GLOBALIZATION, COERCION, AND COMPETITION:
The different pathways to policy convergence

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February 2004

ABSTRACT

While economic globalization is frequently cited as a source for policy convergence, the precise causal links between these two variables often go unexplored. The common thread missing from most of the globalization literature is the role that state agency plays in the regulation of the global political economy. This paper builds on a simple game-theoretic model of policy coordination to develop two arguments. First, great powers remain the most important actors in determining the extent of policy convergence. When great powers act in concert, there will be effective policy harmonization. When the great powers fail to agree, partial policy convergence will take place through competition. The increasing returns to scale of regulatory harmonization will lead powerful actors to compete for as many allies as possible, leading strong policy convergence, but at multiple nodes. These different pathways are examined by examining the variation in outcomes of two different issue areas: money laundering and genetically modified organisms (GMOs).

Introduction

Economic globalization – defined here as the cluster of technological, economic, and political innovations that reduce the barriers to economic, political, and cultural exchange – is frequently cited as a source for policy convergence. However, the precise causal links between these two variables often go unexplored.[1] Multiple narratives are available, including the influence of global civil society,[2] the role of international governmental organizations,[3] the prominence of epistemic communities,[4] and the dominance of capital markets.[5] However, the trouble with most of these theoretical approaches is the lack of variation in the independent variable. According to these theories, globalization increases the number and power of factors and actors that inexorably promote policy convergence. Structural theories lack the capacity to explain variation in convergence outcomes.

The common thread missing from most of the globalization literature is the role that state agency plays in the regulation of the global political economy. This paper builds on a simple game-theoretic model of policy coordination to develop two arguments. First, great powers – defined as governments that possess large internal markets – remain the most important actors in determining the extent of policy convergence. When great powers act in concert, there will be effective policy harmonization through the exercise of both market power and coercive power.[6] When the great powers fail to agree, policy convergence *of a sort* will take place. The increasing returns to scale of regulatory harmonization will lead powerful actors to compete for as many allies as possible, leading strong policy convergence, but at multiple nodes.

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[1] For an exception, see Steven Bernstein and Benjamin Cashore, "Globalization, Four Paths of Internationalization and Domestic Policy Change," *Canadian Journal of Political Science* 33 (March 2000): 67-99.

[2] Paul Wapner, "Politics Beyond the State: Environmental Activism and World Civic Politics," *World Politics* 47 (April 1995): 311-340; Margaret Keck and Kathryn Sikkink, *Activists Beyond Borders* (Ithaca: Cornell University Press, 1998); Ronnie Lipschultz and Cathleen Fogel, "'Regulation for the Rest of Us?' Global Civil Society and the Privatization of Transnational Regulation,'" in Rodney Bruce Hall and Thomas J. Biersteker, eds., *The Emergence of Private Authority in Global Governance* (Cambridge: Cambridge University Press, 2002).

[3] John W. Meyer, John Boli, George Thomas, and Francisco Ramirez, "World Society and the Nation-State," *American Journal of Sociology* 103, No. 1 (1997): 144-181; Martha Finnemore, *National Interests and International Society* (Ithaca: Cornell University Press, 1996).

[4] Peter Haas, "Introduction: Epistemic Communities and International Policy Coordination," *International Organization* 46 (Winter 1992): 1-35; John Braithwaite and Peter Drahos, *Global Business Regulation* (New York: Cambridge University Press, 1999).

[5] See John Goodman and Louis Pauly, "The Obsolescence of Capital Controls?" *World Politics* 46 (October 1993): 50-82; David M. Andrews, "Capital Mobility and State Autonomy: Toward a Structural Theory of International Monetary Relations," *International Studies Quarterly* 38 (June 1994), pp. 193-218; David Sebastian Edwards, "How Effective are Capital Controls?" *Journal of Economic Perspectives* 13, No. 1 (1999): 65-84.

[6] On distinction between the two, see Scott James and David Lake, "The Second Face of Hegemony," *International Organization* 43 (Winter 1989): 1-29.

Second, the likelihood of policy coordination is crucially dependent on the adjustment costs that states face in altering domestic rules and regulations. Globalization increases the rewards for policy convergence – however, there are many situations in which the adjustment costs faced by states are sufficiently high to prevent a great power concert from forming. These costs are a function of the ability of the affected domestic actors to use "exit" rather than "voice" to react to economic globalization.[7] The less viable the exit option, the greater the political and economic adjustment costs.

These arguments are tested by examining the variation in outcomes of two different issue areas: money laundering and genetically modified organisms (GMOs). In both of the relevant sectors – finance and agriculture – markets that were heavily protected against international influences have been dramatically liberalized in the last twenty years. In the case of finance, the true liberalization of capital markets beyond the United States started only in the mid-1980's.[8] The globalization of capital markets generated benefits to participating countries, but also facilitated the laundering of illicit assets.[9] Agriculture is perceived as a more heavily protected market. However, by empirical measures such as tariff levels, subsidies as a percentage of output, or the decline of commodity cartels, the agricultural sector underwent considerable liberalization between 1975 and 1995.[10]

Over the past five years, there has been significant convergence in the development of anti-money laundering rules and regulations. By comparison, convergence on the treatment of genetically modified foods has been considerably less . However, there has been a great deal of convergence by states to either the U.S. or the E.U. position. In the money laundering case, a convergence of interests among the United States and key EU actors led to rapid policy harmonization. In the latter case, divergent U.S. and E.U. preferences on this issue – and the competition by the economic superpowers to win the standard-setting game – have led to policy convergence at two different nodes.

This paper is organized into six sections. The next section lays out the assumptions underlying the basic model. The third section develops a simple game-theoretic model of regulatory coordination. The theoretical results demonstrate the importance of both market power and coercive power as drivers for policy convergence, and the importance of adjustment costs in determining the different pathways to policy convergence. The fourth section examines the case of anti-money laundering standards, and the fifth section looks at the GMO case. The final section concludes.

Modeling policy coordination

There is a burgeoning literature that discusses how great powers determine the pattern of transnational regulatory convergence. David Vogel hypothesizes that there is a

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[7] Albert Hirschman, *Exit, Voice, and Loyalty* (Cambridge: Harvard University Press, 1970).

[8] See Benjamin J. Cohen, "Phoenix Risen: The Resurrection of Global Finance," *World Politics* 48 (1996): 268-296

[9] On the benefits of capital market liberalization, see Bruce Lindsey, *Against the Dead Hand: The Uncertain Struggle for Global Capitalism* (New York: John Wiley, 2002), and Raghuram Rajan and Luigi Zingales, *Saving Capitalism From the Capitalists* (New York: Crown Business Books, 2003).

[10] Christina Davis, *Food Fights Over Free Trade* (Princeton: Princeton University Press, 2003), chapter one.

global "California effect": when great powers ratchet up their regulatory standards, other countries and firms have no choice but to comply with the new standards, thereby raising the stringency of global standards.[11] Beth Simmons provides an explanation of regulatory harmonization that relies on hegemonic state power.[12] For Simmons, regulatory harmonization can be explained by whether the regulatory issue in question is a coordination game or a prisoner's dilemma, and by the extent of the externalities created by an absence of harmonization. Harmonization fails to occur when states face a prisoner's dilemma with few cross-border spillovers. Simmons uses this model to explain the variation in policy coordination in the area of financial regulation. Simmons and Vogel are the most prominent theorists assuming the primacy of states – but they are hardly the only scholars studying globalization and global governance to make this assumption.[13]

Like Simmons and Vogel, I will assume that central governments are the primary actors in global economic governance. This does not mean that states are insensitive to market forces and market pressures. In a globalized market economy, one would expect states to act in a manner that maximizes capital inflows and labor productivity. However, while many authors recognize the state's structural dependence on capital, capital's structural dependence on the state must also be acknowledged. Firms rely on states to establish and enforce the rules of the game for economic interactions. Business traits that range from corporate governance to innovation strategies to procurement policies are often contingent on preexisting state structures.[14] States act as the primary negotiating agents in international fora, and retain the final say in developing the domestic rules that govern economic activity.

