

**THE TRANSATLANTIC SHIFT
IN HEALTH, SAFETY &
ENVIRONMENTAL RISK
REGULATION, 1960 TO 2010**

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The Transatlantic Shift in Health, Safety & Environmental Risk Regulation, 1960 to 2010

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Abstract: An important discontinuity in health, safety, and environmental risk regulation has taken place in both Europe and the United States during the last five decades. Between 1960 to 1990, regulations adopted in the United States were typically more risk averse, comprehensive and innovative than those adopted in European countries or by the European Community/Union. The United States also played a leadership role in supporting more stringent global environmental regulation. Since around 1990, this pattern of relative transatlantic regulatory stringency has reversed: during the last two decades, the European Union has adopted a wide range of more stringent risk regulations than the United States. The EU has also replaced the United States as the primary initiator and supporter of new environmental treaties.

The expansion and strengthening of European risk regulations and the relative lack of new regulations adopted by the United State has been largely shaped by three factors: stronger public demands for more stringent regulations in Europe, more political support for regulations by policy-makers in the EU than in Washington, and different policy approaches to risk assessment. The later is associated with the growing influence of the precautionary principle in Europe and the increased reliance on regulatory impact assessment in the US. The recent European approach to risk regulation represents a response to a series of false positive policy failures, while the slowdown in the rate of regulatory expansion in the US is in part attributable to politically influential false positive errors.

Key words: risk, regulation, precautionary principle, European Union, United States, transatlantic, health, safety, environment

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Introduction

In 1962, the United States¹ enacted regulations for the approval of drugs that were more stringent than those of Great Britain and Germany.

In 1969, the United States banned the artificial sweetener cyclamate, which remains permitted in each member state of the European Union.²

In 1975, catalytic converters were required for all new cars sold in the United States; they were required for all new cars sold in the EU beginning in 1992.

In 1979, the plant-growth regulator Alar was banned in the United States; all but one European country as well as the EU permits its use.

In 1985, the EU prohibited the administration of growth hormones to beef cattle; the United States allows them.

In 1989, the United States eliminated the use of lead in gasoline/petrol. The EU ended its use of this fuel additive in 2005.

Since 1992, the United States has approved more than one hundred genetically modified (GM) varieties for planting, feed, or food; the EU has approved twenty-eight, most of which are not in commercial use. Virtually all processed food in the United States contains GM ingredients, while virtually none sold in the EU does.

In 1997, the EU ratified the Kyoto Protocol, which committed its member states to reduce their emissions of six greenhouse gases (GHG); the United States has not done so.

In 1999, the EU banned the use of six phthalates in children's products; the United States adopted a similar restriction in 2008.

In 2003, the EU banned the use of six hazardous materials in electrical and electronic products beginning in 2006; the United States still permits their use.

In 2006, the EU significantly strengthened and broadened its health and environmental regulations for chemicals; the last comprehensive statutory reform of American chemical regulation took place in 1976.

Within political systems, there are important linkages among many health, safety, and environmental risk regulations. Their public issue life cycles overlap and they often follow parallel or convergent political trajectories.³ This means that if a government is adopting more stringent regulations toward some consumer or environmental risks caused by business, then it is also more likely to do so for others. Alternatively, if it is not stringently regulating a specific health, safety, or environmental risk, then it is also less likely to adopt more risk-averse regulations for others. In short, risk regulations are both interdependent and shaped by similar political developments. These can be stable for long periods of time, but the policy equilibriums that underlie them can also change significantly.

A noteworthy discontinuity in the politics of regulatory stringency took place on both sides of the Atlantic in about 1990. If a new risk regulation was enacted on either side of the Atlantic during the three decades prior to 1990, then it is *more likely* that the American standard was initially, and in some cases has remained, more risk averse. However, if it was adopted on either side of the Atlantic after 1990, then it is *more likely* that the regulation adopted by the European Union was initially, and has often remained, more risk averse.

The Transatlantic Shift in Regulatory Stringency

For approximately three decades, the United States was typically one of the first countries to identify new health, safety, and environmental risks and to enact a wide range of stringent and often precautionary standards to prevent or ameliorate them. Several important American consumer safety and environmental regulations, including its rules for the approval of new drugs; many of its pesticide, food safety, and chemical standards; its controls on automobile emissions, including lead in gasoline/petrol; and restrictions on ozone-depleting chemicals, were among the most risk averse in the world. “The United States was the clear global leader in

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environmental policy in this era, and many other countries copied its policy initiatives.”⁴

Around 1990, the locus of transatlantic regulatory policy innovation and global regulatory leadership began to shift. While American policy makers previously had been “quicker to respond to new risks, more aggressive in pursuing old ones,” more recently it is European policy makers who have been more likely to identify new risks and been more active in attempting to ameliorate existing ones.⁵ Europe has not simply “caught up” to the United States; rather, many of the risk regulations adopted by the EU since 1990 are now more stringent and comprehensive than those of the American federal government, and in “many policy areas [the EU] has taken over the role of world leader.”⁶

The rate at which the federal government has adopted new stringent and comprehensive regulatory statutes and rules markedly declined after 1990. “Further building of the green state—at least at the national level—essentially stopped around 1990.”⁷ By contrast, “[the] EU surged forward,” issuing a steady stream of “higher and tougher standards.”⁸ To borrow Lennart Lundqvist’s influential formulation, which he used to contrast American and Swedish air pollution control standards during the 1970s, since around 1990 the American federal regulatory policy “hare” has been moving like a “tortoise,” while the pace of the European “tortoise” resembles a “hare.”⁹ “It has become almost a constant trend to see more and more legislation being planned or adopted in Europe that sets higher standards to protect health or the environment than in the United States.”¹⁰

Not all American risk regulations enacted between around 1960 and 1990 were more stringent than those adopted by any European country or the EU. For example, the EU’s ban on beef hormones was adopted in 1985, while during the 1970s and 1980s some European countries adopted restrictions on chemicals that were either comparable to or more risk averse than those of the United States. Nor has every consumer safety or environmental regulation enacted by the EU or any of its member states since 1990 been more stringent than those adopted by the United States during the last two decades. For example, American mobile source or vehicular emission

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standards for health-related (criteria) pollutants have been steadily strengthened and remain stricter than those of the EU.

