

The Worldwide Diffusion of Market-Oriented Infrastructure Reform, 1977–1999

Witold J. Henisz
University of Pennsylvania

Bennet A. Zelner
University of California, Berkeley

Mauro F. Guillén
University of Pennsylvania

Why do countries differ so much in the extent to which they adopt neoliberal, market-oriented reform in their infrastructure industries? Building on world-society and neo-institutional theories in sociology, this paper argues that international pressures of coercion, normative emulation, and competitive mimicry strongly influence the domestic adoption of market-oriented reform. The paper considers the effect of such pressures on the adoption of four reform elements: the privatization of state-owned firms, the formal separation of the regulatory authority from the executive branch, the de facto elimination of executive political influence on the regulatory authority, and the opening of the retail market to multiple service providers. It finds generally robust support for its arguments using a multivariate probit analysis of reform adoption in the telecommunications and electricity industries of as many as 71 countries and territories between 1977 and 1999. The results also suggest that the coercive effect of lending by the IMF and World Bank differs for each reform element. The paper discusses the possibility that, by leading countries to adopt some reform elements but not others, international coercion may not produce ideal outcomes.

During the past two decades, dozens of countries around the world have implemented a series of neoliberal policies aimed at redefining the role of the state in the economy. This trend has been particularly pronounced in infrastructure industries such as telecommunications, electricity, water, sanitation, and transportation, in which state-owned enterprises long enjoyed monopolies. “Market-oriented” reform in these industries has included the

adoption of at least one of four elements: the privatization of state-owned firms, or simply “privatization”; the formal separation of the regulatory authority from the executive branch, or “regulatory separation”; the de facto elimination of executive political influence on the regulatory authority, or “depoliticization”; and the opening of the retail market to multiple service providers, or “liberalization.”

Economists argue that the joint adoption of privatization, regulatory reform, and liberalization increases efficiency and improves service standards (Megginson and Netter 2001). Yet, despite this normative rationale, countries have varied substantially in their decision whether to initiate market-oriented reform in a given infrastructure industry, the timing of such reform, and the specific number and combination of reform elements.

To understand the intricate and incomplete pattern of worldwide diffusion of neoliberal, market-oriented reform, we examine the factors

Direct correspondence to Mauro F. Guillén, The Wharton School, University of Pennsylvania, 2016 Steinberg Hall-Dietrich Hall, 3620 Locust Walk, Philadelphia, PA 19104-6370 (guillen@wharton.upenn.edu). This research was supported by the Reginald H. Jones Center for Management Policy, Strategy and Organization at the Wharton School through the General Electric Fund, and the World Bank. We thank Simone Polillo for supplying the trade matrices for the empirical analysis.

that influence a country's policy adoption decision. Research in economics and political science implicates several domestic economic influences, national political characteristics, and the preferences of key interest groups and political actors. Other research, primarily in sociology, holds that as a result of the highly structured nature of the international system of states (Meyer et al. 1997; Van Rossem 1996), cross-border influences partly—or even primarily—explain policy adoption (Simmons, Dobbin, and Garrett 2003).

Our analysis contributes to existing research in two ways. First, we distinguish among the independent effects of a more comprehensive set of international influences than existing research does. Neo-institutional theory in sociology (Campbell 2004; DiMaggio and Powell 1983; Jepperson and Meyer 1991) posits three distinct mechanisms of diffusion: international coercion, which results from power dynamics; normative emulation, whereby actors intensely related to each other within a social structure influence each other; and competitive mimicry, a process of social comparison stemming from the pressure to remain economically effective and efficient relative to relevant others. Existing empirical research on international coercion focuses on the role that dominant states (Kogut and Macpherson 2003; Swank 2003) and multilateral organizations (Brune, Garrett, and Kogut 2004; Frank, Hironaka, and Schofer 2000; Strang and Chang 1993) have played as drivers of reform. Research on normative emulation and competitive mimicry both examine policy imitation among countries: the former emphasizes imitation among countries linked to each other through social ties (Guler, Guillén, and Macpherson 2002; Kobrin 1985; Levi-Faur 2002; Polillo and Guillén 2005; Simmons and Elkins 2004) and the latter stresses imitation among countries competing for foreign capital (Guler et al. 2002; Polillo and Guillén 2005).

Failure to account for all three of these mechanisms concurrently in empirical work may result in omitted variable bias. For example, some of the countries subject to coercive pressures exerted by dominant states and multilateral organizations may also have strong social ties as the result of trade relationships. Indeed, trade by the low-income countries that are most likely to be subject to international coercive pressures has increased substantially relative

to trade by high-income countries during the past 25 years, by 15 percent of the gross domestic product (GDP) (from 24 to 39 percent) versus 7 percent of GDP (from 36 to 43 percent), respectively (The World Bank 2005). Moreover, many countries that are dependent on dominant states and multilateral organizations are also likely to be in competition with each another for external resources such as foreign capital. As a result, inferences drawn from empirical analyses that include measures of coercive pressures but exclude measures of normative and competitive pressures may be incorrect. No published empirical study of which we are aware considers the international influences of international coercion, normative emulation, and competitive mimicry simultaneously.¹

Our second contribution is to statistically analyze the adoption of privatization, regulatory separation, depoliticization, and market liberalization jointly, in contrast to studies that examine the adoption of one element in isolation from the others. Most previous research examines either deregulation (Eising 2002; Levi-Faur 2005) or privatization alone (Brune et al. 2004; Kogut and Macpherson 2003), or focuses on qualitative analysis (Levi-Faur 2003). Investigating joint adoption is of special importance in light of the economic argument that privatization, regulatory reform, and liberalization create benefits only when adopted in tandem. Indeed, it could well be the case that international forces that increase the likelihood of adoption of some elements but not others have a deleterious impact on economic performance and, ultimately, on people's perceptions of market-oriented reform on the whole.

We begin our analysis by discussing the recent history of neoliberalism and the domestic drivers of market-oriented policy reform. We then consider the effects that international coercion, normative emulation, and competitive mimicry have on the adoption process and formulate our hypotheses. We offer an empirical test using worldwide data on the four elements

¹ Three unpublished studies consider coercion, emulation, and mimicry in tandem, those by Brune and Guisinger (2003) on capital account liberalization; Elkins, Guzman, and Simmons (2004) on bilateral investment treaties; and Polillo and Guillén (2005) on the adoption of central bank independence.

of market-oriented policy reform in two key infrastructure industries, telecommunications and electricity, over more than two decades.

THE DOMESTIC AND INTERNATIONAL CONTEXT OF MARKET-ORIENTED REFORM

Market-oriented reform in infrastructure industries has occurred in the context of the rise of the neoliberal approach to policy-making. This school of thought first gained acceptance in Chile and Britain during the late 1970s. Essentially, it proposes to reduce the role of politics and the state in the economy so that markets may function unhindered. Although neoliberalism is today the dominant paradigm of economic policy-making, it has not ascended simultaneously around the world, nor has it taken hold to the same degree in different countries (Brune et al. 2004; Campbell and Pedersen 2001).

Neoliberalism first arose as a direct response to Keynesianism and other forms of state intervention in the economy. During the 1970s, economists engaged in fierce theoretical and practical debates about the proper role of the state, as well as the effectiveness of the "demand-side" policies associated with the Keynesian approach, versus the "supply-side" initiatives espoused by neoliberalism (Evans 1997). Although participants on both sides of the debate tended to emphasize the technical aspects of their arguments, the ideological and political undertones were readily apparent. Keynesianism favors the use of fiscal policy (e.g., government spending) as a way not only to manage the business cycle, avoid recessions, and generate full employment, but also to achieve certain popular political goals such as social cohesion (which the creation of a "social safety net" would allegedly foster). Neoliberalism, in contrast, proposes to encourage entrepreneurship, investment, and long-run economic growth through reductions in subsidies, tax reform, tax cuts, stabilization of the money supply, the free flow of trade and capital, and, central to the current analysis, the market-oriented reform of state-owned industries.

Dozens of countries adopted elements of market-oriented reform between 1980 and 1999. Whereas in 1980 only 10 countries had adopted such an element in telecommunications and

44 had done so in electricity, these figures had respectively increased to 124 and 94 by the end of 1999. In the aggregate, only 40 countries, or 21 percent of the 190 countries and territories for which we have data, had engaged in some level of market-oriented reform in electricity or telecommunications as of 1980; by 1999 the figure had risen to 144 countries, or 76 percent.²

Market-oriented reform has often come under attack in recent years. The California electricity debacle, for example, is typically blamed on "deregulation." Other prominent debacles, such as those involving Enron and WorldCom, are commonly associated with the private ownership of utilities. Nonetheless, a substantial body of empirical evidence suggests that private ownership, deregulation, and liberalization have, in many cases, improved the economic performance of industries previously owned by the state (Megginson and Netter 2001).

Recent critiques of the neoliberal reform paradigm's failure to recognize complex institutional interdependencies help to reconcile these ostensibly conflicting perspectives. Specifically, some observers argue that privatization, regulatory reform, and liberalization must be adopted in tandem to produce economic benefits (D'Souza and Megginson 1999; Megginson and Netter 2001). For example, regulatory reform is of limited value when the regulatory agency is charged only with monitoring a state-owned monopoly. In the case of a privatized monopoly, regulation that has not been depoliticized typically leads to corruption. Moreover, whereas competition among multiple private operators may result in improved service and increased efficiency, entry into a "liberalized" market is unlikely in the presence of a politicized regulatory authority with close ties to a (current or previously) state-owned utility or powerful foreign investor.

