMO position of European farmers is due to the fact that GMOs were not widely used in European farming at the early stages of GMO development. The first available GM food crops were corn (maize) and soybeans, which play a limited role in the agricultural economy of the European Union. During the EU's de facto moratorium on approving GM crops from 1998-2003, only 6 percent of the world's corn and 1 percent of the world's soybeans were produced in the EU. In contrast, U.S. shares of global output of corn were 40 percent and its output of soy beans was 43 percent of the world total during the same time period.³⁷ Because of the increasingly negative public opinion regarding GMOs, European farmers were also hesitant to adopt GMO crops during this time out of fear of a consumer backlash.³⁸ In addition, strict GMO regulation also made it difficult for U.S. farmers to export their products to the EU, and EU farmers benefited from stringent GMO regulations due to less competition from U.S. crops.³⁹ This anti-GMO position of European farmers was an important factor in shaping EU policy on GMOs.

INTEREST GROUP MOBILIZATION IN THE UNITED STATES

In contrast, the environmental and consumer protection lobby in the United States was not able to mobilize public and political opinions against GMOs the same way as in the European Union. While there was some opposition to GMOs by the Sierra Club and Ralph Nader in the late 1990s, they were not able to effectively form public opinion or influence policy-makers.⁴⁰

In addition, the wide-spread usage of GM crops mean the farm industry and retail industry have an interest in maintaining pro-GMO regulation in the United States. American biotech crops made up roughly 40 percent of the total global biotech crops in 2012 (in contrast, EU biotech crops made up less than 0.002 percent).⁴¹ A wider variety of GM crops is grown in the United States and certain crops are almost exclusively grown as GM crops—in 2009, 91 percent of U.S. soybean, 88 percent of U.S. cotton, and 85 percent of U.S. corn were GM varieties.⁴² In contrast to the EU, farmers and their political interest groups in the United States are therefore generally pro-GMO.⁴³

Additionally, the biotech industry itself is a strong advocate in favor of maintaining the current GMO regulatory regime in the United States. Lobbying spending by the biotech industry is a large factor in American politics. In the 2008 election year, Monsanto's lobbying costs were \$8,831,120, or more than 25 percent of the total lobbying spending by the Agricultural Services/ Products industry. In contrast, the National Organic Coalition, a lobbying group for organic agriculture, spent

\$40,800 on lobbying, or 0.001 percent of the total agricultural industry lobbying spending in 2008.⁴⁴ The biotech industry is a strong political force in favor of maintaining current U.S. regulation of GMOs.

An illustration of the strong influence of the biotech lobby is the campaign against Proposition 37 in California in the 2012 election. Prop. 37 would have made labeling of GM food mandatory in the state of California. Monsanto and other biotech firms successfully spent more than \$45 million advertising against this ballot measure.⁴⁵ Because of the prominent role of biotechnology in the U.S. economy, these firms have a marked interest in maintaining the current regulatory regime and opposing any form of anti-GMO regulation, including labeling requirements.

Political and Regulatory Institutions

A contributing factor to the success of European anti-GMO NGOs is the political power of green parties in the EU as well as the responsiveness of regulators to political pressure. In contrast, in the United States, there is no politically important green party and the growing conservatism of American politics combined with an independent regulatory system with science-based risk assessment made it difficult for anti-GMO interest groups to influence U.S. regulation.

POLITICAL AND REGULATORY INSTITUTIONS IN THE EUROPEAN UNION

The proportional representation system in European Union countries has allowed green parties to play an important role in national politics in several European countries as well as the European Parliament. Green parties formed part of the governing coalitions in France, Germany, Belgium, Italy, and Finland in the late 1990s, the time when the EU adopted its strict GMO regulations.⁴⁶ The European Green Party at the same time was able to increase its number of seats in the European Parliament from 23 to 38 between 1994 and 1999, which made it the fourth largest party in the EP.⁴⁷ These green parties were allies to the anti-GMO NGOs and provided political support to strict GMO regulation and also contributed to anti-GMO sentiment by increasing the political focus on the issue.⁴⁸