There has also been increased transatlantic convergence in some policy fields. Following changes in the regulatory policies of the Food and Drug Administration (FDA) that began in the late 1980s, but accelerated during the early 1990s, and the centralization of drug approval policies by the EU during the first half of the 1990s, the “drug lag” has disappeared: a new drug is now as likely to be first approved for use in the United States as in the EU. Both the EU and the United States have now imposed similar bans on lead and phthalates in children’s products, with the United States acting a few months earlier in the former case and the EU nine years earlier with respect to the latter. Some differences in European and American risk perceptions and regulations are long-standing. For example, the health risks of traditional or natural food preparations have been accepted in Europe since medieval times. In 1949, the American FDA banned the sale of any milk product unless all of its dairy ingredients had been pasteurized, while the production and sale of cheeses made from unpasteurized milk is permitted in the European Union.¹¹

But while not *every* European and American consumer or environmental risk regulation is consistent with a transatlantic shift in regulatory stringency since 1990, a *disproportionate number of the more important* consumer and environmental regulations adopted, or not adopted, on either side of the Atlantic during the last five decades do fit this pattern. For roughly three decades, *relatively few important* risk regulations adopted by either individual European countries or the EU were more stringent than those of the American federal government. But since 1990, a *significant number of important* risk regulations adopted by the EU fall into this category.

In some cases, such as chemical regulation and restrictions on ozone-depleting substances, there has been a literal “flip flop,” with the United States and the EU switching places with respect to the adoption of more stringent and comprehensive regulations. But more commonly, the more stringent regulations adopted by the EU since around 1990 address risks that were not previously regulated on either side of the Atlantic. Recent European regulations are likely to be more stringent and often more precautionary than those of the United States for those health, safety, and

environmental risks that have emerged or become more salient since around 1990, such as global climate change, milk hormones, genetically modified food and agriculture, antibiotics in animal feed, hazardous materials in “e-waste,” and chemicals in cosmetics.

International Environmental Agreements

The transatlantic shift in regulatory stringency and global leadership is reflected in changes in the pattern of support for international environmental treaties.¹² Beginning in the 1970s, the United States and the member states of the EU closely cooperated in the establishment of numerous environmental agreements, with the United States often playing a leadership role. At the 1972 Stockholm United Nations international conference on the environment, the United States was “a strong proponent of international action to protect the environment.”¹³ The United States played a critical role in the negotiations that led to the adoption of the London Convention on Dumping at Sea (1972), the Convention on International Trade in Endangered Species and Fauna (1973), the decision of the International Whaling Commission to ban commercial whaling (1884), and the Montreal Protocol on Ozone Depleting Chemicals (1987).

The 1992 Rio “Earth Summit” marks a shift in global regulatory leadership from the United States to the EU. While every major environmental agreement supported by the United States has been ratified by the member states of the EU and/or the EU itself, the United States has not ratified twelve important international environmental agreements ratified by the EU and/or its member states.¹⁴ These include the 1992 Convention on Biological Diversity, the 1997 Kyoto Protocol on climate change, the 2000 Cartagena Protocol on Biosafety, and the 2001 Stockholm Convention on Persistent Organic Pollutants.¹⁵

The Shifting Pattern of Transatlantic Trade Disputes

The shift in transatlantic regulatory stringency is also evident in the changing pattern of European-American trade disputes.¹⁶ The earlier wave of disputes over the use of protective regulations as non-tariff trade barriers (NTBs) between Europe and the United States primarily involved European challenges to, or complaints about, the barriers to transatlantic commerce created by more stringent American regulatory standards. The EU and/or various European governments filed formal complaints with the General Agreement on Tariffs and Trade (GATT) over the excise tax provisions of the 1986 Superfund reauthorization, the American secondary boycott of tuna imports from Spain and Italy (which was based on the Marine Mammal Protection Amendments of 1984 and 1988), and American corporate fuel economy standards (CAFE), which were adopted in 1975 and amended in 1980. European officials were also highly critical of the testing requirements for new chemicals adopted by the United States in 1976.

However, more recent transatlantic regulatory-related trade disputes have revolved primarily around American complaints about the trade barriers posed by more stringent

European regulations. In 1996, the United States filed a formal complaint with the World Trade Organization (WTO) that challenged the legality of the EU's ban on the sale of beef from cattle to whom growth hormones had been administered, which was applied to American beef imports in 1989. In 2003, the United States filed a complaint with the WTO challenging the EU's procedures for the approval of genetically modified organisms (GMOs), as well as the unwillingness of some member states to permit GMO varieties approved by the European Commission. In 2009, the American government filed a complaint with the WTO over the EU's refusal to permit imports of processed poultry treated with anti-bacterial chemicals such as chlorine dioxide, a processing method that differed from the method required by the EU in 1997.

American officials and firms have also complained to the EU about the obstacles to transatlantic commerce posed by a wide range of other European consumer and

environmental regulations, including its ban on the milk hormone BST, its ban on human-use antibiotics as growth promoters in livestock feed, its electronic recycling requirements and bans on hazardous toxic substances in electronics, and the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH), the EU's stricter and more comprehensive chemical approval and testing regulation adopted in 2006.¹⁷ The latter statute was strongly opposed by American government officials and American-based chemical firms. American-based airlines have also objected to the 2008 decision of the EU to regulate the greenhouse gas emissions of foreign airlines that take off and land in Europe.

While previously it was the United States that had sought to protect its more stringent regulations from legal challenges by other countries, more recently the EU has become the primary advocate of changes in WTO rules in order to make them more compatible with the protective regulations it has adopted.¹⁸ The EU has supported new trade rules that would clarify the relationship between the WTO and multilateral environmental agreements—many of which have been signed by the EU and several other countries but not the United States. It also has requested that the WTO accord legal recognition to the precautionary principle in order to “help ensure that measures based on a legitimate resort to the precautionary principle, including those that are necessary to promote sustainable development, can be taken without the risk of trade disputes.”¹⁹ The latter proposal has been strongly opposed by the United States on the grounds that it would become a “guise for protectionist measures.”²⁰

The Precautionary Principle

The EU's adoption of the precautionary principle has become a major focus of transatlantic tension in other forums as well. It reflects and has reinforced an important difference between the EU and the United States about the appropriate criteria for regulating risks. The precautionary principle has increased the discretion of European policy makers by enabling them to impose restrictions on commercial activities whose risks are uncertain, unproven, or disputed. The application of this principle underlies many of the more stringent risk regulations adopted by the EU. The precautionary principle has in turn been strongly criticized by American-based

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firms and American government officials. They have argued that it undermines the importance of scientific risk assessments as a guide to risk management decisions and is likely to lead to regulations based on public fears or “phantom risks” rather than on “sound science.”²¹

These transatlantic differences in risk assessment criteria have become highly contentious. As Jonathan Wiener notes:

Some observers see a civilized, careful Europe confronting a risky, reckless and violent America. To this group, the precautionary principle is an antidote to industrialization, globalization, and Americanization. On the other hand, other observers see a statist, technophobic, protectionist Europe trying to rise to challenge a market-based, scientific, entrepreneurial America. To this group, the precautionary principle is an obstacle to science, trade, and progress.²²

According to Alan Larson, the former U.S. Under Secretary of State:

For some in Europe, the “precautionary principle” appears to mean that when it suits European authorities, they may withhold approval until the risk assessment process has convinced even the most irrational consumer of the absence of even the most hypothetical risk of the most remote theoretical uncertainty.²³

But Pascal Lamy, the former EU trade commissioner, counters that, “in the U.S. they believe that if no risks have been proven about a product, it should be allowed. In the EU it is believed that something should not be authorized if there is a chance of risk.”²⁴ In many respects, we have come full circle: many of the criticisms by American officials of the more stringent risk regulations recently adopted by the European Union echo those made earlier by European officials about many American ones. Formerly, it was Europeans who often accused Americans of acting too hastily

to impose highly stringent risk regulations that lacked adequate scientific justification. More recently, American officials and firms have criticized many of the more stringent risk regulations adopted by the EU in identical terms.

Historical Parallels and Discontinuities

Parallels

There are a number of parallels between the periods of relative regulatory stringency on both sides of the Atlantic. During the 1970s and 1980s, American regulatory policies often served as a benchmark for European consumer and environmental activists: they often criticized the EU for its unwillingness to adopt regulatory standards as stringent as those of the United States, most notably for automotive emissions, the lead content of fuel, and chemicals that harmed the ozone layer. More recently, many American consumer and environmental activists have urged the United States to follow Europe's regulatory lead.²⁵ They have criticized American policy makers for not giving Americans the same level of environmental, health, and safety protection now enjoyed by citizens of the EU.²⁶ At the same time, many of the criticisms previously made about many American protective regulations, namely that they were often unnecessarily strict, too

burdensome, and diminished rather than enhanced public welfare, have also been made about many European ones.²⁷

During both periods of relative regulatory stringency, regulatory policymaking became more centralized, moving from states to the federal government in the United States and from member states to the EU, though both American states and national governments in Europe continue to play important policy roles.²⁸ This centralization of regulatory policymaking played an important role in the strengthening of many regulatory standards in the United States and the EU. However, while the regulatory policy regime established by the federal government during the late 1960s and early 1970s remains in place, the policies it produced changed substantially after 1990.

Discontinuities

There is, however, an important difference between the two periods. Many of the relatively stringent American regulations enacted during the 1970s and 1980s either directly or indirectly influenced European regulatory policies. “European states were heavily influenced by U.S. environmental policy developments in the 1960s and 1970s. Many policy ideas and programs diffused across the Atlantic.”²⁹ During the 1970s, Sweden’s automotive emission standards were modeled on those of the United States, while the National Environmental Policy Act (NEPA) of 1969 shaped the development of environmental policy in Germany. America’s more stringent automobile emissions standards contributed to the EU’s decision to progressively strengthen its own emissions standards, including for restrictions on lead in motor fuels. The EU’s Sixth Amendment, enacted in 1979, which tightened controls over the approval of new chemicals, was a direct response to the more stringent regulatory standards of the Toxic Substances Control Act (TSCA), enacted by the United States three years earlier. America’s restrictions on ozone depleting chemicals also shaped subsequent policy developments in Europe. In fact, during the 1980s some European policy makers argued:

With the advent of global markets, the standard of product acceptability for international consumers would be increasingly set by the country with the most stringent pollution control standards. Thus . . . Europe would only be able to take full advantage of economies of scale in globally competitive markets provided that it legislated *for high environmental standards on a par with those found . . . in the USA.*³⁰

More recently, the EU’s decision to employ a cap and trade scheme for regulating greenhouse gas emissions from stationary sources drew upon the successful emissions trading schemes established by the Clean Air Act Amendments of 1990. The EU’s “Better Regulation” initiatives have also been influenced by American administrative practices.

By contrast, there has been much less regulatory policy diffusion *from* the EU *to* the American federal government. The United States has affected European regulatory policies over the past five decades far more than it has been affected by them. With the important exception of American drug approval policies—which have drawn on and been influenced by European policy approaches—European regulatory policies and politics have had much less national policy impact in the United States than American regulatory policies previously had in Europe. Rather, as before around 1990, federal regulatory policies remain relatively autonomous: they are shaped primarily by domestic politics.

The EU's Global Regulatory Impact

The response—or lack thereof—of Washington to Brussels is atypical. For the EU has been highly successful in “exporting” many of its regulations to other countries. The European Commission has repeatedly urged other countries to adopt its more stringent consumer and environmental standards and has put considerable efforts into encouraging them to do so. As Rockwell Schnabel, the former U.S. ambassador to Brussels, observes, “Europe is increasingly seeking to act as the world’s economic regulator.”³¹

The EU’s active efforts to “globalize” its protective regulations stem from several motives. One is economic. Just as the harmonization of national regulatory requirements creates a level playing field for firms within the EU, so does the adoption of European regulations by other countries mean that the global competitors of European firms will be forced to meet similar requirements in their home markets. Another is defensive: the more countries that adopt its regulations, the greater is their legitimacy. It is “a lot harder to argue that a risk management regime is unnecessary, disproportionate or unfair if it is endorsed by a significant proportion of the world’s population.”³²

The EU’s efforts to export its regulations are “an attempt to reel other regions into the European sphere of influence.” They are a key component of its

...strategy to increase stability in the regions surrounding the EU through the regularization of public administration along a familiar format, and a way of creating kinship and interdependence by opening scope for cooperation and exchange, in which the EU, as the original architect of the regulatory format, is poised to take a central role.³³

They represent a form of “empire building” through the exercise of “soft” power.³⁴ The EU’s “global [regulatory] project has . . . given Europe’s elites a new mission.”³⁵ It has enabled the EU “to carve out an identity and a profile for itself as a ‘normative’ or ‘civilian’ power on the world stage.”³⁶

The significant expansion of the EU’s membership itself has directly expanded the geographic scope of Brussels’ regulatory impact, as its twelve accession states are brought into compliance with the *acquis communautaire*, the body of EU regulations and directives which are legally binding on all member states. Because of their extensive commercial ties with the EU, many of the risk regulations of Norway and Switzerland are similar to those of the EU, and many Russian regulations have been based on those adopted by Brussels.