Anecdotal evidence supports this conceptual logic. For example, the 1997 East Asian financial crisis is attributed in large part to the rapid liberalization of East Asian financial markets (resulting in, among other things, entry by international investors) without concurrent depoliticization of the regulation of these markets. Similarly, in Latin American and former com-

² At the end of 1999, there were 205 countries and territories in the world.

munist countries, reform was thwarted by the sale of state-owned assets to privileged insiders on favorable terms, without the full-scale elimination of existing entry restrictions or depoliticization of the regulation of newly privatized firms. Systematic empirical analyses also find a positive link between the joint adoption of reform elements and performance (Fink, Mattoo, and Rathindran 2002; Levy and Spiller 1994; Wallsten 2001).

Countries vary considerably in the comprehensiveness of their reform efforts. In 1986 Chile became the first country to have privatized a majority of its state-owned electric utility, formally separated regulatory authority from the executive branch, depoliticized the regulatory authority in actuality, and liberalized its electricity industry. In 1984 the United Kingdom became the first country to have attained all four of these reform elements in telecommunications (Fourcade-Gourinchas and Babb 2002). Yet, by the end of 1999 just 2 percent of the 190 countries and territories for which we have data had attained all four elements in their electricity industries, whereas 12 percent had attained three elements, 18 percent had attained two, and 18 percent had attained just one. The analogous figures for telecommunications are seven, 13, 22, and 14 percent, respectively.

As we demonstrate later, both domestic and international factors have shaped the cross-national adoption of the elements of market-oriented reform in the electricity and telecommunications industries. In our empirical analysis, we ascertain whether specific influences have increased the likelihood of piecemeal adoption by allowing the independent variables to have a differential impact on each reform element. We first consider international influences—the focus of our analysis—and then provide an account of the domestic factors influencing reform.

THE INTERNATIONAL CONTEXT OF MARKET-ORIENTED REFORM

We propose that international coercion, normative emulation, and competitive mimicry are three basic mechanisms driving policy diffusion around the world above and beyond the domestic political, economic, and technological factors identified in the literature. We base our

arguments on the assumption that nation-states are in economic, political, and cultural competition with one another. As a result, power dynamics influence them, and they borrow policy ideas and practices from each other to maintain their position and status in the global system of states (Elkins and Simmons 2005; Meyer et al. 1997).

INTERNATIONAL COERCION: THEORY AND GENERAL EVIDENCE

Neo-institutional theory refers to the exertion of pressures for homogeneity by the state and other powerful actors as coercive isomorphism (DiMaggio and Powell 1983). Although much neo-institutional theorizing focuses on the domestic context, world-society scholars apply the concept of coercive isomorphism to interactions among countries. Meyer et al. (1997:157) argue that “the expanding externally defined requirements of rational actorhood” increase the proclivity of less powerful actors or states in the global system to adopt formal structures or practices. Those countries (or groups of countries) with more power in the international system, or that are viewed as possessing high status, shape the policies adopted by countries that are less powerful or considered less legitimate (Gilpin 1987).

International coercion occurs when powerful actors influence the policy choices of governments directly or when such actors change the outcome of a domestic policy struggle by favoring the domestic coalition supporting a given policy. The former concept, “direct coercion,” implies that domestic groups or parties that set policy simply acquiesce to international pressures. This depiction may sometimes approximate reality, for example, in the case of intervention by the International Monetary Fund (IMF) in the wake of a macro-economic or financial crisis. Despite the fact that governments “do not want to sacrifice their sovereignty and have conditions imposed . . . they need the IMF loan and therefore accept IMF conditions because they have no choice” (Vreeland 2003).

The concept of indirect coercion entails the more frequent and perhaps realistic assumption that sundry domestic groups in a country may hold different views about market-orient-

ed reform as a result of differences in ideology or economic interests.³ In this case, the intervention of an outsider or third party can tilt the balance of power toward the group (or groups) favoring reform by providing that group with more resources, legitimacy, or rhetorical arguments, and by prompting various groups to join the pro-reform coalition (Campbell 2004:179; Elkins and Simmons 2005; Levi-Faur 2005). For instance, the literature on IMF lending practices argues that intervention by external actors that provide short-term resources conditional on the implementation of a reform, and threaten subsequent direct or indirect punishments if that reform is not implemented, may alter the domestic political balance of power in favor of reform (Dixit 1996; Putnam 1993; Vreeland 2003).

Simmel (1950:145–69) theorizes more generally about the intervention of a third party in a preexisting relationship between two parties. In his terms, multilateral agencies like the IMF and World Bank facilitate market-oriented reform policies by functioning as a *tertius gaudens*, a third party that enjoys influence because “either two parties are hostile toward one another and therefore compete for the favor of a third element; or they compete for the favor of the third element and therefore are hostile toward one another” (Simmel 1950:155). A domestic group or party favoring market-oriented reform may approach a multilateral agency in order to advance its goals (e.g., privatization), or the agency may approach this group or party itself. The multilateral agency does not necessarily have to exert a huge amount of influence; rather, “the only important thing is that [the third party’s] superadded power give one [of the two preexisting parties] superiority” (Simmel 1950:157).

Empirical research supports the contention that international coercion may affect policy-making. For example, Strang and Chang (1993) find that the signing of International Labor Organization conventions enhanced subsequent

welfare spending, providing evidence of direct coercion by powerful organizations. Studies linking domestic interest group composition to reform provide more limited empirical evidence of indirect coercion (Bockman and Eyal 2002).

THE COERCIVE ROLE OF MULTILATERAL AGENCIES

Much research on international coercion examines multilateral agencies, which control financial resources sorely needed by many countries and have a considerable amount of legitimacy. Multilaterals may use their financial and moral authority to coerce domestic policy actors to adopt otherwise unacceptable policies by attaching so-called “conditionality terms” to loan agreements, thereby promoting the diffusion of market-oriented reform. Such terms comprise a “complex policy covenant” that a debtor country’s government makes with a multilateral agency when the country’s lack of economic or political collateral precludes it from borrowing through conventional private channels. The countries that enter into such a covenant, it is argued, are typically those that direly need external funding to resolve an actual or impending macroeconomic crisis.

The first amendment to the IMF charter, passed in 1952, granted the agency the ability to seek policy changes in debtor countries. The actual imposition of conditionality terms by the IMF, the World Bank, and other multilateral development agencies was initially rare, and the terms imposed narrow in scope. In recent years, however, the average number of terms imposed on a borrowing country has risen substantially, especially during the 1990s (Buira 2003). Some observers attribute the change in multilateral agency behavior to ideological shifts that began in the 1980s (Buira 2003).

In 1993 the World Bank explicitly extended conditionality agreements to the infrastructure sector by making evidence of market-oriented infrastructure reform a precondition for any project lending. Systematic data on specific loans are scarce because neither the IMF nor the World Bank published the terms of loan agreements prior to 1996. Wamukonya, however, finds that during the period October 1998 through February 2001, 32 countries signed letters of intent to undertake such reform as a con-

³ Garrett’s (2001) study of the tendency of leftist governments to spend more and run higher deficits, despite greater product and factor market integration, highlights the persistent effect of ideology on policy outcomes.

dition of receiving loans from the Bank (Wamukonya 2003). Anecdotal evidence also abounds. For example, the Bank lent the Democratic Republic of Congo \$120 million only under the condition that the country "strengthen regulatory authorities in the telecommunication, transport and energy sectors through technical assistance and training" (The World Bank 2004a). More recently, Afghanistan borrowed \$22 million "to set up an independent Regulatory Commission (RC) and [formulate] a Telecommunications Act. . . . Plans for eventual privatization will be augmented by an institutional strengthening exercise to ensure administration procedures and accountability meet all international quality and performance expectations" (The World Bank 2004b). Bangladesh also borrowed \$9 million "to improve the performance of [its] telecommunications sector through strengthening elements of the policy, institutional, and regulatory framework in order to promote the competitive provision of telecommunications infrastructure and services" (The World Bank 2004c). These cases are but three among many.

Prior studies find evidence of the coercive influence of multilateral agencies on individual countries' or groups of countries' probability of privatizing (Brune et al. 2004; Kogut and Macpherson 2003), liberalizing their capital account (Brune and Guisinger 2003), adopting a bilateral investment treaty (Elkins, Guzman, and Simmons 2004), and creating an independent central bank (Polillo and Guillén 2005). Yet, despite multilaterals' strong focus on privatization, regulatory reform, and liberalization, no existing empirical work jointly considers the efficacy of conditionality agreements in achieving these interrelated reform objectives.

In cases in which the multilateral agencies are powerful enough relative to a country's government to impose market-oriented reform in exchange for funding, we expect direct coercion to occur. In other cases, we expect indirect coercion to occur: the IMF or the World Bank works in concert with domestic parties favoring market-oriented reform to tilt the balance of power, especially when the country requires external funding to cope with a macroeconomic or financial crisis. Whether the operative mechanism is direct or indirect, we predict that

Hypothesis 1: Adoption of market-oriented reform elements by a given country is positively associated with the country's exposure to multilateral lenders.

NORMATIVE EMULATION

World-society and neo-institutional theories propose that, in addition to responding to coercive pressures, actors embedded in a social structure may adopt similar behaviors as they seek to conform to shared norms (DiMaggio and Powell 1983; Mizruchi and Galaskiewicz 1993). This concept of "normative emulation" builds on the Durkheimian insight that social density is a determinant of social cohesion and behavioral similarity (Collins 1994). In their quest to appear appropriate within their shared social context of dense social relationships (Coleman 1988; Strang and Tuma 1993), actors that are strongly connected to one another tend to imitate each other's behavior patterns.