States are differentiated by their relative power. Power is defined as the relative size and diversity of an actor's internal market. Markets have a gravitational effect on producers – the larger the economy, the stronger the pull for producers to secure and exploit market access.[15] As demand increases, firms will have greater incentives to mirror that market's preferences. Similarly, the diversity of a state's economy determines how vulnerable it is to becoming asymmetric interdependent on other actors. The more diverse the variety of goods produced and consumed in the national market, the less vulnerable the state to external pressure, be it private or public. A great power has an economy of sufficient size and diversity such that it acts as a natural attractor for profit-

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[11] David Vogel, *Trading Up* (Cambridge: Harvard University Press, 1995).

[12] Beth Simmons, "The International Politics of Harmonization: The Case of Capital Market Integration," *International Organization* 55 (Summer 2001): 589-620.

[13] Walter Mattli, ed., "The Politics and Economics of International Institutional Standards Setting." *Journal of European Public Policy* special issue 8 (June 2001); Barbara Koremenos, Charles Lipson, and Duncan Snidal, eds., "The Rational Design of International Institutions." *International Organization* special issue 55 (Autumn 2001).

[14] Alfred D. Chandler, Jr., *Scale and Scope: The Dynamics of Industrial Capitalism* (Cambridge: Belknap Press, 1990); Suzanne Berger and Ronald Dore, eds, *National Diversity and Global Capitalism* (Ithaca: Cornell University Press, 1996); Paul Doremus et al, *The Myth of the Global Corporation* (Princeton: Princeton University Prres, 1998); Peter Hall and David Soskice, eds., *Varieties of Capitalism* (Oxford: Oxford University Press, 2001).

[15] This is one reason why econometric methods to predict international trade flows are called "gravity models" – the presumption is that the larger an economy, the more traded goods that economy will naturally attract.

seeking actors while being able to rebuff potential coercers. Great powers are price-makers, not price-takers. They have "go-it-alone" power.[16]

Empirically, who are the economic great powers? At present, the United States and the European Union.[17] These are the only two entities that combine relatively large markets with low vulnerability. As measured by aggregate market size, the US and EU both have economies over $10 trillion at the end of 2003. Using market exchange rates, both the US and EU are twice as large as the next biggest economy (Japan) Other potential candidates fail one of the two prerequisites. Japan's domestic market size is significant, but the country's overwhelming dependence on its trading partners for necessary factors of production renders it more vulnerable to the vicissitudes of the global marketplace.[18] China and India have economies that are diverse enough to control their vulnerability to the global marketplace. In the near future, these countries could develop the market power necessary to attain great power status. However, *at present*, neither economy is sizeable enough in hard currency terms to force firms into altering their global operations.[19] As these countries develop their markets, they may enter the great power category. For the current moment, these markets remain emerging and not realized.

Describing the United States as an economic great power is straightforward – both its market size and economic diversity are unquestioned. The European Union presents a trickier problem for international relations theory. It would be problematic to describe the EU as a unitary actor in matters of foreign and security policy. However, on other dimensions, such as trade, the environment, or regulatory standards, the EU can and has been modeled as a viable single actor.[20] The international political economy literature has increasingly modeled the EU as having a "collective interest" in its economic negotiations with external actors in world politics.[21] When member preferences converge, they have been increasingly willing to delegate negotiating power to the EU's supranational institutions.[22] Treating the European Union as a single actor in the coordination of global economic regulations is a significant assumption, but it is no longer a heroic one.

I assume that global regulatory coordination generates positive benefits for all participating actors – but that these benefits come with adjustment costs for those states

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[16] Lloyd Gruber, *Ruling the World: Power Politics and the Rise of Supranational Institutions* (Princeton: Princeton University Press, 2000).

[17] For a similar assessment, see Joseph Nye, *The Paradox of American Power* (New York: Oxford University Press, 2002).

[18] For an excellent recent treatment on the effects of this trade dependence, see Christina Davis, *Food Fights Over Free Trade* (Princeton: Princeton University Press, 2003).

[19] When purchasing power parity (PPP) is used to convert gross domestic product, both India and China would appear to have much larger economies. However, from the perspective of multinational corporations, the PPP conversion rate is not as important as the market exchange rate, since that is the relevant factor for a profit-maximizing actor.

[20] Charlotte Bretherton and John Vogler, *The European Union as a Global Actor* (New York: Routledge, 1999).

[21] Ibid.; see also Joseph Grieco, *Cooperation Among Nations* (Ithaca: Cornell University Press, 1990); Sophie Meunier, "European Institutions and EU-U.S. Trade Negotiations." *International Organization* 54 (Winter 2000): 103-136; Christina Davis, *Food Fights over Free Trade* (Princeton: Princeton University Press, 2003).

[22] Andrew Moravcsik, *The Choice For Europe* (Ithaca: Cornell University Press, 1998).

that need to make changes in the status quo. The idea that regulatory coordination generates a global public good is not immediately obvious. Trade theory suggests that regulatory standards can be thought of as an institutional extension of traditional notions of comparative advantage. Producers maximize their efficiency within a given regulatory environment, and that producer satisfaction translates into increased utility for the government. That environment directly affects the firm's optimal portfolio of outputs. Since cross-border exchange only generates increases in utility because of differences in comparative advantage, do uniform global standards generate positive benefits?

The answer is yes. While regulation may endow firms with comparative advantage, they also function as implicit barriers to trade. This is particularly true when border measures – such as tariffs or quotas – are at minimal levels. Regulatory coordination reduces the transaction costs of cross-border exchange, leading to an increase in static efficiency, which increases economic benefits for all participating states.

Furthermore, there is reason to believe that regulatory coordination would also lead to dynamic gains from trade.[23] The neoclassical argument assumes a world of homogeneous firms facing decreasing returns to scale. The existence and prominence of multinational corporations suggests that these assumptions are flawed.[24] If one allows for increasing returns to scale, the economic benefit of uniform standards start to make more sense. Global regulatory standards provide three distinct benefits to multinational firms, and by extension to home and host countries.

First, uniform standards permit companies to maintain single production processes, rather than multiple processes to accommodate for multiple standards regimes. A single global standard permits firms to exploit economies of scale in their day-to-day operations. Conforming to global rules avoids the maintenance of multiple production processes necessary to comply with different regulatory schema.[25]

Second, the need for multinational firms to develop distinct brands gives them an incentive for a single global standard. It is more difficult for a corporation to present a consistent brand image if its operating environment varies by the national regulatory framework. A single regulatory standard is more consistent with the marketing need for a single corporate culture. Both of these arguments are consistent with empirical findings that firms which adhering to single global standards create greater market value than firms that attempt to exploit divergent standards.[26]

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[23] See generally, on this point, Rajan and Zingales, *Saving Capitalism From the Capitalists*, and Douglas Irwin, *Free Trade Under Fire* (Princeton: Princeton University Press, 2002).

[24] For theories to explain the existence of multinational firms, see Richard Caves, *Multinational Enterprise and Economic Analysis*, 2nd edition (Cambridge: Cambridge University Press, 1996).

[25] David Lazer, "Regulatory Interdependence and International Governance." *Journal of European Public Policy* 8 (May/June 2001), p. 477.

[26] Glen Dowell, Stuart Hart, and Bernard Young, "Do Corporate Global Environmental Standards Create or Destroy Market Value?" *Management Science* 46 (August 2000): 1059-1074. Their results also offer another explanation for why races to the bottom rarely occur. According to their findings, the firms that exploit the lowest standards occupy the most precarious positions in terms of profitability. Racing to the bottom is not necessarily the way to maximize any firms' profitability. Instead, it appears to be a last-ditch survival strategy for marginal producers.

Therefore, a firm that engages in regulatory arbitrage is trying to maximize its rate of return, but in the process it also signals to financial markets its lack of competitiveness with rivals. This signal is likely to raise a firm's capital costs via increased risk premiums. Even for marginal producers, the expected gain

Third, a single regulatory regime clarifies the political process by which regulatory standards can be changed. Multiple standards require firms to gauge the political environments of all countries with significant markets or production facilities. The greater number of disparate national standards that exist, the greater the political uncertainty for multinational actors. Multilateral cooperation reduces the transaction costs of economic exchange. Coordination helps to generate clear decision-making rules for any future changes in the rules. A single global regime clarifies the process through which standards might change, making it easier for firms to form accurate expectations of their future operating environment. As one corporate official phrased it in discussing the Kyoto Protocol, "what businesses want is policy certainty."[27] The reduction of uncertainty via global economic governance increases economic efficiency, moving the global economy closer to the Pareto frontier. Coordination thus bestows greater benefits to all countries by increasing the static and dynamic efficiency of economic agents.

