Public Authority and Private Rules: How Domestic Regulatory Institutions Shape the Adoption of Global Private Regimes*

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How might domestic regulatory institutions influence the adoption of global private regimes? We focus on the ISO 9001 and 14001 certification standards, which obligate firms to establish quality and environmental management systems. Previous research highlights the roles of international commercial audiences and national regulatory pressures as unconditional drivers of adoption. However, we argue that domestic regulatory institutions condition their effects—in opposite directions. Where regulatory institutions function well, firms facing high levels of regulatory pressure are more likely to seek ISO certification, but firms facing pressures from international audiences are less likely to do so. In contrast, weak regulatory institutions make export-oriented and foreign-owned firms more likely to seek ISO certification, but render firms facing high levels of regulatory pressure less likely to do so. We find support for our claims using firm-level data from 10,000 firms in 30 countries in Eastern Europe and Central Asia.

International Relations scholars traditionally view the state as the central actor in both domestic governance and international regimes. In the last two decades, however, scholars have raised questions about state-centered governance narratives (Rosenau and Czempiel 1992; Avant, Finnemore, and Sell 2010). They highlight the important roles of non-governmental, or private, actors—such as trade associations, professional bodies, technical organizations, and activist groups—in establishing private governance structures (Cutler, Haufler, and Porter 1999; Haufler 2001; Buthe and Mattli 2011). Certification standards comprise an important component of such governance arrangements. Such standards have emerged across issue areas—such as quality control, labor, and the environment—as well as across sectors—including forestry, fisheries, apparel, and coffee. As a form of global private regulation, certification standards impose obligations on firms seeking their seal of approval (Prakash and Potoski 2006). On paper, these obligations typically exceed the regulatory requirements of the jurisdiction in which firms function. In return for incurring the costs of such "beyond compliance"

obligations, firms can employ these standards to proclaim their virtues (in the hope of receiving monetary and non-monetary payoffs) to external audiences—including regulators, customers, activist groups, and financial institutions.[1]

Yet private authority does not exist in a vacuum of state authority and public institutions. Indeed, we argue that the adoption of private governance standards at the firm level depends crucially on the context of domestic regulatory institutions—the extent to which regulatory agencies are perceived as effective and relatively impartial, as opposed to corrupt and bribe-driven. Different factors will lead firms to seek certification in different contexts: pressure from international audiences where domestic regulatory institutions are weak, but pressure from state regulators where those institutions are effective.

A well-developed literature examines variations in the adoption of private standards across countries (see, for example, Guler, Guillén, and Macpherson 2002; Prakash and Potoski 2007; Perkins and Neumayer 2010; Berliner and Prakash 2012, 2013; Zeng and Eastin 2012). Most studies, however, focus on country-level certification counts. Statistical analyses of firm-level certification decisions are rare; scholars use data either from a single country (Christmann and Taylor 2001; Khanna and Anton 2002; Darnall 2006) or from multiple developed countries (Anderson, Daniel Daly, and Johnson 1999; Darnall, Henriques, and Sadorsky 2010).

Using a survey of roughly 10,000 firms in 30 transitional economies of Eastern Europe and Central Asia, we explore firm-level drivers of adoption of the most widely recognized international private certification standards: the ISO 9001 quality standard and the ISO

[1] Certification can be for products themselves or for organizational systems and practices. Our paper focuses on certification systems that are aimed at the latter only.

14001 environmental management standard.[2] To our knowledge, this is the first study to employ firm-level data from multiple developing or transition countries to assess the drivers of private certification adoption. This matters, because a number of factors suggest that certification uptake dynamics in developing countries work differently from those in developed countries. Firms make decisions about joining certification standards under the shadow of public regulatory institutions (Coglianese and Nash 2001; Héritier and Eckert 2007), the character of which varies greatly in developing countries.

Existing private regulation studies typically explore the unconditional effects of both international and domestic pressures with respect to certification choices: from commercial audiences located overseas and from domestic regulators. We, however, expect that firms' relationships with these stakeholders depend on the institutional context in which they are embedded. The benefit of our multi-level approach is that, using firm-level data in multiple countries, we are able to identify scope conditions under which private certification standards might substitute for public institutions as signals for firms' commitment to establish well-functioning management systems that bear upon quality and environmental issues.

Firms have a business imperative to assure key audiences—including regulators, customers, and foreign principals—that they are well managed and well run. Our theory focuses on how the institutional context shapes *which* audiences are likely to be more salient and *what* signals will be necessary to provide such assurance. When the macro-level regulatory context is strong, certification enables firms to seek to alleviate regulatory pressure (in the terms of oversight, legal proceedings, or fines) by credibly signaling their commitment to comply with the law. For the regulators, certification enables them to economize on resources (which are constrained even in strong institutional contexts) while strategically focusing their efforts on the worst performing firms (Potoski and Prakash 2004). On the other hand, firms operating in weak regulatory contexts are not likely to face such incentives. Certification is costly, and in these contexts, the regulatory environment makes no implicit demands on firms to demonstrate their compliance or intent to comply. Moreover, officials may show more interest in receiving bribes than in compliance.