World-society scholars apply the concept of normative isomorphism to the country level of analysis, finding that policymakers emulate each other as a way to conform to shared norms and appear legitimate (Jepperson and Meyer 1991; Meyer et al. 1997). Case studies and empirical research document that government officials and bureaucrats constantly assess policy and organizational developments in other countries. Empirical studies emphasizing policy emulation among peer countries include Collier and Messick's (1975) research on the adoption of social security systems; Kobrin's (1985) study of oil nationalizations; Guler et al.'s (2002) study of the adoption of quality certification; Brune and Guisinger's (2003) analysis of capital account liberalization; Polillo and Guillén's (2005) study of central bank independence; Lee and Strang's (2003) study of the diffusion of public sector downsizing; Elkins et al.'s (2004) study of the adoption of bilateral investment treaties; and Fourcade-Gourinchas and Babb's (2002) study of the diffusion of neoliberal macroeconomic policies. This research suggests that policies directly reflect the level of normative conformity within a relevant social structure linking countries to one another.

We propose that normative emulation is more likely to take place among countries that engage

in transactions more intensely with one another. Sociologists studying globalization argue that the intensity of trade relationships reflects the density of the social network in which a given country is embedded (Albrow 1997:25; Van Rossem 1996) and therefore the level of normative conformity within the network. Trade comes hand in hand with "cultural ties" (Waters 1995:40), and thus contributes to "establishing a relationship of identification as well as interdependence." For example, Japanese success in exporting to the U.S. market prompted many American firms to experiment with such Japanese organizational techniques as total quality management and lean production (Strang and Macy 2001). Moreover, research has shown that globalization is associated with more cohesive trading relationships (Kim and Shin 2002). We argue that countries exhibiting more cohesive trade relationships are more likely to adopt similar patterns of behavior, including privatization, regulatory separation, depoliticization, and liberalization of competition in their infrastructure industries.

Hypothesis 2: Adoption of a market-oriented reform element by a given country is positively associated with the country's degree of trade cohesiveness with other countries that have adopted the same element.

COMPETITIVE MIMICRY

Whereas normative emulation refers to the isomorphic impact of the norms shared by socially cohesive actors, competitive mimicry refers to individuals' and organizations' tendency to cope with poorly understood technologies, ambiguous goals, and unclear cause-effect relationships by imitating others whom they perceive as their competitors. Pressure to conform arises from the need to prevent erosion of one's market position and social and political status. Imitation becomes an effective strategy under conditions of uncertainty and bounded rationality because it helps decision-makers keep search costs within reasonable limits, sort out alternatives, and legitimize their actions (DiMaggio and Powell 1983; Mizruchi and Galaskiewicz 1993).

Extending this argument to the country level of analysis and the case of market-oriented reform in infrastructure industries, we argue

that countries embedded in the global economic and trading system face competitive pressures that may render the adoption of legitimized policies, which have been implemented or which worked effectively elsewhere, a viable strategy for promoting their economic and institutional survival (Campbell 2004:179) and for maintaining and enhancing their status within the economic system (Meyer et al. 1997; Van Rossem 1996). Competition among actors (or states) in a social structure such as that created by trading relationships is, in the words of Burt (1987:1291), driven by actors' desire "to live up to their image" and "to maintain their position in the social structure." Competitors are substitutes for each other, a fact that induces status as well as economic competition (Burt 1987:1294; see also White 2002).

It is especially important to take competitive pressures into account when attempting to measure the coercive influence of multilateral lenders. Borrower nations are in distributive conflict with each other not only for international aid funds but also for other international resources such as export markets and import sources. Failure to include a measure of competitive pressures in an empirical analysis thus poses the risk of conflating coercive influences with mimetic ones.

We conceptualize competitive mimicry in terms of role equivalence (Winship and Mandel 1984). Rather than consider the specific identities of the nodes in the network (countries), we focus on the nature of the relationship between nodes, which we define as trade in a particular type of product. Following the sociology of the world-system (Smith and White 1992; Van Rossem 1996), we define a country's role-set to include the total amount of each different product that it exports and each different product that it imports. The degree of role equivalence between two countries is the extent to which their role sets overlap.⁴

We employ the concept of role equivalence rather than the alternative concept of structural equivalence because the latter does not reflect meaningful competition in the context of trade. For example, if countries A and B each trade the

⁴ Winship and Mandel (1984) define role equivalence using a nested pair of dyad-by-dyad distance measures but note that other approaches are possible.

same products to a different set of countries, they are role equivalent but not structurally equivalent. Conversely, if they each trade different products to the same set of countries, they are structurally equivalent but not role equivalent. Thus, two countries may be structurally equivalent (that is, trade with the same third parties) without trading in the same goods (Guler et al. 2002). In contrast, role-equivalent countries face present and potential competition with each other in the same category of products.

Countries that compete with each other in the same product markets are likely to adopt similar patterns of behavior in order not to lose ground to others (Elkins et al. 2004; Guler et al. 2002; Polillo and Guillén 2005). Suppose that countries A and B trade with the rest of the world in the same product categories, and are thus role equivalent. Even when countries A and B trade with different third countries, the adoption of market-oriented infrastructure reform elements by country A will likely prompt country B to follow suit for two mutually reinforcing reasons. First, the two countries are more likely to monitor each other and seek to learn from each other if they are competitors in trade. In other words, competitive relationships create a social channel for comparison, communication, and mimicry. Second, because the adoption of market-oriented infrastructure reform sends a positive signal to the international financial and investment community, country B will likely imitate infrastructure reform by country A, if the two are role equivalent, in an effort to maintain its economic status and social prestige in the network of trade. We therefore predict that

Hypothesis 3: Adoption of a market-oriented reform element by a given country is positively associated with the country's degree of role equivalence with other countries that have adopted the same element.

THE DOMESTIC CONTEXT OF MARKET-ORIENTED REFORM

Although we emphasize the role that international influences play in a country's decision to adopt market-oriented infrastructure reform, domestic factors clearly matter as well. Indeed, much of the existing research on the diffusion

of market-oriented infrastructure reform focuses exclusively on such domestic factors. The arguments tend to borrow heavily from political economy, and they highlight country-level characteristics that alter policymakers' perceived costs and benefits of such reform (Hallerberg and Basinger 1998; Murillo 2001, 2002).

INDUSTRY PERFORMANCE

Because political actors are relatively certain about the outcomes that an existing policy will produce but view reform as creating uncertain long-run political benefits and large or uncertain short-run political costs, they are typically likely to maintain the status quo (Drazen and Grilli 1993; Fernandez and Rodrik 1991). Nonetheless, the poor economic performance of a state-owned infrastructure industry (Henisz and Zelner 2005) may serve as a "focusing event" (Kingdon 1984:106) that, by increasing political actors' short-run costs of inaction (Hoffman 1999; Seo and Creed 2002), moves major policy reform—such as the adoption of market-oriented policies—to the top of the policy-making agenda (Jones, Baumgartner, and Truett 1998).

Poor industry performance may result partly from exogenous factors. For example, beginning in the late 1980s countries in Latin America, Southeast Asia, and the former Eastern Bloc confronted trends such as input price inflation, unprecedented demand growth, and increased industrialization, all of which placed economic strain on state-owned utilities (Henisz and Zelner 2005). Yet, the core problem that ultimately triggered reform in most cases was endogenous (Campbell 2004) to the system of state ownership itself. Because many governments used state-owned utilities as a vehicle for providing subsidies to politically important interest groups (Henisz and Zelner 2006) such as labor and the middle class, they were forced to finance an increasing fraction of capital investment using general revenue rather than utility-generated profits. Exogenous factors only increased the difference between costs and revenues.

Studies examining the effect of industry-level performance on the adoption of telecommunications or electricity reform implicate the enormous debt burden that many governments bore as the result of state-owned enterprises' cumu-

lative deficits (Petrazzini 1995; White 1996). Indeed, this burden was so large in some countries that it precipitated a full-blown macroeconomic crisis, which in turn led to the adoption of market-oriented reform. Empirical support for the positive effect of economic crises on the adoption of market-oriented reform can be found in sociological studies of the adoption of neoliberal reform generally (Armijo and Faucher 2002; Remmer 1998).

FISCAL POSITION

Even when a government's poor fiscal position has arisen for reasons other than a struggling industry, incumbent political actors may choose to privatize because the added short-term revenue from doing so can alleviate fiscal problems and thus increase their popular support. Because virtually all governments employ a form of "cash" (as opposed to accrual) accounting, the sale of state-owned assets to private parties generates short-term revenue for the government without creating an offsetting reduction in balance sheet assets. Moreover, even when the loss of this revenue stream is implicitly noted, the increased operating efficiency that private owners of previously state-owned assets typically achieve (Megginson and Netter 2001) usually leads investors to bid above the net present value of the assets under government ownership, creating an incentive for governments—especially cash-strapped ones—to privatize.

IDEOLOGY

In addition to their individual incentives to maintain support, political actors also subscribe to broader ideologies that influence their propensity to adopt market-oriented reform. Murillo (2002) argues that when countries privatize their electricity and telecommunications industries and political actors' "partisan beliefs" favor high state intervention, a depoliticized ("autonomous") regulator results, whereas a politically subordinate one results when such beliefs favor low state intervention. These beliefs are likely to be correlated with left-right measures of political actors' ideological orientation. Consistent with this proposition, Shleifer and Vishny (1994) argue that right-of-center political actors weigh total economic welfare maximization more heavily than they do income redistribution and thus favor less state inter-

vention in the economy, suggesting a proclivity to adopt privatization; whereas left-of-center executives emphasize the negative impact of reform on income distribution and employment. Quinn and Toyoda's (2003) finding that a country's Communist Party vote share is negatively associated with its adoption of financial liberalization supports this argument in the context of the diffusion of another neoliberal reform.