In addition, regulation in the European Union has also been more politically responsive than in the United States. Prior to the establishment of the European Food Safety Authority (EFSA) in 2004, food safety regulation was conducted at the national level with varying levels of political independence of the regulating agencies.⁴⁹ The precautionary principle, which forms the basis of the European regulation of GMOs, is also malleable to political influence. While the assessment of a risk starts with a scientific evaluation of a risk, the decision to take action on a risk is a political decision on whether "action is deemed necessary."⁵⁰

European Union regulating bodies are also more willing to consider public opinion in their regulatory decision-making. For example, Frans Andriessen, EC farm commissioner in the 1980s, noted, "Scientific advice is important, but it is not decisive. In public opinion, this is a very delicate issue that has to be dealt with in political terms."⁵¹ In addition, the European Parliament, which passed the regulation requiring strict labeling requirements for GM food in 2003, is considered a "lobbying venue for weak interests" and its members are considered to side with less privileged forces in society.⁵² The 2003 European Parliament decision was further hailed as a measure to reassure a skeptical public without reference to evidence of actual risk.⁵³ The willingness of the European Parliament and the European Commission to consider public opinion and interest group preferences thus allowed these factors to shape the EU rules governing GMOs.

POLITICAL AND REGULATORY INSTITUTIONS IN THE UNITED STATES

In contrast, the U.S. electoral system means that the country is dominated by two parties with no viable role for third parties,

Conclusion

Reaching transatlantic consensus on how to move forward on the GMO trade issue will be difficult as the afore-discussed causes of the divergences are factors that cannot be easily addressed, and the established regulatory regimes have strengthened the entrenched interests on both sides of the Atlantic.

Because of the strong anti-GMO public opinion in the EU, it is not likely or feasible for the EU to completely reverse its position on GMOs. Maintaining current labeling standards on GMOs in the EU will have to be part of any trade agreement reached. Public opinion polls show that there is also public support for labeling of GMOs in the United States. Establishing procedures to allow for the labeling of GMO products is therefore not completely unfeasible.

NOTES

1 Charles Hanrahan, "Agricultural Biotechnology: The U.S. – EU Dispute," *CRS Report for Congress* RS21556, 8 April 2010, <<http://digitalcommons.unl.edu/crsdocs/69/>> (8 February 2013).

2 Executive Office of the President, Office of Science and Technology Policy (51 FR 23302), Coordinated Framework for Regulation of Biotechnology, 26 June 1986, <http://www.aphis.usda.gov/brs/fedregister/coordinated_framework.pdf> (16 June 2013).

3 For further information on the U.S. approach to regulation of GMOs see: Charles Hanrahan, "Agricultural Biotechnology: The U.S. – EU Dispute," *CRS Report for Congress* RS21556, 8 April 2010, <<http://digitalcommons.unl.edu/crsdocs/69/>> (8 February 2013), and Mark Cantley and Maurice Lex, "Genetically Modified Foods and Crops," in *The Reality of Precaution: Comparing Risk Regulation in the United States and Europe*, ed. Jonathan Wiener et al. (Washington, DC: RFF Press, 2011), 39.

4 The key document laying out the EU approach to regulation is the EU's "Directive on the Release of genetically modified organisms," which, together with amending acts, is available at http://europa.eu/legislation_summaries/agriculture/food/128130_en.htm

5 Mark Cantley and Maurice Lex, "Genetically Modified Foods and Crops," in *The*

including green parties. While there is some evidence that Democrats favor stronger environmental regulations than Republicans, the growing conservatism of the Republicans has led to a sharper anti-regulation sentiment overall.⁵⁴ While there have been several attempts to introduce legislation on GM food labeling, these have not received wide political support in the U.S. Congress.⁵⁵

Furthermore, much of the regulation of GMOs in the United States lies in the competency of independent regulatory agencies with a strong focus on scientific evidence. The environmental and food safety regulators in the United States with regulatory responsibility for GMOs—the FDA, EPA, and USDA—have a long history and established procedures for regulating new products. The emphasis on scientific risk assessment and the political independence of regulators means that they are not as subject to or dependent on political opinion.⁵⁶ Scientific evidence has generally supported the safety of GMO products,⁵⁷ and U.S. regulators have focused on regulating the unique risks associated with particular GMO products, such as the risk of allergens in particular strains of GM seeds, rather than GMOs in general.⁵⁸

In return, the EU could commit to a greater focus on scientific-based regulation to approve new GM varieties. Additionally, to make it easier for food producers and transporters of food to avoid accidental contamination of food products due to production and transportation reasons, the EU could increase the allowable trace amounts of GMOs before food products require labeling.