Economic globalization reduces the barriers to exchange across borders, acting to increase the benefits derived from coordination. The lower the transaction costs of economic exchange – whether through technological innovation or political accommodation – the greater the rewards that are conferred through policy coordination. Globalization lowers the barriers to entry for all market participants and thereby increases the number of economic actors that stand to benefit from regulatory coordination. Concomitantly, globalization increases the economic benefits to governments for coordination.

While governments may receive benefits from the development of a single global standard, this does not mean that states will prefer *any* global standard. For governments, any agreement to coordinate standards at a point that diverges from the domestic status quo comes with economic and political costs. Governments incur costs from the retraining of regulators, and from the restructuring or creation of new regulatory infrastructures. They also incur the political costs of getting new standards ratified by other branches of the state, or from dissatisfaction with the new standards among voters, interest groups, or members of the selectorate.

Firms incur economic costs when they retool their operations to the new standard. Local producers are by definition more comfortable with local rules than any international standard that diverges from those rules. The benefits of common regulatory standards may exist, but they do not negate the comparative advantage that firms develop in tailoring their production processes to a country's embedded regulatory framework. Even multinational corporations are most comfortable operating in the home country environment that conditioned their historical structure and operating processes.[28] Uncompetitive sectors incur even greater costs from harmonization, since disparate regulatory systems are often the last remaining barrier to full integration. For these sectors, coordination implies economic extinction. The short-term costs of such creative destruction can be significant for the national economy on the whole, and devastating to the directly affected actors.

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of regulatory arbitrage can be outweighed by the costs of sending a signal of uncompetitiveness to capital markets.

[27] Andrew C. Revkin and Neela Benerjee, "Energy Executives Urge Some Gas-Emission Limits on Bush," *New York Times*, August 1, 2001, p. C1.

[28] Alfred D. Chandler, *Strategy and Structure: Chapters in the History of the Industrial Enterprise* (Cambridge: MIT Press, 1970); Doremus *et al*, *The Myth of the Global Corporation*.

Globalization increases the benefits derived from regulatory coordination, but it has only a marginal effect on the adjustment costs.[29] The primary determinant of the government's calculation of adjustment costs is a function of domestic factors. They can be measured by the extent to which affected private actors exercise political voice rather than market exit in responding to the adverse effects generated by policy harmonization.

The definitions of political voice and market exit come directly from Albert Hirschman's classic *Exit, Voice and Loyalty*. Actors exercise voice when they respond to adverse circumstances by expressing their dissatisfaction to the parties responsible for creating the circumstances. Actors exercise exit when they respond to adverse circumstances by altering their patterns of behavior, substituting away from the parties responsible for creating the circumstances.

An underlying assumption of globalization theorists is that the reduction of barriers to international exchange increases the number of exit options for mobile factors of production. This enhances the threat of exit for these actors, forcing states that are structurally dependent of capital to respond to their policy preferences. However, there are reasons to believe that actors that lack exit options exercise more political power, raising the adjustment costs to regulatory coordination. For states, the threat of exit is costly for economic reasons, whereas the exercise of political voice is a signal for significant economic and political costs. The use of voice takes place when the alternative options available to affected parties – internal adjustment or market exit[30] – are deemed to be more costly. This may be due to significant investments in assets specific to the existing regulatory environment, or because of high barriers to exit. However, the exercise of political voice signals that the relevant factors of production face imposing economic adjustment costs. Politically, the exercise of voice creates demands for action that must be addressed by the government in power. Actors exercising voice will punish governments that fail to respond to their preferences by switching loyalties to political rivals.

In which regulatory issue areas should we see the exercise of political voice? In Hirschman's treatment of the subject, there are two likely factors contributing to the use of voice rather than exit. First, actors that face high barriers to exit are more likely to resort to voice as their preferred influence mechanism. As Hirschman observes, "The voice option is the only way in which dissatisfied customers or members can react whenever the exit option is unavailable."[31] Regulatory changes that affect large swathes of society are more likely to trigger political action – since the mass number of citizens will be reluctant to use the exit option of leaving the state.

Second, actors that have successfully deployed the use of voice in the past are more likely to use it in the future. Over time, actors that rely on voice in the past will ignore the exit strategy as an appropriate policy response – and vice versa. Hirschman points out that, "The presence of the exit alternative can… tend to *atrophy the*

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[29] If there is any effect, it would be to marginally raise the costs across the board. The current era of globalization not only reduces barriers to integration, it also increases the speed with which market forces affect uncompetitive sectors. Thus, the short-term costs for uncompetitive sectors would be increased.

[30] In a global economy, there are two kinds of market exit. The relevant actors could choose to exit the affected sector and redirect their productive energies towards a different economic activity. The other exit option is for the actors to relocate production outside of the country. Race to the bottom theorists point to the latter option as evidence of convergence at low levels of regulation.

[31] Hirschman, *Exit, Voice and Loyalty*, p. 33.

development of the art of voice."[32] Later on he says: "By itself, the high price or the 'unthinkability' of exit may not only fail to repress voice but may stimulate it. It is perhaps for this reason that the traditional groups which repress exit alone have proved to be… viable."[33]

One can derive from this argument that mature economic sectors should be more likely to exercise voice. As Mancur Olson observed, the passage of time without exogenous shocks increases the likelihood that any group of actors can overcome collective action problems and exercise political voice in concert. This logic applies to economic sectors; over time, national producers within a particular sector should be increasingly able to act in a cartelistic fashion.[34] This behavior is designed to generate rents that cannot be retrieved through market exit. Regulatory standards reinforce firm preferences by affecting the population ecology of firms.[35] Regulations act as barriers to entry for new firms and as barriers to exit for established firms. Over time, firms that successfully adapt to complex regulatory environments would be expected to resist actions that lower these entry barriers. Firms within a mature economic sector will have a vested incentive to rely heavily on voice to resist any change in the pre-existing regulatory environment. One would expect these actors to specialize over time more in the use of political voice instead of contemplating market exit.

To summarize: governments remain the primary actors in a world of globalization. Great powers are defined as those governments with large and diversified internal markets. Regulatory harmonization generates positive benefits for all participating actors, and those benefits increase with greater globalization. Such coordination also generates adjustment costs for those actors. The costs can be detected by the tendency of affected actors to exercise political voice rather than market exit in response to the prospect of regulatory convergence. This is more likely to take place in regulatory issue areas that affect either mature economic sectors or broad swathes of societal actors. With these assumptions delineated, we can move on to a simple game-theoretic model of regulatory coordination.

A simple coordination game

Figure 1 shows the simplified form of the general coordination game that states face. For now, I assume coordination is a two-player game with no coercive option. Two states, A and B, have the choice of coordinating their market regulation or not. There exists a unidimensional measure of regulatory stringency, with a higher value implying more stringent regulation. It will be assumed that state A's regulatory standards (a) are always more stringent than state B's (b) – in other words, a > b. States can choose to stick to their own regulatory framework or agree to switch to the other country's framework. The payoffs for the status quo – each state retaining their own regulatory standards – are normalized to zero. π_i represents the public good benefits country i derives from the

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[32] Ibid, p. 43 (italics in original).
[33] Ibid, p. 98.
[34] Mancur Olson, *The Rise and Decline of Nations* (New Haven: Yale University Press, 1982), p. 40.
[35] Peter Gourevitch, "The Macropolitics of Microinstitutional Differences in the Analysis of Comparative Capitalisms," in Suzanner Berger and Ronald Dore, eds., *National Diversity and Global Capitalism* (Ithaca: Cornell University Press, 1996).

enhanced economic efficiency achieved through regulatory coordination. π is a function of the intrinsic nature of the regulatory issue in question, the national attributes of country i, and the value of coordinating with country j. To start, however, I will assume that for all i, $\pi_i = \pi$.

The term d_i equals the economic and political costs of making the necessary adjustments to new regulatory standards for country i. Like π, d is a function of the intrinsic nature of the regulatory issue in question, the national attributes of country i, and the value of coordinating with country j. As with π, to start I will assume that for all i, d_i = d, and that d = f(a – b). This makes the adjustment costs a function of the gap in the pre-existing standards between countries A and B. It is logical to assume that the adjustment costs increase as the gap in initial standards between A and B increases.