LONGEVITY OF POLITICAL REGIME

The longevity of a political regime may affect political actors' incentives to adopt market-oriented reform. Banerjee and Munger (2002) argue that new political regimes or leaders have a greater propensity to undertake reform because they are more likely to be in office when its medium- and long-run benefits become visible (see also Williamson 1993 on the "honeymoon effect"). Yet they also note that, as Cukierman and Leviatan (1992) suggest, it may be the case that longer-lived regimes have amassed the credibility necessary to undertake controversial market-oriented reform.

POLITICAL INSTITUTIONS

The structure of domestic political institutions affects the costs that policymakers seeking reform must bear in order to bring about actual policy change (North 1990; Persson 2001; Tsebelis 2002). Institutions that create effective checks and balances on individual and institutional political actors limit the ability of such actors to alter policy unilaterally, thereby generating a status quo bias in policy (Henisz 2000; Tsebelis 2002) and reducing the likelihood of reform.⁵ Several cross-national empirical studies linking a country's level of policy stability to the number of veto points in its policy-making apparatus support this contention (Franzese 1999; Hallerberg and Basinger 1998; Henisz 2004; Treisman 2000).

At the same time, an increased level of checks and balances may exert a positive influence on reform adoption through its effect on investor

⁵ In macroeconomic jargon, strong institutional constraints on policy-making enhance the credibility of policy initiatives by increasing their "time consistency."

perceptions. Investors are more likely to participate in infrastructure industries in countries whose domestic institutional environment offers a stronger safeguard against the future rollback or reversal of market-oriented reform (Henisz 2002; Henisz and Zelner 2001; Stasavage 2002). The increased revenue-raising potential of market-oriented reform in a country with strong checks and balances thus increases political actors' potential benefit from adopting such reform. Empirical evidence on market-oriented reform in telecommunications and electricity is consistent with the proposition that stronger checks and balances promote rather than deter successful reform, suggesting that the positive effect of increased credibility more than offsets the negative effect of the status quo bias created by greater checks and balances (Heller and McCubbins 1996; Henisz and Zelner 2005; Levy and Spiller 1994).

TECHNOLOGY

Specific beliefs about the economics of infrastructure also affect political actors' propensity to adopt market-oriented reform. The traditional neoclassical economic rationale for state ownership or price regulation is that infrastructure industries are a form of "natural monopoly" in which government intervention is necessary to protect consumers' interests. Technological innovations, however, have reduced the validity of this argument. In electricity, new generation-technologies have reduced the minimum efficient scale of a generating plant, while information technologies permit tighter coordination between independent upstream and downstream stages of production. In telecommunications, digital switching technologies have eased the sharing of infrastructure by multiple providers. These innovations have facilitated the adoption of market-oriented reform, especially privatization and liberalization (Gilbert and Kahn 1996).

EMPIRICAL SETTING, DATA, AND METHODS

The telecommunications and electricity industries provide an excellent empirical setting in which to examine the impact of domestic and international factors on the adoption of the market-oriented reform elements of privatization,

regulatory separation, regulatory depoliticization, and liberalization. As noted earlier, a trend of adoption began to gather speed during the 1980s, and by the end of the 1990s, 65 percent of the 190 countries and territories for which we have data had introduced at least one of these four elements in telecommunications, while 49 percent had done so in electricity (see Table 1). The countries that adopted early, and those that have adopted most comprehensively (that is, all four reform elements), represent a variety of geographic regions, income levels, and development levels. Table 2 lists the first 20 adopters of any element and all of the countries that have attained all four elements in each industry.

DATA

We test our hypotheses using an unbalanced cross-national panel dataset on the adoption of market-oriented reform elements in up to 71 countries between 1977 (when Chile, the first modern reformer, adopted an element of reform) and 1999 (the last year for which we have complete data). The unit of analysis is the country-year. Country is a natural choice for the cross-sectional unit in this study because the decision to adopt market-oriented reform in electricity or telecommunications is typically made at the national level, and in most countries around the world telecommunications and electricity were historically organized as state-owned monopolies. Table 1 shows the number of countries that had enacted each reform element by year during the period 1977–1999 (see Table S1 on the *ASR* Online Supplement: <http://www2.asanet.org/journals/asr/2005/toc048.html>).

Data on the timing of adoption are drawn from multiple secondary sources, including the International Telecommunications Union (ITU), the International Energy Agency (IEA), other international agencies, national regulatory agencies, press reports, and third-party analyses.⁶

⁶ The telecommunications reform variables come from the ITU. For the electricity reform variables, we supplement information available from the IEA with data from the Organisation for Economic Co-operation and Development (OECD) International Regulation Database, the World Bank's International Directory of Utility Regulatory Institutions, and the websites of national regulatory agencies and mini-

Table 1. Reform Elements in Place, 1977–1999

Year	Telecommunications					Electricity				
	Priv	Sep	Dep	Lib	One or more ^a	Priv	Sep	Dep	Lib	One or more ^a
1977	8	1	1	1	9	6	3	1	42	43
1978	8	1	1	1	9	6	4	2	42	43
1979	8	2	1	1	10	6	4	2	43	44
1980	8	2	2	1	10	6	4	2	43	44
1981	10	2	2	2	12	6	4	2	43	44
1982	10	3	2	3	14	6	4	2	43	44
1983	10	3	2	3	14	6	4	2	43	44
1984	11	4	2	3	13	6	4	2	43	44
1985	11	5	2	4	15	6	4	2	43	44
1986	11	5	2	4	15	7	5	3	43	45
1987	11	9	2	4	19	7	8	4	44	47
1988	10	11	2	7	21	7	8	4	44	47
1989	13	13	3	7	25	7	9	5	44	47
1990	18	16	3	8	31	7	9	5	44	47
1991	18	20	4	10	36	9	10	5	46	49
1992	19	29	9	10	44	11	14	5	50	54
1993	21	34	11	11	50	12	14	5	52	56
1994	22	38	14	15	57	12	18	5	58	63
1995	26	47	18	17	68	12	24	10	65	72
1996	30	60	28	21	82	16	33	14	69	76
1997	38	81	45	25	102	19	43	16	78	87
1998	49	92	56	36	114	22	51	16	85	93
1999	51	100	62	41	124	27	53	17	87	94

Note: Priv = privatization; Sep = separation; Dep = depoliticization; Lib = liberalization.

^a Denotes number of countries out of the 190 for which data are available that had adopted one or more reform elements in the relevant industry as of the given year.

These data are combined with macroeconomic information from the World Bank's World Development Indicators, industry-specific information from the ITU and IEA, and political data from the Political Constraints Database.

DEPENDENT VARIABLES. We run separate regressions for telecommunications and electricity to ensure that our results are robust to choice of industry. Our data include the year (if any) in which a country attained each of the four reform elements. We identify the year in which privatization occurred in each industry as that in which the government first sold a majority stake in the relevant state-owned utility (and examine alternate definitions in our robustness analysis). We identify the year in which regu-

latory separation occurred as that in which the regulatory authority was formally separated from the executive branch, and the year in which regulatory depoliticization occurred as that in which the regulatory authority is judged in actuality to have become wholly independent or autonomous from the influence of this branch. We identify the year of liberalization of telecommunications as that in which competition in long-distance telephony first occurred, and the year of liberalization of electricity as that in which private generation for sale first occurred. Thus, there are four potential reform element adoptions for each country-year in each industry.

COERCIVE PRESSURES. We measure the strength of the coercive pressures that multilateral lenders exert on a country as the ratio of the country's level of borrowing from the World Bank and IMF to the country's gross domestic product (GDP). Compared to the alternative measure of actual infrastructure project-based

stries. In instances where our data conflict with those from Levi-Faur (2005) and Murillo (2001), our coding has been validated using multiple independent sources.

Table 2. Countries in Estimating Sample Adopting at Least One Element and Countries Adopting All Four Elements of Market-Oriented Reform, 1977–1999^a

Adoption of at Least One Element				Adoption of All Four Elements			
Telecommunications		Electricity		Telecommunications		Electricity	
Country	Year	Country	Year	Country	Year	Country	Year
Philippines	1979	Chile	1978	United Kingdom	1984	Chile	1986
United States	1980	New Zealand	1986	Netherlands	1997	UK	1991
Bahrain	1981	Philippines	1987	Denmark	1998	Bolivia	1996
Bhutan	1981	Norway	1987	Italy	1998		
Chile	1982	China	1987	Spain	1998		
UK	1982	UK	1989	Dom. Rep.	1998		
Japan	1985	Korea, Rep.	1991	Belgium	1998		
Haiti	1987	Argentina	1992	Mauritius	1998		
Spain	1987	Venezuela	1992	Uganda	1998		
Norway	1987	Peru	1992	Peru	1999		
Canada	1988	Colombia	1992	Ireland	1999		
Germany	1988	Nepal	1992	Brazil	1999		
Guinea-Bissau	1989	Costa Rica	1993				
Jamaica	1989	Ireland	1993				
Portugal	1989	Jamaica	1994				
Argentina	1990	Hungary	1994				
Hungary	1990	Trinidad and Tobago	1994				
Dom. Rep.	1990	Nigeria	1994				
Mexico	1990	Nicaragua	1994				
New Zealand	1990	Tunisia	1994				

Note: UK = United Kingdom; Dom. Rep. = Dominican Republic; Korea, Rep. = Republic of Korea.
^a Left panel lists first 20 countries in main estimating samples (including 69 countries in the case of telecommunications and 71 in that of electricity) to have adopted at least one of the four elements of market-oriented reform discussed in the text between 1977 and 1999, along with year of adoption. Right panel lists all countries in main estimating sample to have adopted all four elements between 1977 and 1999, along with year of adoption of fourth element. These lists would differ if a weaker definition of depoliticization were used.

loan agreements, this measure has two advantages. First, it is relatively independent from the domestic political economic factors that may generate pressure for reform at a given point in time. Second, it reflects possible extra-sectoral linkages in country loan packages that the alternative measure would not. For example, in the prominent cases of a \$46 billion Indonesian lending program in 1997 and a \$2.6 billion program to the Ukraine in 2001, a multilateral agency refused to disburse loan funds to a country in the midst of an exogenous macro-economic and financial crisis until the government agreed to undertake market-oriented infrastructure reform. Even if we were to set aside issues of endogeneity and unobserved extra-sectoral linkages, data on the contents of individual loans are publicly available for only a limited time period and number of countries (Goldstein 2001).