Now consider the role of international commercial audiences, specifically overseas customers and the home country principals of multinational subsidiaries, in influencing certification choices. These audiences seek evidence that firms they deal with have adopted good management practices that are expected to lead to desirable outcomes such as high-quality products, environmental stewardship, and regulatory compliance. Media, activist groups, and other stakeholders often hold businesses responsible for the policies and conduct of their subsidiaries or suppliers, especially those located in developing countries (Vogel 2005; Mosley and Uno 2007; Seid-

man 2007; Greenhill, Mosley, and Prakash 2009; Buthe 2010; Mosley 2010). If regulatory institutions are well functioning, these audiences are more likely to believe that firms employ sound quality and environmental management practices, and consequently are less likely to look for additional assurance. However, if regulatory institutions function poorly and are known to encourage bribery rather than compliance, these audiences will demand additional evidence of firms' management practices. Consequently, firms located in countries with weak regulatory institutions will have incentives to look for alternative means to provide such signals, such as by participation in global certification regimes.

In previous work (Berliner and Prakash 2013), we argued that domestic regulatory institutions would condition the country-level diffusion of ISO 14001 certification via global trade and foreign investment linkages. This paper builds on that previous work both empirically and theoretically. Empirically, we test a related argument using detailed firm-level data instead of relying on aggregate country-level counts. Theoretically, we integrate—into a single framework—arguments for the drivers of certification in both weak and strong institutional contexts, instead of weak contexts alone.

The paper proceeds as follows. Section two outlines our theory and hypotheses. Section three describes our data and modeling approaches. Section four presents our results. Finally, section five concludes.

Theory and Hypotheses

We view global private regimes, such as ISO 9001 and 14001, as mechanisms allowing participants to signal their commitment to quality and environmental stewardship to audiences who cannot otherwise fully observe participants' internal processes or performance (Darnall and Carmin 2005; Terlaak and King 2006; Delmas and Toffel 2008). Given such information asymmetries between firms and their external audiences, the certification allows these audiences to better distinguish well-performing firms from poorly performing ones. By giving the opportunity to different audiences to reward firms for their quality or environmental stewardship, successful private certification regimes try to correct failures in the market for virtue (Vogel 2005).

Of course, not all audiences might find this signal to be credible. Some might have broader concerns about private certification standards, especially given that private certification standards have differing quality (King and Lenox 2000; Rivera and deLeon 2004; Morgenstern and Pizer 2007; Gulbrandsen 2009). There are also legitimate concerns about the incentives for firms to credibly self-regulate via private regulation. While claims about certification regimes should be carefully assessed, the empirical fact is that their adoption is widespread across the globe. Clearly, a large number of firms find value in investing in these certification regimes. Yet their adoption shows considerable variation across countries and firms. What might explain these differences?

The International Organization for Standardization (ISO), a Geneva, Switzerland-based international non-governmental organization whose members are private sector national bodies (Mattli and Buthe 2003) such as the American National Standards Institute, the British Standards Institution, and the Deutsche Institut für Normung, sponsors both the ISO 9001 and ISO 14001 certifications. Since its inception in 1947, the ISO has developed and

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[2] The survey question asks "Does this establishment have an internationally-recognized quality certification?" Interviewers were instructed "If there is need for clarification, some examples are: ISO 9000, 9002 or 14000. "As such, it is not possible to differentiate between environmental and quality certifications in this study. Further, it is not possible to be completely certain that firms do not respond with another certification in mind. However, as similar arguments have been advanced across different individual private standards, our theoretical argument applies broadly even if firms are adopting other certifications.

launched more than 19,500 standards. Both the 9001 and 14001 standards have very similar approaches to management practices. They require firms to establish extensive management systems, including substantial investments in personnel, training, and most critically, in establishing paper trails for management operations. Both require participants to receive an initial certification audit and then periodic recertification audits from national-level, ISO-recognized, accreditation organizations. These certifications and audits can be expensive, especially for small firms (Kolk 2000; Darnall and Edwards 2006).