These measures might not be enough to fully resolve the dispute over GMOs due to the entrenched interests on both sides of the Atlantic and the sensitive nature of public opinion on food safety issues. If consensus on this polarized issue is not possible, one final option might have to be to completely exclude GMOs from the TTIP negotiations.

Reality of Precaution: Comparing Risk Regulation in the United States and Europe, ed. Jonathan Wiener et al. (Washington, DC: RFF Press, 2011), 39.

6 Charles Hanrahan, "Agricultural Biotechnology: The U.S. – EU Dispute," *CRS Report for Congress* RS21556, 8 April 2010, <<http://digitalcommons.unl.edu/crsdocs/69/>> (8 February 2013).

7 For an overview of the literature on differences in transatlantic risk regulation 2001–2011, see Sabine Mair, Stormy-Annika Mildner, and Wiebke Wodni, "Risikofreudiges Amerika, risikoaverses Europa," *SWP Zeitschriftenschau*, May 2012 <http://www.swp-berlin.org/de/publikationen/swp-zeitschriftenschau/swp-zeitschriftenschau-detail/article/risikofreudiges_amerika_risikoaverses_europa.html> (16 June 2013).

8 Ragnar Löfstedt and David Vogel, "The Changing Character of Regulation: A Comparison of Europe and the United States," *Risk Analysis* 21, no. 3 (2001): 399–416; and David Vogel, "The Hare and the Tortoise Revisited: The New Politics of Consumer and Environmental Protection in Europe," *British Journal of Political Science* 33, no. 4 (2003): 557–580.

9 Jonathan Wiener and Michael Rogers, "Comparing Precaution in the United States and Europe," *Journal of Risk Research* 5, no. 4 (2002): 317–349.

10 The most extensive public opinion data on GMO opinion in the European Union is by Eurobarometer while in the United States the industry-affiliated IFIC conducts public