NORMATIVE PRESSURES FOR EMULATION. We measure normative pressures for emulation by constructing a country-specific trade cohesion measure that, for each market-oriented reform element, assigns greater weight to the prior adoption decisions of more closely tied countries. The weight assigned to the adoption decision of each of a given country's trading partners is the share of the focal country's total trade that trade with that partner represents. Panel A of Table 3 reports, for the full sample for each industry and two subsamples, a country's average trade cohesion measure with other countries that have adopted a given reform element. Countries in the subsample of those that have adopted a given reform element do more trade on average with other countries that have adopted the same element, relative to the average level of trade with such countries for the entire sample. Conversely, countries in the subsample of those that have not adopted a given reform

Table 3. Trade Cohesion and Role Equivalence Measures for All Countries, Countries that have Adopted a Given Reform Element, and Countries that have not Adopted the Reform Element

Reform element	Telecommunications			Electricity		
	All	Adopters	Non-adopters	All	Adopters	Non-adopters
A. Average Trade Cohesion						
Privatization	28.9	50.2	26.1	23.7	30.1	23.2
Regulatory separation	11.1	30.0	7.6	20.9	48.6	17.8
Regulatory depoliticization	18.6	53.1	16.1	17.5	31.6	17.0
Liberalization	21.4	57.2	19.0	60.7	75.1	51.6
B. Average Role Equivalence						
Privatization	6.5	11.6	5.7	3.6	5.9	3.4
Regulatory separation	9.7	19.1	7.0	6.5	13.6	5.3
Regulatory depoliticization	5.2	15.5	4.0	2.8	6.3	2.6
Privatization	5.2	12.7	4.3	20.1	24.8	17.4

element do less trade on average with other countries that have adopted that element.

PRESSURES FOR COMPETITIVE MIMICRY. We measure pressures for competitive mimicry by constructing another country-specific measure, in which the weights on the prior adoption decisions of other countries reflect the extent to which they are role-equivalent with the focal country, that is, compete in similar international export and import markets (excluding petroleum markets). Role-equivalent country-pairs need not be cohesive. For example, country-pairs trading in similar products to third countries in 1999 included Azerbaijan-Iran, Guatemala-Honduras, United States-Mexico, and United States-United Kingdom. Of these four pairs, Azerbaijan-Iran was the least cohesive: only 3.6 percent of Azerbaijan's total trade was with Iran, and less than 0.5 percent of Iran's trade was with Azerbaijan. In contrast, the United States and Mexico were the most cohesive, accounting for 81.1 percent and 11.3 percent of trade with each other, respectively.

Panel B of Table 3 reports average role-equivalence measures by subsample. The figures are necessarily smaller than those in the top panel because there do not exist any perfectly role-equivalent countries. As can be seen, however, the clustering of adoption decisions is even more dramatic. On average, countries that have adopted a given reform element are considerably more role-equivalent than are countries in the full sample, and those that have not adopted a given reform element are considerably less role-equivalent than are countries in the full sample.

OTHER INDEPENDENT VARIABLES. We include additional independent variables to reflect domestic factors including industry performance, fiscal position, technological change, ideology, regime longevity, and checks and balances. We proxy for performance with two commonly employed measures: the ratio of the number of customers waiting for telecommunications services to the number of customers currently served (Petrazzini 1995), and the percentage of electricity that is generated but lost in transmission or distribution. A high value of either measure indicates a clear performance shortfall in the industry. Each measure is more widely available than are potential alternatives such as the percentage of calls completed, hours of brownouts or blackouts, and various productivity metrics. To capture fiscal strain on the government as a whole, we include the public-sector budget balance.

We rely on the Database of Political Institutions (Beck et al. 2001) for measures of the ideology of the chief executive and regime durability. We allow for the impact of technological change with a linear time trend variable that takes a value of zero in the base year of our analysis (1977) and increases by a value of one each year. Our results are also robust to less restrictive time fixed effects.

We measure checks and balances using the Political Constraints Index (*POLCON*) developed by Henisz (2000).⁷ The first step in con-

⁷ Data and codebook are available from The Political Constraint Index (*POLCON*) Dataset (<http://www-management.wharton.upenn.edu/henisz/POLCON/ContactInfo.html>).

structing this time-varying index is the identification of the number of independent branches of government (executive, lower and upper legislative chambers, judiciary, and subfederal institutions) with veto power over policy change in each country. Countries lacking any formal veto points receive a score of 0. For all other countries, the majority preference of each of these branches and the status quo policy are then assumed to be independently and identically drawn from a uniform, unidimensional policy space [0,1]. This assumption allows for the derivation of a quantitative measure of institutional constraints using a simple spatial model of political interaction. This initial measure is then modified to take into account the extent of alignment across branches of government using data on the party composition of the executive and legislative branches. Alignment across branches increases the feasibility of policy change, thereby reducing the level of political constraints. The measure is then further modified to capture the extent of preference heterogeneity within each legislative branch. Greater within-branch heterogeneity increases (decreases) the costs of overturning policy for aligned

(opposed) branches. The final measure of *POLCON* can take on values ranging from zero (least constrained) to one (most constrained).

To account for the role of any scale economies (or diseconomies) as country size increases, we include the log of a country's population as well as the percentage of the population that resides in urban areas. Additionally, we include the log of per capita GDP as a rough measure of resources and economic structure.

We provide summary statistics for the dependent and independent variables in our analysis for samples used in the primary specification for telecommunications (up to 69 countries; Table 4) and electricity (up to 71 countries; Table 5). Unfortunately, the data on bilateral trade, industry performance and the government budget balance are available for less than half of the total cases in our dataset. The subsamples that result from case-wise deletion of missing observations disproportionately contain wealthy, urban and populous countries with high political constraints. Refer to Table S2 (on the *ASR* Online Supplement: <http://www2.asanet.org/journals/asr/2005/toc048.html>), which provides a correlation matrix for the full

Table 4. Summary Statistics of Telecommunications Subsample

Variables ^a	Telecommunications Subsample			
	Mean	SD	Minimum	Maximum
(1) Privatization	.08	.27	.00	1.00
(2) Regulatory separation	.15	.35	.00	1.00
(3) Regulatory depoliticization	.06	.23	.00	1.00
(4) Liberalization	.52	.50	.00	1.00
(9) Multilateral exposure	.06	.10	.00	.93
(10) TC, privatization	.16	.16	.00	.84
(11) TC, regulatory separation	.19	.18	.00	.90
(12) TC, regulatory depoliticization	.04	.05	.00	.27
(13) TC, liberalization	.02	.02	.00	.10
(18) RE, privatization	.19	.20	.00	.91
(19) RE, regulatory separation	.11	.14	.00	.85
(20) RE, regulatory depoliticization	.06	.08	.00	.37
(21) RE, liberalization	.03	.05	.00	.28
(26) Waiting list for telecommunications	.27	.43	.00	4.20
(28) Urban population (%)	58.68	24.25	5.84	100.00
(29) Budget balance/GDP	-3.95	5.92	-64.49	43.30
(30) Population (log)	16.15	1.59	12.36	20.92
(31) Real per capita GDP (log)	8.20	1.56	4.51	10.78
(32) Political constraints index	.44	.33	.00	.89
(33) Duration of current political regime (log)	2.83	1.20	.00	4.58
(34) Chief executive = right	.31	.46	.00	1.00
(35) Chief executive = left	.31	.46	.00	1.00

Note: Observations = 1,292. SD = standard deviation; TC = trade cohesion; RE = role equivalence; GDP = gross domestic product.

Table 5. Summary Statistics of Electricity Subsample

Variables ^a	Electricity Subsample			
	Mean	SD	Minimum	Maximum
(5) Privatization	.12	.33	.00	1.00
(6) Regulatory separation	.20	.40	.00	1.00
(7) Regulatory depoliticization	.11	.31	.00	1.00
(8) Liberalization	.10	.30	.00	1.00
(9) Multilateral exposure	.05	.08	.00	.93
(14) TC, privatization	.65	.31	.00	.99
(15) TC, regulatory separation	.25	.19	.00	.90
(16) TC, regulatory depoliticization	.03	.02	.00	.11
(17) TC, liberalization	.17	.11	.00	.40
(22) RE, privatization	.24	.25	.00	.94
(23) RE, regulatory separation	.30	.20	.00	.94
(24) RE, regulatory depoliticization	.05	.05	.00	.22
(25) RE, liberalization	.03	.04	.00	.22
(27) Electricity line losses (log)	2.30	0.65	-1.76	5.47
(28) Urban population (%)	59.94	22.73	5.59	100.00
(29) Budget balance/GDP	-3.90	5.46	-64.49	16.25
(30) Population (log)	16.27	1.58	12.31	20.94
(31) Real per capita GDP (log)	8.22	1.51	4.51	10.78
(32) Political constraints index	.43	.34	.00	.89
(33) Duration of current political regime (log)	2.81	1.22	.00	4.58
(34) Chief executive = right	.34	.47	.00	1.00
(35) Chief executive = left	.29	.45	.00	1.00

Note: Observations = 1,369. SD = standard deviation; TC = trade cohesion; RE = role equivalence; GDP = gross domestic product.

sample. We lag all independent variables one period to reduce the potential for endogeneity.