The logic of management systems-based certification approaches holds that if firms adopt appropriate management policies, they will achieve desired outcomes. Since its introduction in 1987, more than 1.1 million facilities in over 170 countries have adopted the ISO 9001 quality management standard.[3] During the early 1990s, environmental certification was a topic of much discussion, particularly centering on the 1992 Rio Earth Summit. Prominent scholars such as Michael Porter (1991) suggested that pollution actually reflected quality management problems because it entailed wastage of resources, which lead to arguments to conceive of environmental issues as just one dimension of overall concerns about quality. Indeed, given the widespread adoption of ISO 9001, many sought to replicate this certification approach in the context of environmental issues. As a result, the ISO organization launched the ISO 14001 environmental certification standard in 1996, modeled along principles similar to those of ISO 9001. More than 250,000 facilities in over 150 countries have adopted this certification standard. Both ISO 9001 and ISO 14001 certification systems are widely recognized as among the most credible signals of firms' commitment to quality and environmental stewardship. More fundamentally, they reflect firms' commitment to streamlining and organizing its internal management systems and processes to meet legal, organizational, and market requirements.

While not central to our argument, we recognize that private regimes sometimes fail to shape the behaviors of their participants in desirable ways. There is a vigorous debate on whether firms participating in private regimes produce better environmental outcomes in relation to non-participants (Koehler 2007; Morgenstern and Pizer 2007). Given the low entry barriers in sponsoring these regimes, some are designed to serve as "greenwashes," which do not impose real obligations on their participants (Steinzor 1998). Despite variations in their effectiveness, the widespread adoption of these private regimes across countries and issue areas presents an important topic of inquiry for IR scholars: to carefully uncover the firms' motivations for joining these regimes and how their international audiences shape these motivations and the institutional contexts in which they function.

Many scholars have investigated the reasons that firms undertake the substantial costs to get these certifications. Two sets of relationships with distinct sets of stakeholders—groups of actors who can express political demand for private regulation (Buthe 2010)—are important here: relationships with regulators and relationships with external commercial audiences. Many authors have emphasized the role of the state in encouraging ISO 9001 adoption. Guler et al. (2002:212) notes

that ISO 9001 certification has "become an imperative for many businesses in Europe, as well as those hoping to work with European firms," due to EU directives, as well as that many government agencies around the world require that their contractors adopt this certification standard. In the case of environmental management systems among S&P 500 firms, Khanna and Anton (2002) find that firms with higher costs of compliance with existing regulations and firms that anticipate higher costs of compliance with future regulations are both likely to adopt more extensive management systems. Darnall (2006:373) argues that "regulatory pressures in the form of improving the company's environmental compliance and anticipating future regulatory benefits were an important predictor of firm-wide ISO 14001 mandates" among U.S. firms. Coglianese and Lazer (2003) note that regulators may encourage management-based regulation as an alternative to performance-based regulatory approaches.

Scholars have also documented the importance of international commercial stakeholders in creating incentives for firms to certify their management systems. These stakeholders are principals of multinationals' subsidiaries, customers in export markets, and buyers in the supply chain. Anderson et al. (1999:40) found that ISO 9001 "certification depends critically on whether the firm sells in markets that value third party attestations of quality." Guler et al. (2002:212–213) argue that "enterprises with operations in more than one country are widely recognized as key agents in the diffusion of practices across national borders because they transfer organizational techniques to subsidiaries and to other organizations in the foreign host countries in which they operate" and find that inward foreign investment drives country-level ISO 9001 adoption.

In the case of environmental management systems, Christmann and Taylor (2001) find that firms in China with multinational owners, multinational customers, and export destinations in developed countries were all more likely to have ISO 14001 certification. Prakash and Potoski (2007) argue that exports to and investment from countries with high levels of certification drove country-level ISO 14001 adoption because certification diffused via global supply chains and organizational hierarchies. Montiel, Husted, and Christmann (2012) contend that the ability of external commercial stakeholders to drive adoption depends on the institutional context—with certification acting as a stronger signal of performance in contexts with corrupt or otherwise weak regulatory institutions. Heritier, Mueller-Debus, and Thauer (2009:28) find that automotive firms operating in South Africa are more likely to undertake inspections of their suppliers, including by requiring both ISO environmental and quality certifications, when they are headquartered in high-regulation countries or have high-end target markets.

We argue that these insights on the roles of regulators and external commercial stakeholders in encouraging firms' participating in certification systems should be understood as being contingent on the macro-level regulatory context in which firms function. In the context of international trade, buyers and sellers tend to be separated by spatial, linguistic, and sociocultural differences. Buyers sometimes infer sellers' product quality partly from the overall reputation of the country in which the sellers are located (Van Ham 2001; Hudson and Jones 2003). Thus, exporting firms located in countries with reputations for environmental problems or low product quality can face a "market for lemons" problem (Akerlof

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[3] ISO. "ISO Survey – Certifications up by + 6%." http://www.iso.org/iso/pressrelease.htm?refid=Ref1491.

1970:488) and suffer a competitive disadvantage in the international market. In such a context, sellers can use quality or environmental certifications to rebrand themselves and signal their commitment to high product quality and environmental stewardship to their foreign buyers (Kreps and Wilson 1982; Milgrom and Roberts 1986; Anderson et al. 1999; Delmas and Montiel 2009).