But the geographic impact of EU regulations extends beyond Europe. As a report to the European Commission observed, “frequently the world looks to Europe and adopts the standards that are set here.”³⁷ Many countries have adopted EU regulations in order to retain access to its large internal market. For global firms, adopting EU rules confers an important advantage: because they are typically the world’s most stringent, if their products comply with EU standards, they can be marketed anywhere in the world.

The EU’s strong support for multilateral environmental agreements has been a critical component of its efforts to “manage globalization” and assert a leadership role in global regulatory governance.³⁸ “The EU has been the chief *demandeur* of every major environment agreement since the early 1990s.”³⁹ It played an active role in promoting global agreements that are based on its own regulatory policies, including for

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biodiversity and biosafety, hazardous waste exports, global climate change, and persistent organic pollutants. A number of these treaties explicitly reference the precautionary principle, which the EU has sought to make an international legal norm. This principle is now incorporated in more than fifty international agreements.

Government regulation of business represents one of the EU's most successful "exports." "Over the last decade, [the EU] has proven that it has the capacity to shape international economic governance across a host of regulatory domains."⁴⁰ The marked increase in Europe's global regulatory influence, which extends beyond health, safety, and environmental regulations and includes, for example, anti-trust policy, and technical standards for automobiles and mobile telephones, is obviously linked to the large size of the EU's internal market, especially following the EU's expansion to central Europe.

But this is only part of the explanation. For "a sizeable market must be coupled with powerful and capable regulatory institutions."⁴¹ The growth in the EU's regulatory capacities has also been critical. The institutional capacities and legal principles that have been developed to create and govern a single market among the EU's member states have given EU officials the technical and administrative expertise to promote global regulatory policy coordination.⁴²

European officials have taken many of the principles and practices that underlie "vertical" regulatory integration within Europe and extended them "horizontally" outside its borders. As a result of the EU's economic importance—with its expansion to twenty-seven countries the EU's GDP is now roughly 30 percent larger than that of the United States and its population is twice as large—the growth of its regulatory capacity, *and* the relative stringency of its regulatory standards, global business regulations are increasingly being "made in Brussels."⁴³

As the *Wall Street Journal* observes, "Americans may not realize it, but the rules governing the food they eat, the software they use and the cars they drive increasingly are set in Brussels."⁴⁴ European regulations have forced "changes in how industries around the world make plastics, electronics, toys, cosmetics and furniture."⁴⁵

According to an American corporate lobbyist based in Brussels, “Twenty years ago, if you designed something to U.S. standards you could pretty much sell it all over the world. Now the shoe is on the other foot.”⁴⁶ Jeffrey Immelt, the chairman and CEO of General Electric, observes that “⁴⁷ For many of GE’s businesses, ranging from light bulbs to plastic, “almost 99% of new regulations will, over time, come from the EU.”⁴⁸ The successful global diffusion of many European regulatory policies also means that many important American environmental, health, and safety standards are not only less stringent and comprehensive than those of the EU, but that some are now weaker than those of many developed and developing countries, including China.

Alternative Mechanisms of Policy Diffusion

As a response to a perceived regulatory vacuum at the national level, a number of American states have adopted protective regulations that are similar to and often modeled on those of the EU. Several American states have imposed restrictions on greenhouse gas emissions, banned some heavy metals from landfills, required manufacturers to take back electronic equipment for recycling, and banned various hazardous substances and chemicals restricted by the EU but not by the federal government. The EU’s regulatory influence has been felt most strongly in California, historically America’s “greenest” state, which has adopted a wide range of risk regulations similar to and often modeled on those of the EU.⁴⁹

The dynamics of “trading up” or the ratcheting of regulatory standards upward thus continues, but the nature and mechanisms of global regulatory emulation and policy diffusion have shifted.⁵⁰ Now it is the EU, rather than the American federal government, whose regulatory policies are playing an important role in strengthening the risk regulations of many of its trading partners. The “California effect,” a term that describes the process by which a government’s more stringent regulatory standards are diffused to other political jurisdictions, has become the “EU effect.” While California formerly served as a vehicle for the “export” of more stringent American environmental standards *to* Europe, more recently it has become an “importer” of several more risk-averse and comprehensive regulations *from* Europe.

In addition to changing what products they produce or how they produce them in order to retain access to the EU's large internal market, many global firms have also chosen to comply with some, or all, EU regulations for many of the products they sell outside Europe, including in the United States. They have done so both to protect their global brands and reputations and because it is often more efficient for them to market similar products globally. Many American food processors and retailers also produce and sell food products that conform to European health, safety, and environmental standards. These private, market-based forms of "trading up" have reduced the gap between some European standards and American business practices.

Clarifying the Argument

The fact that many European protective regulations are now more stringent than American ones does *not* mean that European consumer and environmental regulations are "better." Whose regulations are "better" or "worse" depends on one's policy preferences and values. If one considers more stringent or precautionary regulations to be welfare-enhancing, then the United States was formerly "ahead" of Europe, but now "lags behind" the EU. However, if one is more skeptical of the benefits of more stringent regulations, then the recent pattern of American regulatory policymaking would be considered salutatory. Supporters of more stringent regulations would like the United States to "catch up" to Europe by adopting its precautionary approach to many health, safety, and environmental risks, while critics of European regulatory policies hope that the EU will emulate the United States by relying more on scientific-based risk assessments and cost-benefit analyses.

Since around 1990, in part as a response to many widely publicized examples of "overregulation," American policy makers have placed more emphasis on avoiding false positives, i.e., unnecessarily stringent regulations (Type I policy errors), while their European counterparts, responding to a wide range of policy failures attributed to "under-regulation," have placed greater priority on reducing false negatives, i.e., insufficient stringent regulations (Type II policy errors). Defenders of more stringent

regulations tend to emphasize the risks of false negatives, while critics of protective regulations focus on the shortcomings of false positives.

Citizens, policy makers, managers, and scientists in both Europe and the United States can and do disagree about which specific regulations adopted, or not adopted, on either side of the Atlantic during the last five decades are in the public interest. While the science of risk assessment has become highly sophisticated, risk assessments can be interpreted differently or based on different data, assumptions, questions, or values, and scientists themselves may not always agree. In the face of scientific uncertainty and public pressures, policy makers may choose to be more or less risk averse. As Mary Douglas and Aaron Wildavsky observe, “Acceptable risk is a matter of judgment and . . . judgments differ.”⁵¹

A Policy Puzzle

The extent to which transatlantic regulatory policy divergence has increased during the last two decades presents a puzzle. When compared to the rest of the world, Europe and the United States have much in common. The United States and the fifteen member states of the EU (as of 2003) are affluent democracies with sophisticated public bureaucracies, substantial scientific capacities, and strong civic cultures. Their regulatory officials have access to much of the same scientific expertise and there is extensive communication among policy makers, scientists, business managers, nongovernment organizations, and citizens. Thanks to the spread of global media, many Americans and Europeans are well informed of policy developments on the other side of the Atlantic.