- opinion polling on biotechnology issues. However, the questions are not directly comparable.
- 11 Pew Research Global Attitudes Project, "Broad Opposition to Genetically Modified Foods," 20 June 2013 <<http://www.pewglobal.org/2003/06/20/broad-opposition-to-genetically-modified-foods>> (16 June 2013).
 - 12 International Food Information Council (IFIC), "2012 'Consumer Perceptions of Food Technology' Survey." (Washington DC: International Food Information Council, 2012), <<http://www.foodinsight.org/Resources/Detail.aspx?topic=2012ConsumerPerceptionsOfTechnologySurvey>> (9 May 2013).
 - 13 European Commission, "Eurobarometer 73.1 Biotechnology," Conducted by TNS Opinion & Social on request of European Commission January-February 2010, <http://ec.europa.eu/public_opinion/archives/ebs/ebs_341_en.pdf> (9 May 2013).
 - 14 Diahanna Lynch and David Vogel, "The Regulation of GMOs in Europe and the United States: A Case-Study of Contemporary European Regulatory Politics," Council on Foreign Relations Press, 5 April 2001, <<http://www.cfr.org/genetically-modified-organisms/regulation-gmos-europe-united-states-case-study-contemporary-european-regulatory-politics/p8688>> (10 June 2013).
 - 15 David Vogel, "The Hare and the Tortoise Revisited: The New Politics of Consumer and Environmental Protection in Europe," *British Journal of Political Science* 33, no. 4 (2003): 557-580.
 - 16 For example in an analysis of focus groups in France, Germany, Italy, Spain, and the UK in 1998-1999, Marris (2001) finds that the groups were aware that BSE was not directly linked to GMOs, but focus groups did link GMOs to other food scandals which contributed to their distrust in regulatory authorities and general food safety. See Clare Marris, "Public Views on GMOs: Deconstructing the Myths," *European Molecular Biology Organization Reports* 2, no. 7 (2001): 545- 548).
 - 17 Sylvie Bonny, "Why Are Europeans Opposed to GMOs? Factors Explaining Rejection in France and Europe," *Electronic Journal of Biotechnology* 6, no. 1 (2003): 50-71.
 - 18 Jerome Legge and Robert Durant, "Public Opinion, Risk Assessment, and Biotechnology: Lessons from Attitudes toward Genetically Modified Foods in the European Union," *Review of Policy Research* 2, no.1 (2010): 59-76.
 - 19 Sylvie Bonny, "Why Are Europeans Opposed to GMOs? Factors Explaining Rejection in France and Europe," *Electronic Journal of Biotechnology* 6, no. 1 (2003): 50-71.
 - 20 European Commission, "Eurobarometer 73.1 Biotechnology," Conducted by TNS Opinion & Social on request of European Commission January-February 2010, <http://ec.europa.eu/public_opinion/archives/ebs/ebs_341_en.pdf> (9 May 2013).
 - 21 Ibid.
 - 22 Ragnar Löfstedt and David Vogel, "The Changing Character of Regulation: A Comparison of Europe and the United States," *Risk Analysis* 21, no. 3 (2001): 399-416.
 - 23 David Vogel, "The Hare and the Tortoise Revisited: The New Politics of Consumer and Environmental Protection in Europe," *British Journal of Political Science* 33, no. 4 (2003): 557-580.
 - 24 International Food Information Council (IFIC), "2012 'Consumer Perceptions of Food Technology' Survey." (Washington, DC: International Food Information Council, 2012), <<http://www.foodinsight.org/Resources/Detail.aspx?topic=2012ConsumerPerceptionsOfTechnologySurvey>> (9 May 2013).
 - 25 Ibid.
 - 26 Diahanna Lynch and David Vogel, "The Regulation of GMOs in Europe and the United States: A Case-Study of Contemporary European Regulatory Politics," Council on Foreign Relations Press, 5 April 2001, <<http://www.cfr.org/genetically-modified-organisms/regulation-gmos-europe-united-states-case-study-contemporary-european-regulatory-politics/p8688>> (10 June 2013).
 - 27 International Food Information Council (IFIC), "2012 'Consumer Perceptions of Food Technology' Survey." (Washington, DC: International Food Information Council, 2012), <<http://www.foodinsight.org/Resources/Detail.aspx?topic=2012ConsumerPerceptionsOfTechnologySurvey>> (9 May 2013).
 - 28 European Commission, "Eurobarometer 73.1 Biotechnology," Conducted by TNS Opinion & Social on request of European Commission January-February 2010, <http://ec.europa.eu/public_opinion/archives/ebs/ebs_341_en.pdf> (9 May 2013).
 - 29 Center for Food Safety, "U.S. Polls on GE Food Labeling," <<http://www.centerforfoodsafety.org/issues/976/ge-food-labeling/us-polls-on-ge-food-labeling>> (16 June 2013).
 - 30 Paulette Kurzer and Alice Cooper, "Biased or Not? Organized Interests and the Case of EU Food Information Labeling," *Journal of European Public Policy* 20, no. 5 (2013): 722-740; David Vogel, "The Hare and the Tortoise Revisited: The New Politics of Consumer and Environmental Protection in Europe," *British Journal of Political Science* 33, no. 4 (2003): 557-580; and Robert Falkner, "The European Union as a 'Green Normative Power': EU Leadership in International Biotechnology Regulation," *Harvard University Center for European Studies Working Paper Series* #140 (2006) <<http://aei.pitt.edu/9019/1/Falkner.pdf>> (16 June 2013).