Multinational enterprises face similar challenges, needing to signal their commitment to product quality and environmental stewardship in their overseas subsidiaries to home country stakeholders. Consumers, regulators, shareholders, activists, the media, and other stakeholders in home countries of the multinational may suspect that these enterprises have located activities in countries with weak regulatory institutions in order to take advantage of weaker environmental and product standards. Even if they do not ascribe such motives to multinational firms, they may ascribe a host country's reputation for poor quality or environmental performance to products produced there by multinational subsidiaries. To mitigate these possibilities, multinational owners may encourage or sometimes even direct their subsidiaries to seek ISO certification of their management systems as a signal to these stakeholders of commitment to performance, and to differentiate themselves from other firms operating in the same countries.

Contrast the above with countries with strong regulatory institutions where such signaling motivations are unlikely to drive certification. After all, the external audiences of exporting and foreign-owned firms should be able to rely on the country's reputation for well functioning and impartial regulation and therefore have little need to seek assurances from firm-specific signals of quality and environmental commitment instead. Our theory suggests that while firms might not perceive demands from external commercial audiences for certification, the context of strong macro-level regulatory institutions might create conditions for regulators, as key stakeholders, to influence firms' incentives to join certification systems. In societies with well-functioning regulatory institutions, the state is an important actor in influencing both the market and the non-market environment in which firms function. Here, the threats and promises of the state to firms are more credible. This is because public regulatory agencies tend to have the resources and expertise to enforce regulations, and ensure that regulatory relief and punishment for regulatory infractions are at least somewhat impartial—based on commitment to performance rather than bribes.[4] Firms are likely to view the threat of state action to sanction, or the promise of regulatory relief, as credible. They may therefore seek to differentiate themselves from other firms in ways that might please or impress regulators. Given that regulators have bounded rationality and are typically overburdened (Fiorino 2006), they often welcome such signals from firms to "play ball" and to make their regulatory tasks easier. Indeed, environmental and quality management systems with clear documentation and paper trails allow regulators to do their jobs expeditiously and efficiently.

Our theoretical lens suggests that external commercial audiences and domestic regulatory pressures influence certification choices under different—and largely opposite—conditions. We agree with Börzel and Risse (2010:114) and Börzel, Hönke, and Thauer (2012:3) that, in states with weak regulatory institutions, external commercial actors can serve as "functional equivalents" to the "shadow of hierarchy" in incentivizing firms to join private certification regimes. Based on our discussion, we propose the following hypotheses:

Hypothesis 1: *Dependence on international commercial audiences encourages firms to seek ISO certification only when they operate in countries with weak regulatory institutions.*

Hypothesis 2: *Firms facing high levels of regulatory pressure seek ISO certification only when they operate in countries with strong regulatory institutions.*

Data and Model

We draw upon a data set from the European Bank for Reconstruction and Development (in conjunction with the World Bank), based on a survey of more than 11,000 firms in 30 countries in Eastern Europe and Central Asia.[5] The survey was conducted between 2007 and 2009.[6] This Business Environment and Enterprise Performance Survey "examines the quality of the business environment as determined by a wide range of interactions between firms and the state" (European Bank for Reconstruction and Development 2010).

The survey covered "commercial, service, or industrial business establishments with at least five full-time employees," leaving out agricultural and other primary sector firms. The sampling frames were based on a combination of participants in previous rounds of the survey, and official lists of establishments from national statistical offices. The survey was stratified within each country based on industry (manufacturing, retail trade, and other services), establishment size (small, medium, and large firms), and region. Given that our focus is on estimates of the effects of firm-level relationships with state regulators and foreign audiences in different national contexts, none of which were stratification criteria, we do not make use of survey weights in our modeling approach.

After listwise deletion of missing data, our data set contains 10,017 firms. In addition to working with firm-level data, this data set allows us to explore firms' choices in a region that exhibits wide variation in regulatory quality. We believe that this allows us to generalize our findings from this study to other parts of the world. While some

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[4] Of course, a regulatory agency with perfect information as well as sufficient resources, expertise, and impartiality would have no need to rely on private certification as a signal of commitment to performance—no such "shortcuts" would be necessary. However, no real-world regulators, even in countries with the highest quality institutions, have such perfect information or the resources to collect sufficient information to avoid the need to rely on signals.

[5] The countries included are Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kosovo, Kyrgyzstan, Latvia, Lithuania, Macedonia, Moldova, Mongolia, Montenegro, Poland, Romania, Russia, Serbia, Slovakia, Slovenia, Tajikistan, Turkey, Ukraine, and Uzbekistan.