Moreover, their economies have become increasingly interdependent. “The transatlantic trade and investment relationship has become a super highway.”⁵² Bilateral trade in goods between the EU and the United States totaled \$563 billion in 2007; each is the other’s second most important trading partner. European investments in the United States total \$1.5 trillion, and American firms have investments of approximately \$1.7 trillion in the EU.⁵³

The result is a staggering degree of interdependence between the two economies, not least because the fabled US and European multinationals are now so thoroughly intertwined by mergers and cross-fertilization. Something close to a quarter of all US-EU “trade” simply consists of transactions within firms with investments on the other side of the Atlantic.⁵⁴

Divergent risk regulations between the United States and the EU add to the costs of transatlantic commerce and also raise the costs of international trade as some countries adopt European standards and others, American ones. Improving regulatory cooperation and coordination has accordingly become an important objective of global firms and government officials on both sides of the Atlantic.⁵⁵ Why, then, has transatlantic regulatory polarization increased in so many important policy areas?

Explaining Policy Divergence

I have identified three critical factors that have shaped transatlantic regulatory policy divergence since 1990. The first part of my explanation focuses on changes in political salience of consumer and environmental risks and the extent and intensity of public pressures to ameliorate them. During the last two decades, Europeans have perceived *more* health, safety, and environmental risks caused by business to be both credible and politically unacceptable than have Americans. The breadth and intensity of public demands for more stringent risk regulations has declined in the United States and increased in Europe.

My second explanatory factor involves changes in the political preferences of influential policy makers. While Democrats have generally supported more stringent risk regulations than Republicans, through around 1990 there was also considerable bipartisan support for stronger consumer and environmental regulation. But beginning in the 1990s, regulatory policymaking, especially in the area of environmental protection, became increasingly polarized along partisan lines. Republicans, who were the majority party in both the House of Representatives and the Senate between 1995 and 2006 (with one brief exception in the U.S. Senate), and Republican President George W. Bush, who held office between 2001 and 2008, were less willing to

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support more stringent consumer and environmental risk regulations than were many previously elected Republicans, including Republican Presidents Richard Nixon, Ronald Reagan, and George H. W. Bush. This increase in partisan polarization played an important role in slowing down the rate at which new, more stringent risk regulations were adopted, especially through legislation.

By contrast, in 1995, the same year that a more conservative Republican Party became the majority party in Congress, Sweden, Austria, and Finland, three states with strong “green” preferences, joined the EU. In 1997, members of Green parties served in the governments of France, Germany, Belgium, Italy, and Finland, and the party occupied a total of nearly 150 seats in the national legislatures of eleven member states. Between 1994 and 1999, the number of seats held by European Greens in the European Parliament (EP) increased from twenty-three to thirty-eight, making them the fourth largest party group in the EP. Through 2004, the European Commission had a center-left administration and the EP, center-left majorities. Transatlantic differences in the relative political strength of center-left and center-right political parties between 1995 and 2004 as well as changes in the national composition of the EU help explain the differences in regulatory policies adopted in the EU and the United States during this period.

However, by 2004 most EU member states were governed by center-right majorities and the representation of Green parties in European governments had significantly declined. Elections to the EP in 2004 and 2009 resulted in center-right majorities and the EU has been governed by a center-right European Commission since 2004. But, significantly, center-right politicians and political parties in Europe have been more willing to support expansions of risk regulations than national Republicans have been since the early 1990s in the United States. The politics of European risk regulation has been less polarized along ideological and partisan lines than in the United States.

The third key factor influencing changes in regulatory policymaking on both sides of the Atlantic involves the criteria used by policy makers to decide whether or how to respond to particular risks. While previously, many American policies reflected a willingness to impose regulations in the face of scientific uncertainty, beginning in the 1980s, formal risk assessments began to play an increasingly influential role in the

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making of risk management decisions. This has often increased the level of scientific evidence necessary to justify new risk regulations, most notably by regulatory agencies. By contrast, the EU's inclusion of the precautionary principle in the 1992 Maastricht Treaty on the European Union has strengthened both the ability and willingness of European regulatory officials to enact more stringent regulations in the face of scientific uncertainty about the causes and consequences of the risks being regulated. It has facilitated their ability to ban or restrict existing commercial activities and to withhold approval for new ones. Equally important, in the United States, federal courts have increasingly subjected the rules issued by regulatory agencies to close and careful scrutiny. By contrast, European courts have been more willing to defer to the decisions, directives, and rules of the European Commission and the Council of Ministers—including those based on the precautionary principle.

As relatively few elections in either the United States or in Europe have been fought or decided on the basis of the electorates' regulatory policy preferences, and much regulatory policy is made by appointed officials, policy makers typically enjoy a degree of discretion in making risk management decisions. This is particularly true in the case of the EU, as most European officials are not directly accountable to the European electorate. Accordingly, policy makers may choose to be more or less responsive to public pressures for more stringent regulations. But when policy makers are more willing to adopt more stringent risk regulations, it becomes easier for activists to mobilize public support for them. Conversely, when policy makers are less willing to do so, the "hurdle" that new risks must surmount to become politically salient increases. Since around 1990, it has become more difficult for new health, safety, and environmental risks to be placed on the policy agenda in Washington than in Brussels.

Alternatively, when public pressures for more stringent regulations are extremely strong, policy makers are highly likely to be responsive to them. This helps explain, for example, the support of Republican Presidents Richard Nixon and George H. W. Bush for stricter federal controls on air pollution as well as the Barasso Commission's willingness to back stronger climate-change regulations.

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The relative importance of each of these three factors in explaining any particular policy decision or non-decision varies from policy domain to policy domain, and for some of the policies discussed in this book, other factors have also played an important role. But both separately and often in relationship with one another, they provide a useful framework for explaining the shifts in public policies toward a wide range of health, safety, and environmental risks that took place in on both sides of the Atlantic beginning around 1990.