 - 31 Rachel Schurman, "Fighting 'Frankenfoods': Industry Opportunity Structures and the Efficacy of the Anti-biotech Movement in Western Europe," *Social Problems* 51, no. 2 (2004): 243-268.
 - 32 Ibid.
 - 33 Ibid.
 - 34 Paulette Kurzer and Alice Cooper, "Biased or Not? Organized Interests and the Case of EU Food Information Labeling," *Journal of European Public Policy* 20, no. 5 (2013): 722-740.
 - 35 Ibid.; Robert Falkner, "The European Union as a 'Green Normative Power': EU Leadership in International Biotechnology Regulation," *Harvard University Center for European Studies Working Paper Series* #140 (2006) <<http://aei.pitt.edu/9019/1/Falkner.pdf>> (16 June 2013).
 - 36 Rachel Schurman, "Fighting 'Frankenfoods': Industry Opportunity Structures and the Efficacy of the Anti-biotech Movement in Western Europe," *Social Problems* 51, no. 2 (2004): 243-268.
 - 37 Kym Anderson and Lee Ann Jackson, "Why Are US and EU Policies Toward GMOs So Different?" *AgBioForum* 6, no. 3 (2003): 95-100.
 - 38 Robert Falkner, "The European Union as a 'Green Normative Power': EU Leadership in International Biotechnology Regulation," *Harvard University Center for European Studies Working Paper Series* #140 (2006) <<http://aei.pitt.edu/9019/1/Falkner.pdf>> (16 June 2013).
 - 39 Kym Anderson and Lee Ann Jackson, "Why Are US and EU Policies Toward GMOs So Different?" *AgBioForum* 6, no. 3 (2003): 95-100.
 - 40 Diahanna Lynch and David Vogel, "The Regulation of GMOs in Europe and the United States: A Case-Study of Contemporary European Regulatory Politics," Council on Foreign Relations Press, 5 April 2001, <<http://www.cfr.org/genetically-modified-organisms/regulation-gmos-europe-united-states-case-study-contemporary-european-regulatory-politics/p8688>> (10 June 2013).
 - 41 International Service for the Acquisition of Agri-biotech Applications (ISAAA), "Global Status of Commercialized Biotech/GM Crops: 2012," *ISAAA Brief* 44-2012, <<https://www.isaaa.org/resources/publications/briefs/44/executivesummary/default.asp>> (16 June 2013).
 - 42 Charles Hanrahan, "Agricultural Biotechnology: The U.S. – EU Dispute," *CRS Report for Congress* RS21556, 8 April 2010, <<http://digitalcommons.unl.edu/crsdocs/69/>> (8 February 2013).
 - 43 Kym Anderson and Lee Ann Jackson, "Why Are US and EU Policies Toward GMOs So Different?" *AgBioForum* 6, no. 3 (2003): 95-100.
 - 44 Center for Responsive Politics, "OpenSecrets.org," <<http://www.opensecrets.org/lobby/indusclient.php?id=A07&year=2008>> (16 June 2013).
 - 45 Amy Westervelt, "With California Prop Defeated, GMO Labeling Proponents Look to Farm Bill," *Forbes*, 13 November 2012 <<http://www.forbes.com/sites/amywestervelt/2012/11/13/with-california-prop-defeated-gmo-labeling-proponents-look-to-farm-bill/>> (9 May 2013).
 - 46 David Vogel, "The Transatlantic Shift in Health, Safety, and Environmental Risk Regulation, 1960-2010," APSA 2011 Annual Meeting Paper <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1901855> (16 June 2013).
 - 47 Ibid.
 - 48 Ibid.
 - 49 Ibid.
 - 50 Mark Cantley and Maurice Lex, "Genetically Modified Foods and Crops," in *The Reality of Precaution: Comparing Risk Regulation in the United States and Europe*, ed. Jonathan Wiener et al. (Washington, DC: RFF Press, 2011), 39.
 - 51 Cited in David Vogel, "The Hare and the Tortoise Revisited: The New Politics of Consumer and Environmental Protection in Europe," *British Journal of Political Science* 33, no. 4 (2003): 557-580.
 - 52 Paulette Kurzer and Alice Cooper, "Biased or Not? Organized Interests and the Case of EU Food Information Labeling," *Journal of European Public Policy* 20, no. 5 (2013): 722-740.
 - 53 Mark Cantley and Maurice Lex, "Genetically Modified Foods and Crops," in *The Reality of Precaution: Comparing Risk Regulation in the United States and Europe*, ed. Jonathan Wiener et al. (Washington, DC: RFF Press, 2011), 39.
 - 54 David Vogel, "The Hare and the Tortoise Revisited: The New Politics of Consumer and Environmental Protection in Europe," *British Journal of Political Science* 33, no. 4 (2003): 557-580.
 - 55 Mario Teisl, Luke Garner, Brian Roe, and Michael Vayda, "Labeling Genetically Modified Foods: How Do US Consumers Want to See it Done?" *AgBioForum*, 6, no 1&2 (2003): 48-54, <<http://www.agbioforum.org/v6n12/v6n12a11-teisl.htm>> (16 June 2013).
 - 56 Susan Dudley and Jeffry Brito, *Regulation: A Primer*, Second Edition (Washington, DC and Arlington VA: Mercatus Center George Mason University and George Washington University Regulatory Studies Center, 2012); and David Vogel, "The Transatlantic Shift in Health, Safety, and Environmental Risk Regulation, 1960-2010," APSA 2011 Annual Meeting Paper <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1901855> (16 June 2013).
 - 57 Charles Hanrahan, "Agricultural Biotechnology: The U.S. – EU Dispute," *CRS Report for Congress* RS21556, April 8, 2010, <<http://digitalcommons.unl.edu/crsdocs/69/>> (8 February 2013).
 - 58 Mark Cantley and Maurice Lex, "Genetically Modified Foods and Crops," in *The Reality of Precaution: Comparing Risk Regulation in the United States and Europe*, ed. Jonathan Wiener et al. (Washington, DC: RFF Press, 2011), 39.