[6] Only 157 of the firms in our final dataset were interviewed in 2007, while 8,299 were interviewed in 2008 and 1,561 in 2009. While the onset of the global financial crisis late in this period could lead to fluctuations in firms' exports, both export *orientation*—whether their business is set up to produce for export or domestic consumption—and foreign ownership are likely to be resistant to rapid changes during the period of time in which firms were surveyed.

features of the postcommunist context are unique, many features of countries in this region are indeed shared by many developing countries, such as legacies of state ownership and the potential for widespread corruption among state regulators.

Dependent Variable

Our dependent variable is a dichotomous response to the survey question: "Does this establishment have an internationally-recognized quality certification?" The survey guidelines include a note to the interviewer, stating that "If there is need for clarification, some examples are: ISO 9000, 9002 or 14000." In our sample, 2,736 firms responded that they had such certifications, or 27.3 percent of the total. Of these, roughly 200 firms responded that certification was "still in process," which we consider as an affirmative response, as we are interested in the decision to seek ISO certification. Roughly 200 more responded that they did not know, which we consider as a negative response. Given the level of resources and management involvement required in obtaining certification, it is reasonable to assume that the managers being interviewed would know if their firm was certified. However, we also conduct robustness checks making alternative choices on these two dimensions.

While the survey question specifically pertains to quality issues, it does not distinguish ISO 9001 quality management certifications from ISO 14001 environmental management certifications. We do not view this as a problem for our analysis, however, because ISO 14001 certification tends to go along with ISO 9001 certification. While some ISO 9001 certified firms may not be ISO 14001 certified, most ISO 14001 certified firms are ISO 9001 certified as well. Indeed, ISO 9001 certification has been found to be an important predictor of subsequent ISO 14001 certification (Corbett and Kirsch 2001; Darnall 2006; Delmas and Montiel 2008). Research has also found that the two certifications share similar motivations and implementation practices (Pan 2003; Molina-Azorín, Tarí, Claver-Cortés, and López-Gamero 2009) and that many firms implement both management systems in an integrated manner (Bernardo, Casadesus, Karapetrovic, and Heras 2009; Karapetrovic and Casadesús 2009).[7] Because the two certifications address closely related issues and require similar management systems to be implemented, our argument that the roles of different stakeholders in encouraging firms to seek certification differ by institutional context applies to both. In terms of organizational dynamics, both certification systems emphasize similar issues in regard to quality and legal compliance. Broadly speaking, ISO certification reflects firms' commitment to strong internal management practices, which lead to high-quality products, environmental stewardship, and compliance with the applicable laws and regulation.

Modeling Approaches

We use two separate modeling approaches to test our hypotheses. As we utilize a binary dependent variable, we employ logistic regression in both approaches. First, we split the sample of countries into those with strong and weak regulatory institutions. Doing so allows us to assess the varying effect of our key variables in each context. We use different institutional measures to ensure that our choice of the measure used to split the countries into two groups is not driving our results. Each "strong institutions" sample comprises those countries at or above the median value of a given measure, while each "weak institutions" sample comprises those countries below the median. We expect stronger firm-level relationships with external commercial audiences in the context of the weak regulatory institutions sample to drive certification choices. We do not expect this to hold as strongly, however, in the context of the sample with strong regulatory institutions. On the other hand, we expect greater firm-level regulatory pressure to drive certification in the context of the sample of countries with stronger regulatory institutions sample. We do not expect this to hold in the sample of countries with weak macro-level regulatory institutions.

Second, we employ a hierarchical modeling approach, which allows us to include both firm-level and country-level covariates in the model, while including random effects for each country (Gelman and Hill 2007). As opposed to splitting the sample, this approach includes interaction terms between the strength of regulatory institutions and each key firm-level driver of certification to assess the extent to which cross-national variation in the effects of key variables can be explained by the quality of macro-level regulatory institutions.

Firm-level Covariates

We use two firm-level variables to capture the influence of external commercial audiences. *Foreign ownership* measures the proportion of the firm's ownership held by foreign entities, while *export orientation* measures the proportion of the firm's sales that were exported. Both variables range from 0 to 1.

To assess the leverage regulators have over individual firms, we employ the variable *regulatory burden,* which reflects respondents' answer to the question, "In a typical week over the last year, what percentage of total senior management's time was spent on dealing with requirements imposed by government regulations?" As this variable has a highly skewed distribution, with most of the values at the low end, we employ a log transformation. Firms will value certification if they perceive that it helps them in dealing with regulators. This is possible if regulators seek evidence that firms are undertaking due diligence to comply with the law (as signaled in firms' decisions to join the ISO standards). If instead, regulators simply seek bribes, then certification can offer no such benefit. Thus, when firms face higher regulatory burdens, they seek ISO certification only in contexts where the quality of regulatory institutions is high.