Actors must choose whether to adhere to their national standard or be willing to switch to the other player's prior standard. Regulatory coordination increases the size of the public good but can also imposes costs on actors that must adjust from the previous status quo. For all states, the most preferred option is coordination at their set of national standard. Because of adjustment costs, a state's worst outcome is to agree to another country's standards but fail to successfully coordinate. This model is consistent with but not identical to other international relations models of coordination.[36]

Solving this simple game reveals three important facts. First, if the costs of adjustment outweigh the perceived benefits of harmonizing regulatory standards, an actor's dominant strategy is to retain its national standards.[37] This leads to an equilibrium outcome of no coordination. If d > π, then the *only* equilibrium outcome that exists is no coordination.

This simple result is worth emphasizing because the implicit bias in much of the international relations literature is that cooperation is a socially efficient outcome relative to the status quo. More formally, international relations theorists assume that international interactions are variations on simple "games of cooperation," in that cooperation generates a unique and socially efficient outcome that Pareto-dominates non-cooperative outcomes.[38] This is true even of models that allow for distributional conflicts among participating actors. Rather than assume *ex ante* that cooperation is the socially efficient outcome, the model described above allows for the possibility that cooperation does not Pareto-dominate noncooperation.

The second insight from this game presumes that π > d; i.e., the public benefits from coordination outweigh the economic and political costs of adjustment. This makes coordination a possible equilibrium outcome. As the public good from cooperation increases and the costs from adjusting to new standards decreases, a coordinated outcome becomes more likely. In other words, regulatory coordination is an increasing function of

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[36] Stephen D. Krasner, "Global Communications and National Power: Life on the Pareto Frontier," *World Politics* 43 (April 1991): 336-366. See also Gruber, *Ruling the World.*

[37] If State B chooses to switch standards, State A's utility from retaining its standards is greater than switching (π > -d). If State B retains its national standard, State A's utility from retaining its standards is still greater than switching standards (0 > π – d). By symmetry, this holds for State B as well.

[38] For a formal definition of "games of cooperation," see Jonathan Bendor and Piotr Swistak, "The Evolutionary Stability of Cooperation," *American Political Science Review* 91 (June 1997), p. 297-8.

π but a decreasing function of d. These results rely on the inclusion of mixed strategies, and are demonstrated in the appendix.[39]

Again, this is a straightforward result that is nevertheless worthy of note. One would expect that as the bargaining "core" between the actors increases, so will the likelihood that a bargain will be struck.[40] Any increase in the benefits from coordination or decrease in the political costs of adjustment increases the size of the core, which increases the likelihood of coordination. Similarly, any increase in the initial gap between national regulatory standards reduces the size of the bargaining core, which reduces the likelihood of coordination. Most game-theoretic approaches are concerned with what happens within a bargaining core. This emphasis elides over the fact that coordination is more likely when the size of the bargaining core increases.

So far, the model has assumed symmetrical payoffs between the negotiating countries. However, a more reasonable conjecture would be to say that the public good benefits from regulatory coordination depend upon the size of the newly-opened market. For example, if the United States and Jordan coordinate their regulatory standards, it reduces the barriers to exchange between the countries. For American firms, this is a small but positive benefit. Reducing the barriers to exchange to a market that is only $1/438^{th}$ the size of the U.S. economy does not yield substantial rewards. On the other hand, such coordination would be generate a significant windfall for Jordan, since the market that opens up to its actors is significantly greater. In this real-world instance, $\pi_{US} < \pi_{Jordan}$

This simple example demonstrates why the positive benefits that come from regulatory coordination should vary according to the actor. So, let Y_i equal the market size of country i. And, instead of $\pi_i = \pi$, let π_i be a function of the relative market shares of the two countries, such that a country i receives a bigger payoff from coordination as the market size of the partner country increases.[41]

How does this affect the dynamics of the coordination game? One hypotheses clearly emerges from this change to the game: once an economy amasses enough relative size, the *only* equilibrium outcome is coordination at that country's standards. The intuition is relatively straightforward.[42] Assume that country A is the great power. Increasing A's market size relative to country B reduces A's benefit of coordinating at B's standards, since B's market seems proportionately less significant. A's adjustment costs remain unchanged by the change in relative market size. At some point, A's market size will increase to the point that it prefers the status quo to coordination at B's regulatory standards. So, once its market reaches a certain size, country A's dominant strategy is to adhere to its pre-existing standards. Given A's choice, country B will switch its standards to A's preferred position so long as the benefits from coordination outweigh the adjustment costs. Since B's benefits from coordination increase with A's

[39] On how to interpret mixed-strategy equilibria, see James Johnson and Randall Calvert, "Interpretation and Coordination in Constitutional Politics," Working Paper No. 15, W. Allen Wallis Institute of Political Economy, Rochester, NY, July 1998, p. 11.

[40] In economics, the term "core" refers to the zone of possible bargains that would represent a Pareto improvement over the status quo. See Werner Hildenbrand, "Cores," in John Eatwell *et al*, eds., *The New Palgrave: General Equilibrium* (New York: W.W. Norton, 1989).

[41] Formally, let Y_i equal the size of country i's economy. Then for all i, π_i = a linear transformation of: $Y_j/(Y_i + Y_j)$

[42] The mathematical proof for this is in the appendix to this paper.

market size, after a certain point A's economy is big enough to ensure that this will be the case.

The introduction of market power alone increases the likelihood that coordination will take place at the larger country's preferred set of standards. However, great powers have another mechanism through which they can influence the coordination game – the threat of active economic coercion. It is easy to point to circumstances in which great powers have threatened or employed economic sanctions over regulatory differences. There is considerable debate about the utility of economic sanctions in the pursuit of political goals.[43] However, there is strong empirical evidence that the threat or use of sanctions can yield significant concessions in regulatory disputes.[44]

With this tactic, a state that prefers to retain its own standards will impose economic sanctions if the other state refuses to switch its standards. Figure 2 demonstrates how the option to employ pressure tactics changes the payoffs of the coordination game. States with the capability to employ economic coercion can alter the payoff structure. They can penalize the other actor for choosing to retain their pre-existing standards when the great power would prefer the target country to switch its regulations.

The introduction of economic coercion alters the dynamics of the coordination game in two ways. First, it widens the size of the bargaining core – the distribution of costs and benefits under which a coordinated outcome is an equilibrium outcome. For the targeted state, the preference to switch standards is no longer a question of whether the benefits exceed the adjustment costs. The question is whether the costs exceed the benefits such that switch is costlier than economic sanctions. Even if the targeted state is worse off from switching, it may represent the least bad alternative when faced with the possibility of sanctions.[45]

The second way in which coercion alters the dynamic of the game is to reduce the threshold market size necessary to lock in coordination at the great power's standards as the only possible equilibrium outcome. The shadow of potential sanctions lowers the threshold at which the targeted state would prefer switching to the great power's standards rather than accept the status quo. *Ceteris paribus*, the presence of coercion increases the range of situations in which coordination at the great power's most preferred outcome will take place.

Market power and coercive power shift the contours of the coordination game in a way that favors large markets. However, there is an important caveat to this conclusion: only relative power matters. When the two interacting countries are both great powers, neither actor possesses a bargaining advantage. This is true even if one of the two actors has more relative power. Given the size of both economies, the likelihood that the difference in market size is sufficient to alter the payoffs enough to generate a single equilibrium outcome is mathematically impossible.[46] As for the coercion option, it is

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[43] Daniel Drezner, *The Sanctions Paradox* (New York: Cambridge University Press, 1999).

[44] Daniel Drezner, "The Hidden Hand of Economic Coercion," *International Organization* 57 (Summer 2003): 643-659.

[45] Gruber, *Ruling the World*.

[46] The asymptotic nature of ratios explains this fact. With small countries, a great power's size can appear greater due to its market size, but as the size of the smaller country increases, the ratio falls exponentially. For example, the United States is 438 times the size of Jordan. However, for two other "small market"

highly unlikely that either actor would be able to satisfy the necessary conditions for making a credible threat of economic sanctions.[47] Even if the threat was credible, the costs of coercion for the targeted great power are small enough relative to their economic size to make it an ineffective instrument of statecraft. Empirically, sanctions among great powers have generated meager results at best.[48] Between governments with large internal markets, the effects of market power and coercive wash out.