Economic and financial market risks; the consequences of climate change, terrorism, and organized crime; supply security of energy and raw materials; the increase of cybercrime; and the vulnerability of critical infrastructure—governments, businesses, and societies face numerous systemic risks. Purely national approaches to cope with these transnational challenges are doomed to fail. In fact, there is a need for international cooperation. The United States and the EU are key players in this context—without the two economic and political heavyweights, systemic risks cannot be handled adequately. Despite the high degree of integration of their economies, sound political relations, and similar vulnerabilities to systemic risks, cooperation between the two partners is often difficult.

ADDITIONAL ANALYSIS IS AVAILABLE ONLINE:

White, Grey, and Black (Euro) Swans: Dealing with Transatlantic Financial Risk in 2012, by Matthias Matthijs (2012)

Climate 2.0 – Can Geoengineering Make the World a Safer Place?, by Sabrina Schulz (2012)

Max M. Mutschler, *Risk Governance and Transatlantic Cooperation in Space*, AICGS Issue Brief 43 (2012).

AICGS and SWP are grateful to the Transatlantik-Programm der Bundesregierung der Bundesrepublik Deutschland aus Mitteln des European Recovery Program (ERP) des Bundesministeriums für Wirtschaft und Technologie (BMWi) for its generous support of the project "New Systemic Risks: Challenges and Opportunities for Transatlantic Cooperation" and this Issue Brief.

Linnea Kreibohm, MPP, is a research assistant at the Hertie School of Governance in Berlin. The views expressed are her own, and do not represent the views of the Hertie School.

All AICGS publications are available on our website at www.aicgs.org.

The views expressed in this publication are those of the author(s) alone. They do not necessarily reflect the views of the American Institute for Contemporary German Studies.

Providing Knowledge, Insights, and Networks for the Future.

Located in Washington, DC, the American Institute for Contemporary German Studies is an independent, non-profit public policy organization that works in Germany and the United States to address current and emerging policy challenges. Founded in 1983, the Institute is affiliated with The Johns Hopkins University. The Institute is governed by its own Board of Trustees, which includes prominent German and American leaders from the business, policy, and academic communities. Please visit our website at www.aicgs.org.

Who's Afraid of GMOS? Understanding the Differences in the Regulation of GMOS in the United States and European Union

1755 Massachusetts Ave., NW
Suite 700
Washington, D.C. 20036 – USA
T: (+1-202) 392-9312
F: (+1-202) 265-9531
E: info@aicgs.org
www.aicgs.org

AMERICAN INSTITUTE
for Contemporary
German Studies
JOHNS HOPKINS UNIVERSITY