In addition to capturing the leverage exercised by external commercial audiences and regulators on individual firms, our model includes several firm-level variables which the literature reports as being important drivers of ISO certification. *Firm Age* is measured as the logged number of years in existence. This reflects the fact that

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[7] Most third-party auditors offer joint audits for ISO 9001 and ISO 14001. One prominent auditor notes "If an organization already has ISO 9001, there are many common requirements which do not need to be repeated when you combine ISO 9001 with ISO 14001... It is often more efficient to combine these two manuals (EMS & QMS) into one - sharing the common clauses and procedures... Rather than have parallel (duplicate) Manuals, we note where the user can just add EMS requirements to the existing QMS Manual." See <http://integrated-standards.com/combine-iso-9001-iso-14001.aspx>. Last accessed May 26, 2012.

firms may have accumulated experience and expertise in implementing new management systems. *Firm Size* is measured as the logged number of employees. This reflects the contention that large firms, as reflected in their employee roster, have greater capacities to certify their management systems which often require extensive documentation and dedicated staff to manage them. *Subsidiary* is an indicator of whether or not the surveyed firm is a subsidiary of another company. Subsidiaries of parent companies may have stronger incentives as well as greater capacities to certify their management systems. *Service Sector* is an indicator for firms reporting operating in the construction, retail, wholesale, hotel and restaurants, transport, information technology, or "other services" sectors. All firms receiving a score of 0 on this variable are manufacturing firms, as no agricultural or other primary sector firms were included in the survey. This control reflects the finding that ISO management systems tend to be more attractive to manufacturing firms and less to service firms, especially in the context of international commercial pressures. *State ownership* is an indicator taking a value of 1 if the firm was wholly or partially owned by the state. State-owned firms may have fewer incentives to certify in order to ingratiate themselves with regulators, and they may pay less heed to perceived concerns of their overseas commercial audiences given that such firms have historically operated in sheltered domestic markets. However, state ownership could also serve as an alternative avenue for state regulators to encourage certification, or create greater external demand for firms to signal their adherence to modern management practices.

Country-level Covariates

The key country-level variable which we expect to condition the effects of firms' perceptions of regulatory burden and their dependence on overseas commercial audiences is the strength and quality of a country's (macro-level) regulatory institutions. Our primary measure of institutional quality is the variable *Control of Corruption*, drawn from the 2008 World Governance Indicators (WGI). This variable captures "perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as 'capture' of the state by elites and private interests" (World Governance Indicators 2012), based on an unobserved components model of multiple governance indicators drawn from numerous different data sources.[8]

To ensure that the split-sample model results are not driven by a particular basis for dividing the countries into "strong institutions" and "weak institutions" groups, we also use three additional institutional measures. The first of these is Transparency International's 2008 Corruption Perceptions Index (CPI), based on surveys of expert perceptions of public sector corruption. The second is the variable *Government Effectiveness* from the World Governance Indicators, capturing "perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such

policies" (World Governance Indicators 2012). The third is the *Corruption* variable from Freedom House's 2008 "Nations in Transit" report on democratization in post-communist transition countries.

In addition, several of our models (those not already including country fixed effects) include country-level controls to capture the role of other factors that might influence firms' certification choices. Citizens in rich countries might be more likely to hold post-materialist values which can encourage certification choices. We therefore control for *GDP* per capita, which reflects levels of economic development, with data drawn from the World Bank's World Development Indicators. Since citizens in democratic settings have greater opportunities to articulate clear preferences about corporate practices that might influence firms' certification choices, we control for levels of *Democracy* with data from the Polity IV project. On one hand, membership in the European Union, where governmental policies as well as citizens' preferences for corporate practices are salient, can also drive certification choices of firms located in EU member countries. On the other hand, firms located in countries which were formerly part of the Soviet Union might face fewer such pressures. We therefore include indicator variables for countries which were a part of the *former Soviet Union* and which were *EU Member* countries at the time of the survey.

While firm-level engagement with the global economy should influence certification choices, arguably, the overall openness of the economy to global markets and global businesses might also influence firms. Thus, we include two country-level measures of economic integration. *FDI per GDP* measures the value of inward foreign direct investment as a percent of the size of the economy, while *Exports per GDP* measures the value of exports as a percent of the size of the economy. Data for the aforementioned two variables are drawn from the World Bank World Development Indicators. Finally, in the split-sample models, we are able to include country fixed effects to control for all other country-level variables that might influence certification decisions.

Results

Table 1 presents the results of our first set of models. Each pair of models splits the sample of countries into two parts: countries with strong regulatory institutions, comprising those at or above the median country's value on each institutional measure; and countries with weak regulatory institutions, comprising those with values below the median. These models include only firm-level covariates, as all country-level variables are perfectly collinear with the country fixed effects. Models 1 and 2 split the sample using the WGI Corruption measure. Models 3 and 4 use the CPI Corruption measure. Models 5 and 6 use the WGI Government Effectiveness measure. Finally, Models 7 and 8 use the Nations in Transit (NIT) Corruption measure. The key results in all of these models are the differences, across different institutional contexts, in the magnitude of the coefficients of our three key variables of interest.