Public Risk Perceptions

Public opinion is one of the three key factors that have shaped regulatory policies and politics on both sides of the Atlantic. But this, in turn, raises a critical question: what explains public opinion, or more

The more risks that are regarded as both credible and unacceptable by politically influential segments of the electorate, the more likely policy makers will find themselves pressured to adopt more stringent risk regulations. Increases in public demands for more stringent risk regulations essentially stem from a gap between the public's perceptions of the risks they consider *both* credible and unacceptable and the existing scope and stringency of government regulation. Both dimensions of public perceptions are critical. For example, while the risks of smoking are widely regarded as credible on both sides of the Atlantic, it would clearly be politically unacceptable for any country to ban cigarettes. Likewise, while the risks of consuming dairy products made from unpasteurized milk are credible, European consumers consider them to be acceptable.

As is true for many public policies, changes in risk regulations typically have their origin in some kind of triggering mechanism, i.e., some event, information, or development that disrupts or “punctuates” the existing political equilibrium and thus “opens the previously constrained decision-making domain to other interests and participants, and [leads to] a ‘refraining’ of the issue that undermines the previous policy justification.”⁵⁶ Such triggering mechanisms or focusing events can include a major accident, catastrophe, or highly visible policy failure, new reports or studies, an

influential book, stories in the media, and/or a public campaign waged by activists.⁵⁷ “The stronger public concerns are, the more effective NGOs [non-government organizations] are likely to be in affecting public opinion.”⁵⁸ Likewise, the greater the media coverage of a particular risk, the more likely it is to become politically salient.

A succession of such “triggers” can then create what Cass Sunstein describes as a “risk availability cascade,” or what David Hirshleifer characterizes as an “informational cascade.”⁵⁹ Such a “cascade” changes the way in which *other* risks are perceived. They make influential segments of the public more likely to regard claims, reports, or information about other risks which they learn or hear about—often indirectly or unrelated to the original triggering mechanism or mechanisms—as both credible and unacceptable. Paul Slovic writes:

An unfortunate event can be thought of as analogous to a stone dropped in a pond. The ripples spread outward, encompassing first the directly affected victims, then the responsible company or agency, and in the extreme, reaching other companies, agencies and industries. . . . Some events make only small ripples; others make larger ones.⁶⁰

A stream of “unfortunate events” or other policy triggers can then produce what has been described as a “precautionary risk culture” or a “risk society,” characterized by a continuous stream of both highly credible and politically unacceptable business-related health, safety, and environmental risks, or a succession of “larger ripples.”

Such a “precautionary risk political culture” or “risk society” periodically characterized the United States beginning in the 1960s and especially during the 1970s and 1980s. As a British journalist observed in 1972, “We saw the Americans thrashing around from one pollution scare to the next . . . One moment it was cyclamates, mercury the next, the ozone, lead cadmium— there they seem set on working their way in a random manner through the whole periodic table.”⁶¹ A British social scientist commented in 1979, “Americans seem to have taken an excessively strict interpretation of risk, reducing ‘reasonable risk’ to practically ‘zero risk.’”⁶²

Three years later, Mary Douglas and Aaron Wildavsky wrote:

Try to read a newspaper or news magazine . . . on any day some alarm bells will be ringing. What are Americans afraid of? Nothing much, really, except the food they eat, the water they drink, the air they breathe...In the amazingly short space of ten to twenty years, confidence about the physical world has turned into doubt. Once the source of safety, science and technology has become the source of risk. . . . America is more passionately involved than any other nation in the debates about risks to nature.⁶³

As these observations suggest, from the early 1960s through around 1990, significant segments of the American public heard and found both credible and politically unacceptable a continuous stream of “alarm bells.” These included contaminated cranberries, cyclamates, DES in livestock, strawberries, thalidomide, pesticides, unsafe cars, high levels of air pollution, lead, contaminated toxic waste dumps, a nuclear power accident, mercury-contaminated fish, DDT, asbestos, and two major oil spills, one in Santa Barbara and a second, much larger one in Alaska in 1979, to name but a few. Many became associated with one other. As Alan Mazur notes in his historical study of the political salience of many risks that have emerged in the United States, public warnings did not arise in isolation. Nearly every one of them is connected to some other warning or public concern, recently or currently in the news. In motivating partisans to support or oppose it, a technology’s association with other contentious issues in politics and society may be as important as its intrinsic risk.⁶⁴

Since around 1990, a similar kind of “precautionary risk culture” has emerged in Europe. In 1988, the *Washington Post* reported: “Dead seals in the North Sea, a chemical fire on the Loire, killer algae off the coast of Sweden, contaminated drinking water in Cornwall. A drumbeat of emergencies has intensified the environmental debate this year in Europe, where public concern about pollution has never been higher.”⁶⁵ In 1992, the protection of the environment and the fight against pollution had become “an immediate and urgent problem” in the view of 85 percent of EU citizens.⁶⁶ In 2001, the *Washington Post* observed:

Wealthy, well-educated Europe is regularly swept by frightening reports of new dangers said to be inherent in contemporary life.... Americans have health concerns too, but not on this scale. The year is two months old and already in 2001 public opinion and public officials have been rattled by alarms over risk—proven and not—from genetically modified corn, hormone fed beef and pork, “mad-cow” disease, a widely used measles vaccine, narrow airline seats said to cause blood clots and cellular phones said to cause cancer.⁶⁷

Whether or not objectively Europeans have recently had more reasons to be “scared” than in the past, they often perceived themselves as more vulnerable.⁶⁸

What Happened in the United States?

But what, then, subsequently happened in the United States? Why did fewer consumer and environmental risks become salient in the United States? Why did public pressures or demands for more risk-averse regulations diminish?

One plausible explanation is that after around 1900 Americans experienced fewer “unfortunate events”—or at least certainly none that appeared as threatening to the health of so many people as the outbreak of BSE in Britain or which resulted in as many preventable deaths as from HIV-contaminated blood in France. But this can be only a partial explanation. For one of the central findings of this book is that a dramatic or highly visible “unfortunate event” is neither a necessary nor a sufficient condition to trigger intense public dissatisfaction with the regulatory status quo. Risks rarely speak for themselves. Most “alarm bells” are not based on harms or dangers that are visible or self-evident. Rather, they are typically rooted in claims that a particular commercial activity or product poses a credible and politically unacceptable health, safety, or environmental risk—often made by an activist group, private or government scientific by the media.

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The significance and causes of these (alleged) risks are often based on scientific studies which can be subject to conflicting interpretations and whose data or conclusions few citizens are in a position to independently assess. In many cases, the causal links between these “risks” and the harms associated with them are contentious or difficult to prove or verify, especially as many are based on claims about future harms or dangers.