METHODS

We estimate policy reform adoption rates using a multivariate probit analysis, a technique that assesses the influence of a set of covariates on the incidence of multiple possible events, where the errors across the equations may be correlated and the strength of these correlations is estimated. Each of the four dependent variables is a binary indicator that takes a value of one if the country has adopted a given reform element by the end of a given year, and zero otherwise. The multivariate probit model thus has a structure similar to that of a seemingly unrelated regression (SUR) model, except that the dependent variables are dichotomous indicators.

More formally, for each industry we estimate the equations

$$y_1^* = \beta_1'x_1 = \varepsilon_1, y_1 = 1 \text{ if } y_1^* > 0, 0 \text{ otherwise}$$

$$y_2^* = \beta_2'x_2 = \varepsilon_2, y_2 = 1 \text{ if } y_2^* > 0, 0 \text{ otherwise}$$

$$y_3^* = \beta_3'x_3 = \varepsilon_3, y_3 = 1 \text{ if } y_3^* > 0, 0 \text{ otherwise}$$

$$y_4^* = \beta_4'x_4 = \varepsilon_4, y_4 = 1 \text{ if } y_4^* > 0, 0 \text{ otherwise}$$

$$\begin{aligned} E[\varepsilon_1] &= E[\varepsilon_2] = E[\varepsilon_3] = E[\varepsilon_4] = 0 \\ \text{Var}[\varepsilon_1] &= \text{Var}[\varepsilon_2] = \text{Var}[\varepsilon_3] = \text{Var}[\varepsilon_4] = 1 \\ \text{Cov}[\varepsilon_1, \varepsilon_2] &= p_{1,2}; \text{Cov}[\varepsilon_1, \varepsilon_3] = p_{1,3}; \\ \text{Cov}[\varepsilon_1, \varepsilon_4] &= p_{1,4}; \\ \text{Cov}[\varepsilon_2, \varepsilon_3] &= p_{2,3}; \text{Cov}[\varepsilon_2, \varepsilon_4] = p_{2,4}; \\ \text{Cov}[\varepsilon_3, \varepsilon_4] &= p_{3,4} \end{aligned}$$

in Stata using the mvprobit command.⁸ The mvprobit command implements this model using a simulated maximum likelihood (SML) estimator, which, “under standard conditions . . . is consistent as the number of observations and the number of draws tend to infinity, and is asymptotically equivalent to the true maximum likelihood estimator as the ratio of the square root of the sample size to the number of draws tends to zero” (Cappellari and Jenkins 2003).

⁸ Data analysis was performed using version 7.0 of mvprobit in Stata 7.0, Stata 8.2, and intermediate releases.

The specific simulator that mvprobit uses is the Geweke-Hajivassiliou-Keane (GHK) simulator, which “exploits the fact that a multivariate normal distribution function can be expressed as the product of sequentially conditioned univariate normal distribution functions, which can be easily and accurately evaluated” (Cappellari and Jenkins 2003). We cluster the standard errors by country to address the lack of independence of multiple observations from the same cross-sectional unit.

EMPIRICAL RESULTS

THE INTERNATIONAL CONTEXT OF MARKET-ORIENTED REFORM

INTERNATIONAL COERCION. Tables 6 and 7 display our empirical results. We report separate parameter estimates and significance tests for each of the four dependent variables for the electricity and telecommunication industries.

Table 6. Multivariate Probit Telecommunications Model Predicting the Adoption of Four Market-Oriented Reform Elements, 1977–1999

	Telecommunications ^a			
	Priv	Sep	Dep	Lib
Multilateral exposure	2.748† (1.555)	2.569* (1.042)	1.380 (1.815)	.002 (3.150)
Trade cohesion	1.078 (1.097)	2.262* (1.107)	.227 (.522)	2.139* (.878)
Role equivalence in trade	1.683 (3.145)	-.214 (1.953)	3.915* (1.894)	-1.843 (4.349)
Sector performance	-.868 (.928)	.254 (.292)	.034 (.435)	.105 (.697)
Time	.058* (.026)	.108*** (.034)	.121*** (.029)	.151** (.048)
Budget balance	.023 (.021)	.046** (.017)	.023 (.026)	.076* (.036)
Political constraints	-.604 (.551)	.115 (.412)	.015 (.451)	2.639*** (.756)
Regime duration	-.021 (.124)	.022 (.107)	.174 (.109)	.501*** (.158)
Chief executive = right	.147 (.355)	.251 (.321)	.217 (.308)	.371 (.379)
Chief executive = left	.142 (.325)	.438 (.272)	.034 (.238)	-.433 (.339)
Real per capita income	.022 (.174)	.143 (.171)	.347† (.184)	.485† (.285)
Population	.157 (.122)	.144† (.074)	.223** (.076)	.625*** (.129)
Urbanization	.029*** (.009)	.009 (.010)	-.003 (.010)	-.016 (.012)
Constant	-6.849*** (3.207)	-7.233*** (2.104)	-10.455*** (2.200)	-21.312*** (4.192)
Estimated Correlations:				
Separation	.246† (.138)	—	—	—
Depoliticization	.178 (.133)	1.181*** (.187)	—	—
Liberalization	.525** (.179)	.392* (.189)	.379* (.166)	—

Note: Priv = privatization; Sep = separation; Dep = depoliticization; Lib = liberalization.

^a N = 1,292; Log pseudo-likelihood = -1096.27.

† $p < 0.10$; * $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed tests).

Table 7. Multivariate Probit Electricity Generation Model Predicting the Adoption of Four Market-Oriented Reform Elements, 1977–1999

	Electricity Generation ^a			
	Priv	Sep	Dep	Lib
Multilateral exposure	5.927*** (1.599)	2.868* (1.276)	2.507 (1.720)	.267 (1.547)
Trade cohesion	−2.019* (.998)	1.340† (.745)	−.730 (.465)	−.103 (.390)
Role equivalence in trade	6.604 (5.788)	4.515** (1.708)	16.732*** (3.820)	.330 (1.357)
Sector performance	.578* (.286)	.771** (.257)	.462 (.369)	.737** (.276)
Time	.024 (.017)	.048† (.029)	.012 (.024)	−.001 (.018)
Budget balance	.027 (.031)	.038 (.025)	.047 (.029)	.008 (.022)
Political constraints	1.262† (.686)	.161 (.469)	.374 (.479)	1.197* (.554)
Regime duration	.004 (.157)	.122 (.100)	.229 (.147)	.018 (.105)
Chief executive = right	−.109 (.359)	.250 (.322)	.218 (.396)	−.163 (.279)
Chief executive = left	−1.054* (.457)	.506† (.270)	.143 (.381)	.206 (.258)
Real per capita income	.429 (.334)	.184 (.225)	−.314 (.248)	.401† (.224)
Population	.189 (.142)	.117 (.064)	.210* (.104)	.458*** (.104)
Urbanization	.037* (.018)	.015 (.012)	.043*** (.012)	.008 (.011)
Constant	−12.953*** (3.358)	−9.359*** (2.738)	−7.861* (3.302)	−13.230*** (2.524)
Estimated Correlations:				
Separation	.392* (.185)	—	—	—
Depoliticization	.342† (.205)	1.516*** (.211)	—	—
Liberalization	.444** (.146)	.122 (.130)	.059 (.142)	—

Note: Priv = privatization; Sep = separation; Dep = depoliticization; Lib = liberalization.

^a N = 1,369; Log pseudo-likelihood = −1348.58.

† $p < 0.10$; * $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed tests).

These results provide partial support for Hypothesis 1. The coefficient estimates for multilateral exposure in each of the eight equations are positively signed, but not all are statistically significant. In electricity, exposure to multilateral lenders was positively and significantly associated with majority privatization and regulatory separation. In telecommunications, exposure to multilateral lenders was positively and significantly associated with regulatory separation, and positively and weakly signifi-

cantly ($p = .077$) associated with majority privatization.

The magnitude of the effects is substantial. For example, as shown in panel B of Table 8, a country that borrowed from multilateral institutions in an amount one standard deviation above the sample mean level was 1.52 times as likely to separate formally the regulatory authority from the executive branch in the telecommunications industry (14.68 percent) as was a country with exposure equal to the sample mean (9.65 percent). For severely indebted countries

Table 8. Estimated Magnitude of the Effects of Variables Predicting the Adoption of Four Market-Oriented Reform Elements, 1977–1999

	Telecommunications			Electricity		
	Priv	Sep	Lib	Priv	Sep	Lib
A. Predicted Probability of Adopting a Reform Element (%)						
Baseline (i.e., All Variables at Mean)	3.93	9.65	2.20	.02	5.46	1.35
Multilateral Exposure at Mean + 1SD	6.81	14.68	NS	NS	8.55	NS
Multilateral Exposure at Mean + 2SD	11.10	21.22	NS	NS	12.79	NS
Multilateral Exposure = 50% of GDP	28.98	43.06	NS	NS	37.60	NS
Cohesion Weighted Peer Adoption at Mean + 1SD	NS	16.45	NS	.10	8.96	NS
Cohesion Weighted Peer Adoption at Mean + 2SD	NS	25.76	NS	.53	13.91	NS
Role Equivalence Weighted Peer Adoption at Mean + 1SD	NS	NS	3.60	NS	8.95	3.32
Role Equivalence Weighted Peer Adoption at Mean + 2SD	NS	NS	5.65	NS	13.88	7.24
B. Multiplier of Baseline Probability of Adopting a Reform Element						
Multilateral Exposure at Mean + 1SD	1.73	1.52	NS	NS	1.57	NS
Multilateral Exposure at Mean + 2SD	2.82	2.20	NS	NS	2.34	NS
Multilateral Exposure = 50% of GDP	7.37	4.46	NS	NS	6.89	NS
Cohesion Weighted Peer Adoption at Mean + 1SD	NS	1.70	NS	5.00	1.64	NS
Cohesion Weighted Peer Adoption at Mean + 2SD	NS	2.67	NS	26.50	2.55	NS
Role Equivalence Weighted Peer Adoption at Mean + 1SD	NS	NS	1.64	NS	1.64	NS
Role Equivalence Weighted Peer Adoption at Mean + 2SD	NS	NS	2.57	NS	2.54	NS

Notes: Data are calculated for all results for which $p < 0.10$ in Tables 6 and 7. NS = not significant; SD = standard deviation; GDP = gross domestic product; Priv = privatization; Sep = separation; Dep = depoliticization; Lib = liberalization

whose borrowing from multilaterals was equal to half of their gross domestic product, the likelihood of adoption was 4.46 times greater (43.06 versus 9.65 percent). The positive effects of multilateral borrowing on the adoption of majority privatization in telecommunications and regulatory separation in electricity were of similar magnitude. Multilateral borrowing had the greatest impact on privatization in the electricity industry (see Table 8).