Consistently across all of the models presented in Table 1, the effect of foreign ownership is much larger in weak than in strong regulatory contexts. Between Models 1 and 2, the effect of foreign ownership in weak regulatory contexts is roughly 4.46 times greater than the effect in strong contexts. In Models 3 and 7, the foreign owner-

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[8] While the concept of corruption includes more institutional characteristics than just the quality of regulatory institutions, the two should be very highly correlated in practice. In particular, we are interested in the tendency of state regulators to actually seek compliance as opposed to bribes, or vice versa, which will be largely a function of systemic corruption.

TABLE 1. Results from Logistic Regression Models of ISO Certification in Split Samples of Firm-level Data. Strong Institutional Quality Models Include Countries at or Above Median Value of Each Institutional Measure, While Weak Institutional Quality Models Include Countries Below the Median. All Models Include Country Fixed Effects

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
	WGI Corruption		CPI Corruption		WGI Gov. Effectiveness		NIT Corruption	
Institutional Measure Institutional Quality	Strong	Weak	Strong	Weak	Strong	Weak	Strong	Weak
foreign ownership	0.239*	1.065***	0.144	1.221***	0.431***	0.802***	0.094	1.234***
	(0.136)	(0.149)	(0.135)	(0.150)	(0.144)	(0.143)	(0.137)	(0.162)
export orientation	0.198	0.396**	0.185	0.371**	0.218*	0.332**	0.298**	0.501***
	(0.124)	(0.164)	(0.127)	(0.158)	(0.125)	(0.163)	(0.144)	(0.183)
regulatory burden	0.068**	−0.082***	0.088***	−0.101***	0.122***	−0.128***	0.055	−0.104***
	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.034)	(0.031)
Firm Age	0.206***	−0.044	0.212***	−0.031	0.208***	−0.027	0.138**	−0.032
	(0.056)	(0.054)	(0.058)	(0.054)	(0.058)	(0.052)	(0.062)	(0.058)
Firm Size	0.543***	0.506***	0.549***	0.492***	0.543***	0.512***	0.577***	0.483***
	(0.028)	(0.031)	(0.029)	(0.031)	(0.029)	(0.030)	(0.032)	(0.033)
Subsidiary	0.222*	0.667***	0.223*	0.647***	0.241**	0.577***	0.383***	0.665***
	(0.115)	(0.112)	(0.115)	(0.113)	(0.122)	(0.108)	(0.126)	(0.120)
State Ownership	0.395*	0.012	0.485*	0.042	0.497**	0.068	0.329	−0.016
	(0.214)	(0.190)	(0.248)	(0.176)	(0.250)	(0.172)	(0.212)	(0.201)
Service Sector	−0.520***	−0.624***	−0.524***	−0.617***	−0.514***	−0.606***	−0.507***	−0.613***
	(0.078)	(0.083)	(0.079)	(0.084)	(0.081)	(0.080)	(0.085)	(0.090)
Observations	4549	5468	4366	5463	4384	5633	3745	4,920
Countries	15	15	15	14	15	15	14	14
AIC	5043.446	4638.549	4887.645	4641.480	4748.133	4933.568	4088.685	4048.230

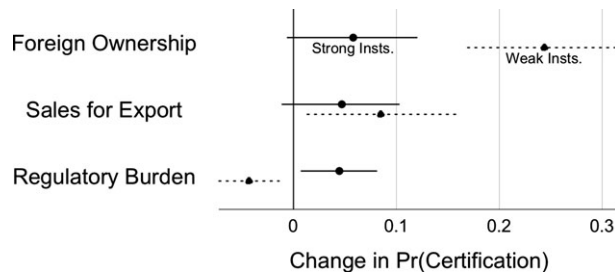(Notes. ***$p < .01$, **$p < .05$, *$p < .1$.)

FIG. 1. Substantive effects of key variables, calculated using simulations from the results of Model 1 and Model 2. The point shows the expected increase in predicted probability of ISO certification when increasing each key variable from a low value to a high value, holding all other independent variables at their mean values for the particular sample of countries. Non-dashed and dashed lines show 95% confidence intervals for results from Model 1 and Model 2, respectively. For the first two variables, the changes are from 0 to 1, while for regulatory burden the change is from one standard deviation below to one standard deviation above the mean.

ship coefficient is not even statistically significant at a $p < .1$ level in the strong institutions samples. Figure 1 presents substantive effects of each of the three key variables, using the split sample presented in Models 1 and 2. We use simulations from our model results to calculate the expected change in predicted probability of certification for an otherwise average firm, while increasing each variable in turn from a low value to a high value.[9] Thus, all else equal, changing a hypothetical firm from no foreign ownership to full foreign ownership is expected to result in a 0.06 increase in the probability of ISO certification in a country with strong regulatory institutions,

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[9] See the Online Appendix for the median values of each variable used in these simulations.

but an increase in 0.24 in a country with weak regulatory institutions. The magnitude of this difference in the effects of foreign ownership highlights the crucial conditioning role of institutional context on the uptake of these private regulatory standards.