Most of the politically influential “alarm bells” that have rung on either or both sides of the Atlantic, ranging from cyclamates, Alar, and ozone depletion to antibiotics in animal feed, beef and milk hormones, genetically modified foods, global climate change, phthalates in children’s toys and cosmetics, fall into this category. For each of them, citizens, the media, and opinion leaders must decide who is more credible: those who insist on the need for more stringent regulations or those who question or challenge such claims. In short, *the public must decide both what to worry about and how much to worry.*

After around 1990, Americans did not necessarily have fewer health, safety, or environmental risks to worry about.⁶⁹ Nor did they hear fewer alarm bells than Europeans. New health, safety, and environmental risks continued to emerge in the United States, many of which were similar to or echod those raised in Europe. Rather, what changed was their political impact: compared to both the United States before 1990 and Europe since then, fewer alarm bells in the United States rang as loudly or for as long. They became less likely to produce the kind of sustained and intense public response that is necessary to turn an alarm bell into a “policy trigger.” Equally important, the ringing of one alarm bell was less likely to set off a cacophony of others.

Rather than a risk “availability cascade,” the last two decades in the United States have been characterized by a risk “availability blockade.” Widely publicized disagreement about the credibility of many of the alarm bells rung by activists made it more difficult for the influential segments of the public to be persuaded that additional stringent and comprehensive regulations were needed to protect them. For example, in 2010, a record 48 percent of Americans stated that the “seriousness of global warming” is “greatly exaggerated.”⁷⁰

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Significantly, according to survey data after peaking in 1990, the gap between public demands for more risk regulations and the scope and stringency of existing regulations that had helped drive the previous expansions of consumer and environmental regulation *diminished*; the latter finally caught up with the former. After around 1990, large segments of the public became *more* likely to believe that the United States was *now* (finally) making adequate progress in protecting and improving environmental quality. This in turn affected the extent and intensity of public demands for additional regulation; it made it more difficult for new alarm bells to gain sufficient political traction to become policy triggers. By the twenty-fifth anniversary of Earth Day in 1995, “the public’s sense of urgency about the environment had declined considerably.”⁷¹

In short, enough had now been done: the median voter had become more broadly satisfied with the regulatory status quo. These broad trends continued. According to a Gallup public opinion survey conducted in March 2010, Americans were less worried about a wide range of environmental problems than at any time during the past twenty years. Gallup primarily attributed the long and steady decline in concern for environmental issues since 1989 to “a general belief among Americans that environmental conditions in the U.S. are generally improving.”⁷² Americans did *not* become less committed to or concerned about protecting the environment; what *did* change was the extent and intensity of public support for *additional* regulation.

Endnotes

¹ Unless otherwise noted, the “United States” or the “U.S.” refers to the American federal government.

² The term “European Union” did not formally come into use until 1993, when it was adopted as part of the Treaty on European Union or “Maastricht” Treaty signed in 1992; prior to that date, the EU was called the European Economic Community or EEC. However, for purposes of clarity, I have chosen to use the current name throughout the text, though some quotations refer to the “Community” or the “European Community.”

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⁴ John Dryzek et al., *Green States and Social Movements: Environmentalism in the United States, United Kingdom, Germany, and Norway* (Oxford: Oxford University Press, 2003), 160.

⁵ Sheila Jasanoff, “American Exceptionalism and the Political Acknowledgement of Risk,” in *Risk*, ed. Edward Burger (Ann Arbor: University of Michigan Press, 1993), 63.

⁶ Quoted in Jonathan Wiener, “Whose Precaution After All? A Comment on the Comparison and Evolution of Risk Regulatory Systems,” *Journal of Comparative and International Law* 13 (2007): 214.

⁷ Christopher Klyza and David Sousa, *American Environmental Policy, 1990–2006: Beyond Gridlock* (Cambridge, MA: MIT Press, 2008), 43.

⁸ Quoted in Robert Donkers, “US Changed Course, and the EU Surged Forward,” *Environmental Forum* (March/April 2006): 49. The second quotation is from Alasdair Young and Helen Wallace, *Regulatory Politics in the Enlarging European Union: Weighing Civic and Producer Interests* (Manchester and New York: Manchester University Press, 2000), 9.

⁹ Lennart Lundqvist, *The Hare and the Tortoise: Clean Air Policies in the United States and Sweden* (Ann Arbor: University of Michigan Press, 1980).

¹⁰ Theofanis Christoforou, “The Precautionary Principle, Risk Assessment, and the Comparative Role of Science in the European Community and the US Legal System,” in *Green Giants? Environmental Policies of the United States and the European Union*, ed. Norman Vig and Michael Faure (Cambridge: MIT Press, 2004), 25.

¹¹ Marsha Echols, “Food Safety Regulation in the European Union and the United States: Different Culture, Different Laws,” *Columbia Journal of International Law* 4 (Summer 1998): 525–43.

¹² For a complete list of international environmental agreements since 1959 and their legal status in both the United States and Europe, see Miranda Schreurs, Henrik Selin, and Stacy VanDeveer, “Expanding Transatlantic Relations: Implications for Policy and Energy Policies,” in *Transatlantic Environment and Energy Politics: Comparative and International Perspective*, ed. Schreurs, Selin, and VanDeveer (Burlington, VT: Ashgate, 30 2009), 8–9.

¹³ Donkers, “US Changed Course, and the EU Surged Forward,” 49.

¹⁴ Schreurs, Selin, and VanDeever, “Expanding Transatlantic Relations,” 8, 9.

¹⁵ Robert Falkner, “American Hegemony and the Global Environment,” *International Studies Review* 7 (2005): 585.

¹⁶ For a summary and analysis of several trade disputes stemming from more stringent European standards, see Sebastiaan Princen, *EU Regulation and Transatlantic Trade* (Hague: Kluwer Law International, 2002). For case studies of EU-U.S. trade disputes over risk regulations, see David Vogel, *Benefits or Barriers? Regulation in Transatlantic Trade* (Washington, DC: Brookings Institution Press, 1998). For a more general discussion, which includes case studies of transatlantic risk-related disputes, see Ernst-Ulrich Petersmann and Mark Pollack, eds., *Transatlantic Economic Disputes: The EU, the US, and the WTO* (New York: Oxford University Press, 2003).

¹⁷ For an extensive list of American business criticisms of EU regulatory policies, their lack of scientific basis, and the harm they pose to American firms, see *Looking Behind the Curtain: The Growth of Trade Barriers that Ignore Sound Science* (Washington, DC: National Foreign Trade Council, 2003); Lawrence Kogan, *Unscientific “Precaution”: Europe’s Campaign to Erect New Foreign Trade Barriers* (Washington, DC: Washington Legal Foundation, 2003); *EU Regulation, Standardization and the Precautionary Principle: The Art of Crafting a Three-Dimensional Trade Strategy That Ignores Sound Science* (Washington, DC: American Foreign Trade Council, 2003); Lawrence Kogan, *Precautionary Preference: How Europe’s New Regulatory Protectionism Imperils American Free Enterprise* (Princeton, NJ: Institute for Trade, Standards and Sustainable Development, 2005).