A likely explanation for the positive association between multilateral exposure and the reform elements of majority privatization and regulatory separation, but not regulatory depoliticization and market liberalization, involves the lower observability and enforceability of the latter two elements. Majority privatization is relatively easy for the multilateral lenders imposing conditionality terms to observe, as is the formal separation of the regulatory authority from the executive branch. In contrast, the reform element of regulatory depoliticization—the *de facto* elimination of executive influence on the regulatory authority (as opposed to *de jure* separation)—is more difficult to observe and enforce; the enforcement of market liberalization—the actual entry of competitive service providers—is difficult as well. The multilateral agencies may therefore have been favoring the imposition of *de jure* conditionality terms at the expense of *bona fide* reform, or at least were considerably less effective at attaining the latter. This interpretation is consistent with the oft-noted increased difficulty that multilateral agencies have had in obtaining compliance with the structural policy objectives specified in relatively recent conditionality agreements (such as improvement in financial market supervision, stronger enforcement of antitrust laws, and the creation of an independent regulatory authority), relative to their success in obtaining compliance with the terms specified in early conditionality agreements (such as reduced public borrowing, the retardation of money supply growth, the raising of interest rates, reduced public-sector employment, the lowering of tariffs, simplification of the tax code, and the termination of import quotas).

Additional support for our interpretation of the differential effects of multilateral exposure on the attainment of specific reform elements comes from the results of an alternative speci-

fication for each industry that is identical to the main specification in every respect except that the dependent variable in the depoliticization equation is a weaker measure (reflecting a judgment that the regulatory authority is semi-autonomous, as opposed to fully autonomous).⁹ As in the main electricity specification, exposure to multilateral lenders was positively and significantly associated with majority privatization and regulatory separation, but not with liberalization. Similarly, in telecommunications, exposure to multilateral lenders was again positively and significantly associated with regulatory separation, and positively and weakly significantly ($p = .086$) associated with majority privatization. However, multilateral exposure was positively and significantly associated with depoliticization in electricity, and positively and weakly significantly ($p = .070$) associated with depoliticization in telecommunications. The magnitude of the multilateral exposure coefficient in the depoliticization equation in each of these cases is similar to that of the multilateral exposure coefficient in the regulatory separation equation (between 2.74 and 3.09). Thus, the multilaterals appear to have been roughly as effective in attaining a small degree of *de facto* depoliticization as they have been in attaining *de jure* separation. Because this smaller degree of *de facto* depoliticization (“semi-autonomy”) was likely easier to observe and enforce than the larger degree of *de facto* politicization (“full autonomy”) measured by the variable used in the main specification for each industry, the multilaterals’ greater efficacy in attaining the former is consistent with our interpretation of the results from our main industry specifications as reflecting differences in observability and enforceability.

NORMATIVE EMULATION AND COMPETITIVE MIMICRY. We find some support for Hypothesis 2 (normative emulation) in the case of telecommunications, where regulatory separation and market liberalization by trade-related peer countries boosted adoption. In the case of electricity, our results indicate that privatization by trade-related peer countries reduced adoption, but as shown in Table 8, the magnitude of this effect was quite small. We also find a weakly sta-

⁹ These and all additional results reported hereafter are available from the authors.

tistically significant association ($p = .072$) for the adoption of regulatory separation by trade-related peer countries.

We find some support for Hypothesis 3 (competitive mimicry) as well. In the case of telecommunications, one element (depoliticization of the regulatory authority) showed evidence of competitive mimicry, whereas in the case of electricity, two of the four reform elements (separation of regulatory from operational authority and depoliticization of the regulatory authority) did. The magnitude of these effects was substantial (see Table 8).

Given the differing importance of the trade cohesion and role-equivalence measures in explaining adoption of the four reform elements and the high correlation between the two measures, it is useful to consider the results of regressions including only one of the measures. Removing the trade cohesion measure increases the number of equations with a marginally significant coefficient estimate on the role-equivalence measure by one for each industry; removing the role-equivalence measure has the same effect.

We attempt to shed additional light on the relative effects of normative emulation and competitive mimicry by omitting from our estimating equations independent variables (other than those of theoretical interest) whose missing values substantially reduce the sample size. Doing so increases the statistical power of our analysis, albeit at the expense of increased omitted variable bias. The results obtained show a more consistent pattern of support for the effect of prior adoption of reform elements by role-equivalent countries than for that of prior adoption by trade-cohesive countries. Thus, we find slightly stronger support for the presence of competitive mimicry than we do for the presence of normative emulation.

It also instructive to examine the results of regressions that omit both the trade cohesion and the role-equivalence measure. As discussed in the Introduction, analyses that include measures of coercion but exclude these other two international influences may produce biased results. This possibility is especially significant in the context of ongoing academic and policy debates about the moral propriety and effectiveness of conditionality programs, which revolve around the issue of coercion. When both the trade cohesion and role-equivalence measures are elimi-

nated from our model, we find that the coercive effect of multilateral borrowing was significant in the case of regulatory separation in both industries, and that of privatization in electricity. In addition, multilateral borrowing exerted a significant effect on liberalization in telecommunications, but did not exert a marginally significant effect on privatization.

Finally, Table S3 (on the *ASR* Online Supplement) summarizes the results from a model that excludes all domestic influences and one that excludes domestic political influences (but includes domestic economic influences). In both cases, the results are generally consistent with those that we report in Tables 6 and 7.

THE DOMESTIC CONTEXT OF MARKET-ORIENTED REFORM

Turning to the independent variables that capture the economic motivations for reform, we find that our proxy for industry performance in the electricity industry (line losses in transmission and distribution) was positively associated with regulatory separation, majority privatisation, and market liberalization. We do not obtain similar results in the telecommunications industry. In both cases, our inability to measure costs of production and the prices charged to various consumer classes reduce our ability to identify performance effects more precisely. Contrary to our expectations, we find no evidence of a link between budget deficits and reform; and in two cases (regulatory separation and liberalization in telecommunications), we find that countries were more likely to undertake reform when they possessed a budget surplus. One potential explanation for these findings is that in addition to the financial incentive to privatize, as discussed earlier, political actors may also recognize the costly and long-term nature of the reform process, and only initiate it when they have sufficient slack resources. Our empirical results are consistent with the possibility that these offsetting incentives balance each other out.

The results from our independent variables intended to capture the impact of domestic political factors are also mixed. Ideology played no apparent role in the likelihood of reform, except that a left-leaning government was less prone to engage in privatization of electricity, and that longer-lived political regimes were more

inclined to engage in liberalization of telecommunications. We find a positive association between the level of checks and balances in domestic political institutions (i.e., political constraints) and the adoption of market liberalization in both telecommunications and electricity, suggesting that in the absence of such checks and balances, regulatory reform designed to protect small entrants was not perceived as credible. We also find a weak ($p = .066$) positive association between checks and balances and privatization in the electricity industry.

Finally, the passage of time, which proxies for the impact of technological change, was positively associated with all four reform elements in telecommunications, and (weakly) with regulatory separation in the case of electricity.

FORWARD-LOOKING PREDICTIONS

The ITU dataset contains information on the adoption of reform in telecommunications from after 1999, the threshold that we use in our analysis. Another way of examining the predictive power of our model is thus to review the post-1999 experience of the countries that had the highest predicted probability of adopting a given reform element in 1999, but had not yet done so. Our results indicate that the countries that had the highest probability of separating operational from regulatory authority in 1999 but had not yet done so were Uruguay, Romania, Algeria, and Latvia. Algeria adopted this reform element in 2000, Uruguay and Latvia did so in 2001, and Romania followed in 2002. In the case of depoliticization, the non-adopters that had the highest predicted probability of adoption in 1999 were Argentina, Poland, Thailand, and Turkey. Turkey adopted this reform element in 2000, and Thailand followed in 2004. Among non-adopters, Uruguay, Singapore, and Australia had the highest predicted probability of privatizing the majority of their state-owned telecommunications firms in 1999; Australia is now considering doing so in 2005. Argentina, Turkey, and Portugal were the non-adopters in 1999 that had the highest probability of adopting competition in long-distance telephony; Argentina and Portugal adopted this reform element in 2000, and Turkey followed in 2003. Thus, our model quite accurately predicts the adoption of reform elements beyond the final year of our sample.