From this simple two actor game-theoretic exercise, we can draw several conclusions. First, there exist some regulatory issue areas for which no coordination is the equilibrium outcome. For those issues where π is sufficiently low and d is sufficiently high, there is no incentive to coordinate regulatory standards in the absence of a colossal hegemon.

Second, power matters. Great powers are more likely to achieve regulatory coordination at their preferred level of standards. Their power affects the location of regulatory coordination in two ways. First, their market size can alter the incentives of actors such that their preferred outcome becomes the only equilibrium. Second, the threat of economic coercion can accelerate the lock-in effect of coordinating at the great power's ideal point.

The disparate pathways to regulatory convergence

In moving from a two-actor version of the game to a multi-actor version of the game, it is clear that there are two key stages of the game. The first stage involves only the great powers – the second stage involves other actors. If the great powers can coordinate their regulatory standards, then global regulatory convergence is a likely outcome. If no coordination is the equilibrium outcome among the great powers, then global regulatory competition will be the outcome.

When great powers can agree upon common regulatory standards, then there is little that other actors in the system can do to prevent global regulatory convergence to take place at the great power's preferred set of standards. A great power concert can generate the necessary market size to lock in their preferred set of standards as the unique equilibrium outcome for almost all actors. The addition of these actors to the club of coordinated states would merely increase the incentives for coordination for laggard states.[49] The only ones that would be capable of resisting would face dramatically high adjustment costs. Even those actors would be compelled to adjust under the threat of economic coercion. Therefore, when great powers can coordinate their regulatory standards, the outcome is rapid regulatory convergence.

The absence of a bargaining core among the great powers alters both the process and outcome of regulatory negotiations. As previously noted, coercive tactics are less likely to yield results than in the club standards outcome. Great powers are by definition

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economies – Egypt and South Korea – the ratios are much smaller. The U.S. is roughly 39 times the size of Egypt and 11 times the size of South Korea.

[47] Drezner, *The Sanctions Paradox*, chapter two.

[48] Ibid, chapter four. See also Barry Buzan, "Economic Structure and International Security," *International Organization* 38 (1984): 597-624.

[49] This is akin to arguments made in Thomas Schelling, Micromotives and Macrobehavior (New York: W.W. Norton, 1978), and Lisa Martin, *Coercive Cooperation* (Princeton: Princeton University Press, 1992).

less vulnerable to economic coercion. They can also thwart any organized multilateral attempt at pressure, and *ad hoc* pressure coalitions have a low probability of success.

However, the dynamics of the regulatory game are such that each actor has an incentive to maximize the size of the market that conforms to its preferred regulatory arrangements. The obvious strategy for a great power is to try and amass as many allies as possible to its preferred set of regulatory standards. In theory, a great power could amass the combined market power of a larger coalition of actors. Such a tactic would cross the tipping point and induce rival states to switch standards.[50] However, *all* great powers would have an incentive adopt this strategy.

The predicted result is one of partial convergence through competition. Great powers will use inducements, coercive tactics, persuasion, and forum-shifting in an effort to woo as many actors as possible to their preferred regulatory position. All the while, these governments will expend considerable effort to weaken the legitimacy of competing standards. Because all great powers have an incentive to engage in these tactics, the rest of the actors in the system will be asked – or forced – to choose which set of standards to endorse earlier than they otherwise would have. Through this competitive process, states will converge to a small number of possible regulatory standards – but among those standards "blocs," the outcome is one of repeated cycles of bargaining, contestation, and conflict.

It should be noted that the extent of convergence through competition is a function of the number of economic great powers in the system. In an economically bipolar world – as currently exists – both poles will try to create as large a regulatory bloc as possible. As the distribution of economic power shifts to a more multipolar world, the dynamic changes. Competition among the great powers would be expected – but the increasing number of poles also increases the number of nodes at which convergence would take place. The increased number of great powers also implies reduced market and coercive power vis-à-vis the rest of the world. Therefore, as the distribution of economic power increases, so should regulatory divergence.

Coerced standards: the case of money laundering

Money laundering is defined as the conversion of wealth derived from the proceeds of crime into untraceable and seemingly legal financial holdings. The size of these flows has been estimated at approximately 2-5% of global GDP, or upwards of $2 trillion.[51] The bulk of international money laundering is conducted in support of transnational criminal organizations. Money laundering also has the potential to stunt the

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[50] This logic is akin to sales maximization strategies in strategic trade theory and/or path dependent arguments. See James Brander and Barbara Spencer, "Export Subsidies and International Market Share Rivalry," Journal of International Economics 18 (February 1985): 83-100 on the former, and W. Brian Arthur, "Competing Technologies, Increasing Returns, and Lock-In By Historical Events," *Economic Journal* 99 (March 1989): 116-131

[51] Michel Camdessus, "Money Laundering: the Importance of International Countermeasures." Speech delivered to the Financial Action Task Force, February 10th, 1998, Paris.

proper development of capital markets, retard economic growth, and weaken the rule of law.[52]

       The benefits to the US and EU from cracking down on money laundering were transparent – doing so helped to preserve the reputation of their financial systems and reduce incentives for corruption. In the wake of the 1989 BCCI scandal, the G-7 states along with the European Commission created the Financial Action Task Force on Money Laundering (FATF) to address the problem. FATF worked over the next year to develop a set of recommended best practices affecting financial supervision and regulation, appropriate law enforcement guidelines, and protocols for international cooperation. These practices were called the FATF Forty Recommendations.[53]

       Originally, the FATF Forty Recommendations were designed to coordinate regulatory systems among the advanced industrial democracies. However, both the United States and the European Union decided to treat money laundering as a *global* problem in the mid-1990's, for three reasons. First, starting in the mid-1990's, the globalization of capital markets increased the prominence of offshore financial centers, which had particularly lax anti-money laundering regimes. In an international financial system that is only as strong as its weakest link, the vulnerability of these OFCs to a money laundering scandal had disturbing implications for global capital markets (Dixon 2001). Second, the proliferation of banking scandals tarnished the reputation of several major international banks. Corrupt money from Joseph Estrada (former president of the Philippines), Sani Abacha (former dictator of Nigeria), Vladimiro Montesinos (former Peruvian intelligence chief) Helmut Kohl (former prime minister of Germany), and Omar Bongo (former president of Gabon) flowed into accounts in Europe and the United States. These scandals affected preeminent financial institutions, such as Citibank and the Bank of New York. Third, the Asian financial crisis highlighted how "crony capitalism" in the Pacific Rim economies permitted criminal access to financial institutions.[54]

       The moves towards regulatory coordination took place out of the public eye, and inspired neither strong support nor strong opposition among the populations at large in the US and EU. The financial sectors in these countries were more concerned about the costs of complying with new regulations. Banks, for example, were concerned about the added cost of implementing know-your-customer regulations.[55] Attempts were made by the larger financial firms to set up a "private order" as a means of warding off further state regulations, and in the United States, firms in the financial sector did express concern to Treasury officials about the regulatory shift.[56] However, those pressures failed to dissuade Treasury officials from their course of action.

       The mere establishment of the FATF Forty recommendations encouraged many countries to take the necessary steps towards implementation. However, some developing countries faced significant adjustment costs at the prospect of coordinating

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[52] Peter Quirk, "Macroeconomic Implications of Money Laundering." IMF Working Paper 96/66, Washington, DC, 1996.

[53] The FATF Forty Recommendations have since been revised twice – in 1996 and in 2003.

[54] William Wechsler, "Follow the Money." *Foreign Affairs* 80 (July/August 2001): 40-57.

[55] See Ann Florini, "Does the Invisible Hand Need a Transparent Glove? The Politics of Transparency." Paper prepared for annual World Bank Conference on Development Economics, Washington, D.C., April 28-30, 1999.