¹⁸ For a more detailed discussion of the shifts in European and American positions on the trade rules governing consumer and environmental regulations as non-tariff trade barriers, see David Vogel, “Trade and the Environment in the Global Economy: Contrasting European and American Perspectives,” in *Green Giants? Environmental Policies of the United States and the European Union*, ed. Norman Vig and Michael Faure (Cambridge, MA: MIT Press, 2004), 231–52. See also *EU’s Environmental Agenda* (Cuts Centre for International Trade, Economics & Environment, 2001), and Dirk De Bievre, “The EU Regulatory Trade Agenda and the quest for WTO Enforcement,” *Journal of European Public Policy* 13, 6 (September 2006): 851–966.

¹⁹ Quoted in Vogel, “Trade and the Environment in the Global Economy,” 252.

²⁰ Quoted in *ibid.*

²¹ For defenses of its approach to risk assessment and management, see, for example, Carolyn Raffensperger and Joel Tickner, eds., *Protecting Public Health and the Environment: Implementing the Precautionary Principle* (Washington, DC: Island Press, 2003); Joel Tickner, ed., *Environmental Science and Public Policy* (Washington, DC: Island Press, 2003); and Nancy Myers and Carolyn Raffensperger, eds., *Precautionary Tools for Reshaping Environmental Policy* (Cambridge, MA: MIT Press, 2006). For criticism, see, for example, Frank Ross, “Paradoxical Perils of the Precautionary Principle,” *Washington and Lee Law Review*, 21 (1996): 851–925; Julian Morris, ed., *Rethinking Risk and the Precautionary Principle* (Oxford: Butterworth-Heinemann, 2000); and Cass Sunstein, *Laws of Fear: Beyond the Precautionary Principle* (Cambridge: Cambridge University Press, 2005).

²² Jonathan Wiener, “Whose Precaution After All? A Comment on the Comparison and Evolution of Risk Regulatory Systems,” *Journal of Comparative and International Law* 13 (2007): 214–15.

²³ Quoted in M. Eli, “The Precautionary Principle—What the US Thinks,” *European Affairs* 1, no. 2 (1987): 85.

²⁴ Wiener, “Whose Precaution After All?” 213–14.

²⁵ See, for example, Myers and Raffensperger, eds., *Precautionary Tools for Reshaping Environmental Policy*.

²⁶ See, for example, Mark Shapiro, *Exposed: The Toxic Chemistry of Everyday Products: Who's at Risk and What's at Stake for American Power* (White River Junction, VT: Chelsea Green Publishing, 2007).

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³⁵ J. Zielonka, "Europe as a Global Actor: Empire by Example," *International Affairs* 84, no. 3 (2008): 479.

³⁶ R. Daniel Kelemen, "Globalizing European Union Environmental Policy," *Journal of European Public Policy* 17, no. 3 (2010): 338.

³⁷ Tobias Buck, "Standard Bearer: How the European Union Exports its Laws," *Financial Times*, July 10, 2007.

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³⁹ Emphasis in original Kelemen, "Globalizing," 337.

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⁴³ “Charlemagne: Brussels Rules OK,” *The Economist*, September 22, 2007.

⁴⁴ Brandon Mitchener, “Increasingly, Rules of Global Economy Are Set in Brussels,” *Wall Street Journal*, April 23, 2002.

⁴⁵ Marla Cone, “Europe’s Rules Forcing US Firms to Clean Up,” *Los Angeles Times*, May 16, 2005.

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⁴⁷ Marc Gunther, “Cops of the Global Village,” *Fortune*, June 27, 2005.

⁴⁸ Mitchener, “Increasingly, Rules of Global Economy Are Set in Brussels.”

⁴⁹ Jim Wasserman, “California Becoming Nation’s New Gateway for European Environmental Laws,” *SF Environment*, July 24, 2003.

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⁵¹ Mary Douglas and Aaron Wildavsky, *Risk and Culture* (Berkeley: University of California Press, 1982), 194.

⁵² Matthew Baldwin, John Peterson, and Bruce Stokes, “Trade and Economic Relations,” in *Europe, America, Bush: Transatlantic Relations in the Twenty-First Century*, ed. John Peterson and Mark Pollack (London: Routledge, 2003), 29.

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⁵⁵ Wyn Grant and David Coen, “Corporate Political Strategy and Global Policy: A Case Study of the Transatlantic Business Dialogue,” Regulatory Initiative Working Paper series, 42 (November 2000); Carl Lankowski, “The Transatlantic Environmental Dialogue,” in *Green Giants? Environmental Policies of the U.S. and the European Union*, ed. Norman Vig and Michael Faure (Cambridge, MA: MIT Press, 2004), 329–44. According to a 2009 study released by the European Commission, aligning non-tariff measures (NTM) would increase the U.S. GDP by \$53 billion per year and the EU GDP by \$158 billion, though only a portion of these NTMs include the risk regulations explored in this study.

⁵⁶ Robert Repetto, “Introduction,” in *Punctuated Equilibrium and the Dynamics of US Environmental Policy*, ed. Robert Repetto (New Haven, CT: Yale University Press, 2006), 13. The concept of

punctuated equilibrium as applied to politics was developed by Frank Baumgartner; see Frank Baumgartner, "Punctuated Equilibrium, Theory and Environmental Policy," in *ibid.*, 24–46.

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⁵⁸ Thomas Bernauer and Ladina Caduff, "In Whose Interest? Pressure Group Politics, Economic Competition and Environmental Regulation," *Journal of Public Policy* 24, no. 1 (2004): 105.

⁵⁹ Cass Sunstein, *Laws of Fear: Beyond the Precautionary Principle* (Cambridge: Cambridge University Press, 2005), 97. See also David Hirshleifer, "The Blind Leading the Blind: Social Influences, Fads, and Informational Cascades," in *The New Economics of Human Behavior*, ed. Mariano Tommasi and Kathryn Ierulli (Cambridge: Cambridge University Press, 1995), 1882

⁶⁰ Paul Slovic, "Perception of Risk," in *The Perception of Risk*, ed. Paul Slovic (London: Earthscan, 2001), 227. See also the collected essays of Nick Pidgeon, Roger Kasperson, and Paul Slovic, eds., *The Social Amplification of Risk* (Cambridge: Cambridge University Press, 2003).

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