ROBUSTNESS CHECKS

Our results are robust to the inclusion of additional variables, different definitions of cohesion and role equivalence, different lag structures, and the possibility that financial or other crises are simultaneously influencing increases in multilateral exposure and market-oriented reform.

OMITTED VARIABLE BIAS. We check for omitted variable bias by adding to our core specifications independent variables that could plausibly influence the dependent variable, including two measures of the openness of the host country economy (trade and foreign direct investment), two measures of the level of debt service (as a percentage of GDP and exports), a measure of financial vulnerability (central bank reserves as a percentage of imports), two measures of the size of government (expenditure and revenue), two measures of host-country growth prospects (population and income), and indicator variables for contemporaneous or one-year lagged changes in the political leadership (as opposed to a continuous measure of the duration of the current political regime, which is included in the primary specification), for post-1989 transition economies and for members of the European Union or Organization for Economic Cooperation and Development. We also redefine trade cohesion and role equivalence to take into account exports alone instead of total trade. Additionally, we recalculate these measures to include petroleum products. The coefficient estimates of theoretical interest are stable in each of these permutations (results available from authors upon request).

LAG STRUCTURE. A potential explanation for our results demonstrating that multilateral exposure had a stronger effect on privatization and the separation of regulatory from operational authority is the short lag (one year) that we use in our primary specification. Specifically, it may take more than one year to create a depoliticized regulatory authority or a competitive infrastructure service industry. We address this potential concern by extending our lag to three and five years and still find no support for a relationship between multilateral exposure and reg-

ulatory depoliticization or liberalization in either industry.

RELEVANT SAMPLE PERIOD. As noted earlier, since 1993 the World Bank has explicitly tied infrastructure lending to the adoption of market-oriented reform. Results for the period 1979–92 only are similar to those for the period 1993–99, with the effect of coercion larger in economic magnitude during the latter period. Changing the base year of the analysis to 1960 does not alter the pattern of significant results either.

SIMULTANEITY. Given our acknowledgment of the role of domestic economic and political factors in reform adoption, and the role ascribed to these same factors in Vreeland's (2003) analysis of a government's decision to seek an IMF program and the IMF's decision to grant this request, we allow for the possibility that a country's choices to ask multilateral lenders for a loan and adopt market-oriented infrastructure reform may be simultaneously determined. Specifically, we employ a two-stage model whose first stage mirrors Vreeland's (2003) depiction of the domestic economic and political factors influencing the adoption and granting of a multilateral lending program, and whose second stage includes these variables as well as the predicted probability that a government will seek a multilateral loan, and that multilateral lenders will grant this loan, as estimated in the first-stage regression. We find no substantive change in the results reported earlier.

SAMPLE SELECTION BIAS. To ensure that the bias in our estimating sample relative to the population of countries undertaking reform is not influencing our results, we conduct a two-stage estimation in which we predict the probability of a country's being in the estimating sample, and then use the predicted value of the dependent variable from this first stage regression as an independent variable in our primary specifications. None of the results reported above change in any substantive manner. The predicted probability of being in the sample does, in some specifications, exhibit a negative association with the incidence of reform, suggesting that, were we to possess data on the omitted countries, they would be more likely to have undertaken reform. From the first-stage

regression we also know that these countries tend to be small and poor and have a young political regime and, as a result, are more likely to have a high degree of multilateral exposure. Thus, the potential bias in our estimating samples would produce conservative estimates of the magnitude of the effects of interest.

DISCUSSION AND CONCLUSION

We simultaneously assess the impact of three international influences (international coercion, normative emulation, and competitive mimicry) on the adoption of privatization, regulatory separation, regulatory depoliticization, and market liberalization in two infrastructure industries—telecommunications and electricity. We find that, after taking domestic political and economic factors into account, international forces have had a strong effect on the domestic adoption of market-oriented infrastructure policies. Moreover, this effect has varied by reform element. International coercive pressures have increased the likelihood of majority privatization and regulatory separation, but not of regulatory depoliticization and liberalization of competition. Normative emulation among countries has increased regulatory separation and market liberalization in telecommunications only. Competitive mimicry has increased the likelihood of regulatory depoliticization in both electricity and telecommunications, and of regulatory separation in electricity.

Our analysis provides a more nuanced perspective than does prior work that either champions (Sachs 2000) or challenges (Garrett 1995, 2001; Guillén 2001a, 2001b) the effect of capital market integration on policy convergence, or questions whether multilateral lending packages actually influence domestic policy outcomes (Przeworski and Vreeland 2000; Ul Haque and Khan 1998). It also further illuminates the debate about the blanket desirability of market-oriented reform. Citizens in a country pressured into market-oriented infrastructure reform when poor industry-performance does not create demands for such reform, or when the national policy-making apparatus lacks sufficient checks and balances to support a well-organized market, may fare worse than those in a country adopting reform as the result of clear performance shortfalls and in the presence of domestic institutional support. The adoption of

policies in response to international pressures may thus help explain resistance to market-oriented reform, both domestically and globally.

Perhaps the most important implication of our analysis involves the differential effects of international pressures on individual reform elements. Despite the normative policy-making prescription espoused by the World Bank, the International Monetary Fund, and some academics that countries should undertake privatization, regulatory reform, and market liberalization in tandem, we find that multilateral exposure has had a positive effect on privatization and formal regulatory separation, but not on *de facto* regulatory depoliticization and market liberalization. Privatization of state-owned utilities coupled with *de jure* regulatory reform only, and unaccompanied by any true competition, imbues private (and often foreign) investors with unchecked market power and is thus likely to have a deleterious effect on consumers and citizens. In such a case, citizens in "reformed" countries may end up worse off, fueling a domestic political backlash against market-oriented reform. Indeed, the current backlash against neoliberalism in many parts of the world is driven partly by the fact that local and foreign investors have benefited from reform disproportionately and sometimes at the expense of consumers.

Our analysis is limited in two primary respects. First, we opt to conceptualize and assess the impact of macro-level variables on the history of market-oriented reform in a large sample of countries. Thus, some of our empirical measures are relatively coarse indicators of the micro-level influences at work. In-depth comparisons of a handful of countries, or intensive case studies of individual countries, enable a more thorough understanding of political dynamics and decision-making, but at the cost of reduced external validity. Although we choose to emphasize generality rather than detail, we acknowledge the value of more specific comparisons and case studies, and view these approaches as complementary to ours. In the current article, we incorporate the insights of more detailed case studies and comparisons to the extent feasible, and seek to ameliorate measurement problems by conducting a battery of robustness checks involving different industries, variable definitions, lag structures, and simultaneous cause-effect relationships. That

such additional tests yield similar results enhances the credibility of our findings.

The second limitation involves our inability to distinguish between direct and indirect coercion effects, both of which contribute to the adoption of reform. This problem, too, relates to the trade-offs between large-sample research and more detailed case studies or comparisons. To wit, analyses of the latter two types are better able to identify and measure complex cause-effect relationships operating through multiple channels. Future research can perhaps develop more detailed indicators and provide more precise tests of the central proposition that international coercion, whether direct or filtered through domestic dynamics, exerts a major influence on policy-making.

Our analysis speaks to broader questions about globalization. Clearly, domestic policy-making cannot be understood without an appreciation of cross-national dynamics, as world-system and world-society theorists have long emphasized. Put simply, globalization is affecting the domestic affairs of countries. Historically, the interaction of societies has produced a great diversity of outcomes, ranging from mutual enrichment to decline, and even to destruction of one or more parties. Our results suggest that it is precisely the heterogeneity in the effects of globalization that makes cross-national dynamics so important to study.

Our study is but the first step in a research program examining the extent to which the exertion of pressures for market-oriented reform produces desirable outcomes. Future studies of reform adoption should include the institutional forces that neo-institutional sociology and world-society scholars emphasize as well as the economic and political forces political economy scholars highlight. Attempting to identify the determinants of market-oriented infrastructure reform without acknowledging the importance of the forceful espousal of this notion by the World Bank and International Monetary Fund ignores the leverage that multilateral lenders possess as well as the power of ideas. Similarly, the assessment of policy reform in countries subject to similar levels of international coercion, normative emulation, and competitive mimicry must take into account differences in domestic economic and political factors to produce meaningful conclusions.

Witold J. Henisz is Associate Professor of Management at the Wharton School. He received his Ph.D. from the Haas School of Business at University of California, Berkeley. His research examines the impact of political hazards on international investment strategy. He considers both the determinants of government attempts to redistribute investor returns to the broader polity as well as the determinants of the success of individual firms in withstanding such pressure. His research has been published in such scholarly journals as *Academy of Management Journal*, *Academy of Management Review*, *Administrative Science Quarterly*, and *Strategic Management Journal*.

Bennet A. Zelner is Visiting Assistant Professor at the Haas School of Business at the University of California, Berkeley, and also serves as a consultant to the World Bank. He previously served as Assistant Professor at the McDonough School of Business at Georgetown University. He received his Ph.D. from the Haas School of Business at the University of California, Berkeley. His research examines how firms manage the political risks and opportunities they confront, especially in their overseas operations. His work has appeared in such scholarly journals as the *Academy of Management Review*, *International Organization* (forthcoming), and the *Journal of Economics and Management Strategy*.

Mauro F. Guillén is the Dr. Felix Zandman Endowed Professor of International Management at the Wharton School and Professor of Sociology in the Department of Sociology of the University of Pennsylvania. He received a Ph.D. in sociology from Yale University and a doctorate in political economy from the University of Oviedo in his native Spain. His current research deals with the diffusion of practices and innovations in the global economy. His most recent book on globalization, *The Limits of Convergence: Globalization and Organizational Change in Argentina, South Korea, and Spain*, was published by Princeton University Press in 2001.

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