[56] For the efforts at private order, see Mark Peith and Gemma Aiolfi, "The Private Sector Become Active: The Wolfsberg Process," *Journal of Financial Crime* 10 (April 2003).

their regulatory standards at FATF levels. Developing governments can exploit repressed capital markets and privileged access to scarce foreign exchange to reward favored interests, political supporters, or simply enrich themselves.[57] At a minimum, regulatory oversight raises the political and economic costs of engaging in acts of favoritism. For emerging markets with offshore financial centers, adjustment costs are even greater. These markets have fewer disclosure requirements for customers. This provides black market entrepreneurs – such as narcotics traffickers – the opportunity to insert assets into the global financial marketplace. Although there are long-term risks to reputation for the emerging markets, many of these governments operate on the principle of "any capital is good capital" and are therefore loath to displace such investments in the name of regulatory coordination.[58] Finally, both types of emerging markets must invest in the training and implementation necessary to enforce any newly adopted regulations. From the perspective of a developed economy, such an investment would appear to be minimal. However, international relations scholars have observed that the transaction costs of compliance with the rules of the global marketplace can be considerable for developing country bureaucracies.[59]

To correct this problem, the US and EU used persuasion and inducements as well to ensure broad acceptance of the need to ratchet up anti-money laundering standards. FATF enlarged its membership to include most of the membership in the Organization for Economic Cooperation and Development (OECD). FATF also expanded to include key developing countries, such as Argentina, Brazil, South Africa, and the Russian Federation.[60] The great powers also encouraged the creation of FATF-style regional bodies in the developing world, such as the Caribbean Financial Action Task Force and the Asia-Pacific Group on Money Laundering.[61] There are currently five regional bodies with a collective membership of 108 jurisdictions.[62] For these regional groups, the G-7 proffered technical assistance to ensure adherence and recognition of the FATF Forty Recommendations on Money Laundering. By August 2001, over 140 countries and territories had publicly acknowledged the FATF 40 as the accepted international standard for anti-money laundering.

The specter of coercive economic power also played a role. In June 1999, the G-7 heads of state and the head of the European Commission pushed for FATF to take an even more aggressive posture towards non-members whose laws appeared to tolerate money laundering.[63] In February 2000, FATF published criteria to identify "non-cooperative countries and territories" (NCCTs), a schedule for selecting and evaluating jurisdictions for NCCT status, and a menu of "countermeasures" for those governments that refused to comply with FATF requests. The countermeasures ranged from the

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[57] Jack Hitt, "The Billion Dollar Shack." *New York Times Magazine*, December 10, 2000.

[58] Quirk,

[59] Joseph Stiglitz, Globalization and Its Discontents (New York: Norton, 2002), p. 227; Cally Jordan and Giovanni Majnoni. "Financial Regulatory Harmonization and the Globalization of Finance." World Bank Policy Research Working Paper 2919, Washington, DC, 2002.

[60] A complete membership list can be accessed at http://www.fatf-gafi.org/Members_en.htm#MEMBERS.

[61] Other FATF-style regional bodies have been established in Eastern Europe, South America, and Eastern and Southern Africa.

[62] Membership lists can be found at http://www1.oecd.org/fatf/Members_en.htm#OBSERVERS.

[63] See the June 18, 1999 Communiqué by G-7 Heads of State and Government at http://www.g7.utoronto.ca/g7/summit/1999koln/g7statement_june18.htm.

issuance of advisories to domestic financial institutions to the most serious possible sanction: "conditioning, restricting, targeting, or even prohibiting financial transactions with non-cooperative jurisdictions."[64]

FATF members reviewed the first group of possible NCCTs between February and June 2000. 29 jurisdictions were assessed, and 15 were listed as NCCTs. FATF demanded that these countries take the legislative and administrative steps to criminalize money laundering, establish centralized financial intelligence units, cooperate with other national authorities in money laundering investigations, and require banks to file suspicious activity reports to the government. With regard to the NCCTs, FATF warned, "should those countries or territories identified as non-cooperative maintain their detrimental rules and practices despite having been encouraged to make certain reforms, FATF members would then need to consider the adoption of countermeasures."[65] A month later, the G-7 Finance Ministers strongly supported FATF's NCCT initiative as well as the potential sanctions that backed up the threat. The G-7 Heads of State communiqué stated: "We are prepared to act together when required and appropriate to implement coordinated countermeasures against those NCCTs that do not take steps to reform their system appropriately, including the possibility to condition or restrict financial transactions with those jurisdictions."[66]

Within a year, 73% of the target countries made major concessions prior to the implementation of any economic sanctions. There is clear evidence to support the contention that these jurisdictions altered their laws in direct response to the FATF threat of economic coercion. When Lebanon passed its anti-money laundering legislation, its central bank governor explicitly stated that the law was designed to meet FATF's criteria.[67] Dominica's Finance Minister urged for the passage of an anti-money laundering bill in order to escape the FATF "blacklist."[68] Other targets expressed similar sentiments, either in public or in negotiations with FATF officials.[69] Although media coverage of the FATF initiative prior to the September 11th attacks was scant, what reporting there was confirmed this assessment.[70]

The demonstration effect of the first round of the NCCT process, combined with the enhanced salience of money laundering in the wake of the 9/11 attacks, caused several other potential targets of coercion to preemptively adopt rigorous anti-money laundering measures. Within five years, the great powers were able to use a combination of market power and coercive power to cajole, coerce, and induce the rest of the world into adopting the FATF Forty Recommendations as the accepted anti-money laundering standard.

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[64] Financial Action Task Force, *Report on Non-Cooperative Countries and Territories*, Paris, February 14, 2000, p. 8.

[65] Financial Action Task Force, *Review to Identify Non-Cooperative Countries and Territories: Increasing the Worldwide Effectiveness of Anti-Money Laundering Measures*, Paris, June 22, 2000, p. 12.

[66] Both communiqués can be accessed at http://www.g7.utoronto.ca/g7/summit/2000okinawa/.

[67] "Lebanon Approves Money Laundering Law," Reuters, April 10, 2001.

[68] "Opposition in Dominica Blasts Anti-Money Laundering Bill," Reuters, June 16, 2001.

[69] Canute James and Michael Peel, "Tax Havens Tighten Rules," *Financial Times*, June 17, 2001.

[70] See *Economist*, "Fighting the Dirt," June 21, 2001.

Competing standards: the case of GMOs

Genetically modified organisms are designed to improve the yield of agricultural goods while reducing the need for herbicides, pesticides, and other chemicals. No scientific evidence exists to demonstrate that genetically modified products are harmful to humans. However, there are concerns about whether transgenic crops would cross-pollinate with neighboring crops, overwhelming indigenous flora and fauna and reducing biodiversity.

Genetically modified organisms trigger strong and conflicting preferences from two groups with high costs for exit. Agricultural producers in GMO-friendly countries have invested heavily in assets specific to GMO technology. In the United States, for example, the Agriculture Department estimated that in 2002, GMO crops represented 75% of soybean plantings, 34% of corn plantings, and 71% of total cotton plantings.[71] At the same time, farmers that are rendered less competitive from GMO competition would be expected to resist regulatory coordination that permits GMO importation.

The other group that faces high exit costs are consumers concerned about food safety. The lack of any significant food safety scandals related to GMOs has caused American consumers to adopt a blasé attitude towards GM crops. In Europe, the concerns generated by mad cow disease in the late 1980's generated deep suspicion of large-scale agricultural innovations. Since then, EU officials, the European Parliament, and member governments have acted to reduce competitive pressures on their agricultural sector and allay public concerns about "Frankenfoods."[72]

The US and EU governments remain far apart in their preferences for regulating genetically modified organisms (GMOs).[73] The US opposes most regulatory restrictions on GMOs, arguing that there is no scientific basis for such a regulatory position. The European Union has an unofficial moratorium in place on the sale of GMO crops. Officially, EU institutions prefer to place restrictions and/or labels on GMO products. Developing countries are also split between agricultural exporters that have embraced the technology and other states that fear a loss of biodiversity from using GMOs.[74]

The United States and other food exporters in the "Miami group" (Argentina, Canada, Chile, and Uruguay) have relied on the World Trade Organization's legal authority to delegitimize EU policies restricting trade in GMOs. The Miami group also holds sway over the Codex Alimentarius Commission, a U.N. emanation that establishes food codes based on scientific principles. In the Sanitary and Phytosanitary agreement established during the Uruguay round, GATT defers to the Codex to establish appropriate

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[71] K.T. Arasu, "US Farm Group Says Europe's GMO Plan Unworkable," Reuters, 3 July 2002.

[72] Aseem Prakash and Kelly Kollman, "Biopolitics in the EU and the US: Race to the Bottom or Convergence to the Top?" *International Studies Quarterly* 47 (December 2003): 617-642.

[73] Gilbert Winham, "Regime Conflict in Trade and Environment: The Cartegena Protocol and the WTO," Paper presented at the International Studies Association annual meeting, Chicago, IL, February 2001; Jeffrey Lewis and David Nixon, "Transnational Regulatory Conflict and the Problems of Deeper Integration," Paper presented at the International Studies Association annual meeting, Chicago, IL, February 2001.

[74] Sybil Rhodes, "The Politics of Frankenfood: The Role of States, Corporations, and Interest Groups in the Genetically Modified Foods Debate." Paper presented at the International Studies Association annual meeting, New Orleans, LA, March 2002.

sanitary measures.[75] Not surprisingly, WTO panel rulings consistently support the Miami group's position that attempts to restrict agricultural products without credible scientific evidence of possible harm violate international trade law.[76]

Having failed at altering the rules in these IGOs, the European Union switched fora to another United Nations emanation to advance its regulatory preferences. In January 2000, the Cartagena Protocol on Biosafety, an outgrowth of the 1992 Rio Convention on Biodiversity, endorsed using the "precautionary principle" in the treatment of large modified organisms. This principle states that potentially dangerous activities can be restricted or prohibited *before* they are scientifically proven to cause serious damage.[77] The result is a legal stalemate, with the biosafety protocol's precautionary principle flatly contradicting the trade regime's norm of scientific proof of harm. Legal and development experts agree that it will be difficult at best to reconcile the WTO and Cartagena regimes.[78]

Attempts by the United States and the European Union to reconcile their differing standards have proven fruitless. Indeed, David Vogel, in reviewing the increasing acceptance of GMO crops within the United States, concludes:[79]

> [W]hile American regulatory officials have adopted a relatively supportive policy toward both the release of genetically-modified organisms into the environment as well as the marketing of food products which are produced from genetically-engineered seeds, the European Union has been much more restrictive in both areas…. in this area of regulatory policy, not only is there no move toward regulatory convergence but American and European regulatory policies have become more divergent. (emphasis in original)

The divergence of preferences between the US and EU have stymied efforts to develop common global regulations on GMOs.[80] However, both sides have invested considerable resources into converting other states to adopt their position on the matter. Implicit in U.S. diplomacy over the GMO issue has been the specter of WTO arbitration rulings in their favor. Prior WTO panel rulings on related issues – such as hormone-fed beef – support the U.S. regulatory position. Other governments are aware that the U.S. can use the WTO to legitimize and authorize economic sanctions for failing to permit GM imports. Consistent with the EU's economic size, it has been unmoved by WTO-supported American sanctions on the beef case.[81] However, this threat has a powerful effect on countries asymmetrically dependent on access to U.S. markets. For example,

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[75] GATT Article XX(b); Agreement on the Application of Sanitary and Phytosanitary Measures, Article 2.2.

[76] Davis, *Food Fights Over Free Trade*, chapter nine. See also Georgetown University's Institute of International Economic Law, "GMOs in the WTO," available at http://www.law.georgetown.edu/iiel/current/gmos/gmos_wto.html.

[77] For the official EU explanation, see "Communication from the Commission on the Precautionary Principle," February 2, 2000, at http://europa.eu.int/comm/dgs/health_consumer/library/pub/pub07_en.pdf.

[78] Urs. P. Thomas *et al*, "The Biosafety Protocol: Regulatory Innovation and Emerging Trends," *Revue Suisse de Droit International et de Droit Européen* 10 (April 2000): 513-558; Erik Millstone and Patrick van Zwanenberg, "Food and Agricultural Biotechnology Policy: How Much Autonomy Can Developing Countries Exercise?" *Development Policy Review* 21 (September 2003): 655-667.

[79] David Vogel, "The Dynamics of Regulatory Convergence," Paper prepared for presentation at a conference on "Regulation in Europe," November 1999, p. 26.

[80] Associated Press, "Countries 'Polarized' on Safety of Genetically Modified Products," 23 February 2004.

[81] Davis, *Food Fights Over Free Trade*, chapter nine.

the first two countries to agree with American standards for GMO labeling were Mexico and Canada.[82]

With the sanctions lever in reserve, American actors have pushed for greater acceptance of the U.S. regulatory principles regarding GMOs. Officially, the Department of Agriculture and the U.S. Trade Representative have lobbied governments across the globe on the virtues of GMO crops. Representatives from firms with large investments in GMO technology, such as Monsanto, have marketed their products to large emerging markets such as India.[83] At the 2002 World Food Summit, one press report characterized the U.S. government as "making no secret of its powerful and intensified advocacy of biotechnology." At the same summit, the U.S. Secretary of Agriculture announced a ten-year, $100 million Collaborative Agriculture Biotechnology Initiative to "advance research on varieties better suited to growing conditions in developing countries."[84] Official American food aid is also likely to contain GM technology.

U.S.-based actors have also pushed countries to accept U.S. safety certifications for GMO products or to develop their own protocols as quickly as possible. In the case of China, for example, Chinese officials told U.S. officials in fall 2001 that they would accept U.S. safety certifications for GMO crops. After Beijing reversed course in early 2002, the U.S. Trade Representative and Agriculture Secretary issued a joint statement saying, "This is an unacceptable situation." In response, the Chinese government issued temporary safety certificates permitting GMO imports until permanent regulations were drafted in February 2004.[85] One NGO official complained in early 2004 that "the U.S. is trying to impose its standards on the rest of the world."[86]

European actors have pushed equally hard to promote the precautionary principle and resist the diffusion of GMO-friendly regulations. The official EU position on GMO crops is that they are as safe as conventional food. However, the EU Commissioner for consumer protection and health acknowledged that the EU funds nongovernmental organizations that oppose GMO products.[87] The head of Greenpeace's Genetic Engineering Campaign noted in early 2004: "Europe has been very vocal in its skepticism about GMOs and of course that travels everywhere."[88]

The European NGO campaign against GMO proliferation, combined with the EU moratorium on GMO imports, have encouraged many countries to adopt the EU position on genetically modified crops. African scientists have argued that European-based NGOs – including OxFam and Save the Children – frightened African governments into

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[82] Mark Stevenson, "Mexico becomes first importer nation to adopt U.S.-backed standards on labelling for genetically modified grains," Associated Press, 12 February 2004.

[83] Associated Press, "Monsanto's Gene – Altered Crops in India," 10 February 2003.

[84] Quotations from Hilmi Toros, "World Food Summit Endorses Biotechnology to Conbat Hunger," Inter Press Service, 12 June 2002.

[85] Evelyn Iritani, "U.S., China at Impasse Over Genetically Modified Crops," *Los Angeles Times*, 9 February 2002; *Dow Jones Newswires*, "China Says No GMO Permits Needed From Health Ministry for Now," 1 July 2002; *People's Daily Online*, "Gene-Altered Crops are Safe: Officials," 26 February 2004.

[86] Sean Yoong, "Countries 'Polarized' on Safety of Genetically Modified Products," Associated Press, 23 February 2004.

[87] Lizette Alvarez, "Europe Shows a Growing Distaste for Genetic Foods," *New York Times*, 10 February 2003.

[88] Quoted in Jeremy Smith, "World Awaits More GM Crops as Safety Debate Rages," Reuters, 27 February 2004.

rejecting food aid that contained GM technology.[89] African states are also concerned about being shut out of European markets if they invest in GMO technology. In May 2003, President Bush accused the EU of undermining efforts to eradicate hunger in Africa because of their GMO position.[90]

The result of the US and EU pressure has been a single global cleavage on the GMO issue.[91] In one camp are countries that specialize in agricultural exports, have internal markets of sufficient size to exploit the possibilities of GMOs, or are vulnerable to U.S. coercive pressure. In the other category are countries that either rely on subsistence agriculture or are trade dependent on the European Union. One assessment of the developing world positions on the issue concludes:

> One group consists of those countries such as Argentina, China and Cuba that are trying to develop a domestic seed and/or crop industry. The second group consists of… developing countries for whom GM crops and food are a matter for agricultural, health and environmental policy-makers and not part of their industrial policy.

Between the United States and the European Union, there has been regulatory divergence over GMOs. However, their dispute has caused both governments and their affiliated supporters to actively lobby other countries into adopting their regulatory positions. The result has been a rapid bifurcation over the regulation of genetically modified crops.

Conclusion

This paper has argued that even in a globalizing economy, governments possessing large internal markets are the most important actors contributing to regulatory convergence. The reduction of barriers to exchange has increased the demand for regulatory coordination by increasing the perceived rewards of harmonization. However, the adjustment costs are unaffected by globalization, because domestic actors facing the greatest costs of regulatory change will usually lack market exit options and be forced to rely on political voice to express their opposition. To avoid paying the domestic political price, great power governments have an incentive to ward off the use of voice by keeping global regulatory standards as close to their domestic arrangements as possible.

In a bipolar economic world, I argue that there are two kinds of convergence mechanisms. When the great powers can achieve a concert on the preferred regulatory standard, global policy coordination is the predicted outcome. Great powers can use their combined market and coercive power to lead other countries into accepting their preferred regulatory arrangements as quickly as possible. The case of money laundering provides an excellent example of this kind of convergence process.

When the great powers' adjustment costs are too high for coordination to be possible, the result is an intriguing paradox – great power rivalries can be a powerful source of policy convergence. Divergent preferences among large states, combined with the increasing returns to scale of regulatory harmonization, lead these actors to attract as many allies as possible. In a bipolar distribution of power, the result is a bifurcation of

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[89] Tamar Kahn, "Modified Food-Aid Fears Slammed," *Business Day*, 6 March 2003.

[90] David E. Sanger, "Bush Links Europe's Ban on Bio-Crops With Hunger," *New York Times*, 22 May 2003.

[91] Millstone and van Zwanenberg, "Food and Agricultural Biotechnology Policy," p. 656.

policies, but strong policy convergence at two different nodes. Without this great power rivalry, it is highly unlikely that any degree of policy convergence would have taken place. The case of GMOs strongly underscores this type of convergence process.

The cases provided here are merely plausibility probes – further theoretical and empirical work is clearly needed. However, the two cases do suggest some possible modifications to the theory detailed above. For example, in both the GMO and money laundering case, great powers used incentives as well as coercive pressure to get other countries to change their regulatory positions.

Finally, if the theory presented here holds, there are reasons to believe that regulatory harmonization will be an increasingly difficult task over time. The long-term growth of India and China will shift what is currently a bipolar economic distribution of power into a more multipolar world.[92] As the number of actors increases, the likelihood of creating a concert of common preferences among them necessarily declines.[93] This holds with particular force if these countries achieve great power market size while still having low per capital incomes. In addition to the current tension between the American and European varieties of capitalism,[94] another source of preference divergence could emerge among the great powers: the tension between rich countries willing to trade off economic growth for quality of life issues, and still-developing countries that are more reluctant to sacrifice growth.[95]

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[92] Dominic Wilson and Roopa Purushothaman, "Dreaming with BRICs: The Path to 2050," Goldman Sachs Global Economics Paper no. 99, New York, October 2003.

[93] Robert Axelrod and Robert Keohane, "Achieving Cooperation Under Anarchy: Strategies and Institutions," *World Politics* 38 (October 1985): 226-254.

[94] Peter Hall and David Soskice, eds., *Varieties of Capitalism: The Institutional Foundations of Comparative Advantage* (New York: Oxford University Press, 2001).

[95] Ronald Inglehart, "Globalization and Postmodern Values," *The Washington Quarterly* 23 (Winter 2000), p. 219. See also Ronald Inglehart, *Culture Shift in Advanced Industrial Society* (Princeton: Princeton University Press, 1990).

APPENDIX

Lemma 1: *If π - d < 0, then the only equilibrium outcome is for both countries to retain their national standards*.

Proof: Begin with A's choice of standing firm or switching to B's standards. If B chooses to switch standards, A's utility from retaining its standards is greater than switching (π < d). If B retains its national standard, State A's utility from retaining its standards is still greater than switching standards, given the assumption that the costs of adjustment are greater than the benefits from regulatory coordination ($0 > \pi - d$). Therefore, the dominant strategy for A is to retain its own standards. By symmetry, this holds for B as well. *Q.E.D.*

Lemma 2: *If π > d, the likelihood of regulatory coordination is an increasing function of both π, but a decreasing function of d.*.

Proof: If π > d, then the model becomes a symmetrical coordination game with three Nash equilibria: A(switch to B's standards)—B(retain national standards), A(retain national standards)—B(switch to A's standards), and a mixed-strategy equilibrium.

To calculate the mixed strategy equilibrium: Let ρ = probability that A chooses (retain national standards). A chooses a value of ρ such that B is indifferent to its possible strategy set (switching to A's standards and retaining national standards). Therefore, A chooses ρ such that:

$\rho(\pi - d) - (1 - \rho)d = 0 + (1 - \rho) \pi$

$\rho\pi - d = \pi - \rho\pi$

$\rho = \dfrac{d + \pi}{2\pi}$

By symmetry, ρ is also the probability that B chooses to retain its national standards.

The probability of a coordinated equilibrium P(coordinated equilibrium) = P[A(switch to B's standards); B(retain national standards)] + P[A(retain national standards); B(switch to A's standards)], which equals $2\rho(1 - \rho)$. Substituting, we get:

P(coordinated equilibrium) = $2\rho(1 - \rho) = \dfrac{2(d + \pi)(\pi - d)}{4\pi^2}$

Which simplifies to: $\dfrac{\pi^2 - d^2}{2\pi^2}$

Which simplifies to: $\frac{1}{2} - d^2/2\pi^2$

Changing the values of p, d, a, and b within the constraint of $\pi > d = (a - b)$ does not alter the pure strategy Nash equilibria. Changing these values does affect the likelihood of a coordinated equilibrium occurring in the mixed-strategy outcome. Partial differentiation shows that P(coordinated equilibrium):

*   Increases with π;
*   Decreases with d.

Q.E.D.

Lemma 3: *There exists a market size Y* such that,* ceteris paribus*, when $Y_A > Y^*$, the only equilibrium outcome is coordination at country A's standards*.

Proof: $\pi_A = Y_B/ (Y_A + Y_B)$, and $\pi_B = Y_A/ (Y_A + Y_B)$. Since by definition $Y_i > 0$ for all i, π_A and π_B are continuous functions of Y_i that lie between zero and one.

Partial differentiation shows that as Y_A increases, π_B monotonically increases and π_A monotonically decreases.

Since by definition $0 < d < 1$, $\exists \, Y^*$ such that for all $Y_A > Y^*$,

$\pi_A - d < 0$ (1)

When this condition holds, A's dominant strategy is to retain its national standards. Given this strategy for A, B will choose to switch standards *iff*:

$\pi_B - d < 0$ (2)

π_B is an increasing function of Y_A, so by Kakutani's fixed point theorem, there must exist a value Y** such that, *ceteris paribus*, for all $Y_A > Y^{**}$, inequalities 1 and 2 both hold. For those values of Y, the only Nash equilibrium outcome is [Retain national standards; switch to A's standards].

Q.E.D.

FIGURE 1
THE COORDINATION GAME

		STATE B	
		Switch to country A's standards (a)	Retain national standards (b)
STATE A	Retain national standards (a)	*Coordinate at A* $(\pi, \pi - d)$	*No coordination* $(0, 0)$
	Switch to country B's standards (b)	*No coordination* $(-d, -d)$	*Coordinate at B* $(\pi - d, \pi)$

π = benefits from regulatory coordination
d = adjustment costs of adopting a new regulatory standard.

FIGURE 2
THE MODIFIED COORDINATION GAME

		STATE B	
		Switch to country A's standards	Retain **national standards**
STATE A	Retain national standards	*Coordinate at A* $(\pi_a, \pi_b - d)$	*No coordination* $(0, -c)$
	Switch to country B's standards	*No coordination* $(-d, -d)$	*Coordinate at B* $(\pi_a - d, \pi_b)$

π = benefits from regulatory coordination
d_i = adjustment costs of moving to a new regulatory standard for country i.
-c = costs to B of maintaining the status quo.