The effects of firm-level export orientation on certification decisions also depends on the institutional context, although not as strongly as the effects of foreign ownership. While the magnitudes of the coefficients are smaller than those for foreign ownership, the differences are still clear. Between Models 1 and 2, the coefficient under weak institutions is twice as large as that under strong institutions. In Models 1 and 3, the export orientation coefficient is not statistically significant at a $p < .1$ level in the strong institutions samples, while it is significant in the corresponding weak institutions samples. In the simulation results presented in Figure 1, changing a hypothetical firm from no exports to producing entirely for export is expected to increase the probability of certification by only 0.05 in a country with strong institutions, but by 0.08 in a country with weak institutions.

The effects of the variable measuring firm-level regulatory burden (that is, the leverage of regulators over individual firms) show the opposite relationship with institutional context: As hypothesized, its effect is more pronounced where regulatory institutions are strong. In most of the split samples, the effect of regulatory burden measure is positive and statistically significant in countries with strong regulatory institutions and actually negative and statistically significant in countries with weak regulatory institutions. The simulation results presented in Figure 1 show that, for an otherwise average firm, increasing the management time spent dealing with regulation from one standard deviation below its mean value to one standard deviation above is expected to reduce the probability of certification by 0.04 in a country with weak

TABLE 2. Results of Hierarchical Logistic Regression Models of ISO Certification

	Model 9	Model 10	Model 11	Model 12
Firm-Level Variables				
foreign ownership	0.548***	0.670***	0.546***	0.557***
	(0.101)	(0.102)	(0.101)	(0.101)
export orientation	0.206**	0.217**	0.251**	0.193**
	(0.097)	(0.097)	(0.106)	(0.098)
regulatory burden	−0.028	−0.029	−0.027	−0.037*
	(0.020)	(0.020)	(0.020)	(0.020)
Firm Age	−0.024	−0.025	−0.025	−0.030
	(0.032)	(0.032)	(0.032)	(0.032)
Firm Size	0.535***	0.539***	0.535***	0.538***
	(0.020)	(0.020)	(0.020)	(0.020)
Subsidiary	0.403***	0.430***	0.406***	0.400***
	(0.081)	(0.081)	(0.081)	(0.081)
State Ownership	0.156	0.169	0.155	0.168
	(0.138)	(0.138)	(0.138)	(0.139)
Service Sector	−0.616***	−0.607***	−0.617***	−0.615***
	(0.055)	(0.055)	(0.055)	(0.055)
Country-Level Variables				
Corruption (WGI)	0.260	0.351	0.287	−0.134
	(0.303)	(0.310)	(0.304)	(0.300)
GDP per capita	0.026	0.028	0.027	0.027
	(0.019)	(0.020)	(0.019)	(0.019)
Democracy	−0.012	−0.011	−0.012	−0.010
	(0.022)	(0.022)	(0.022)	(0.021)
Former Soviet	−1.135***	−1.129***	−1.131***	−1.109***
	(0.179)	(0.182)	(0.179)	(0.173)
EU Member	−0.305	−0.327	−0.308	−0.291
	(0.281)	(0.286)	(0.281)	(0.271)
FDI per GDP	0.373	0.435	0.365	0.302
	(1.183)	(1.205)	(1.183)	(1.139)
Exports per GDP	−0.147	−0.168	−0.145	−0.252
	(0.564)	(0.575)	(0.564)	(0.543)
Cross-Level Interactions				
foreign ownership × Corruption		−0.809***		
		(0.162)		
export orientation × Corruption			−0.187	
			(0.178)	
regulatory burden × Corruption				0.220***
				(0.038)
Observations	10,017	10,017	10,017	10,017
Countries	30	30	30	30
AIC	9792.729	9770.134	9793.634	9761.127

(*Notes.* ***$p < .01$, **$p < .05$, *$p < .1$)

institutions, but to increase it by 0.05 in a country with strong regulatory institutions. While these effects are relatively small in magnitude, the fact that both are statistically significant but in opposite directions highlights the important conditioning role of institutional context in shaping firms' choices regarding private certification standards.

The results presented in Table 2 use an alternative approach to test our hypotheses. By employing hierarchical models with random effects instead of fixed effects for countries, we can include country-level covariates in the model. Here, we test our hypotheses using interaction terms with the WGI Corruption measure of institutional strength, rather than by splitting the sample into two. That is, these models test for linear relationships between country-level institutional strength and the magnitude of effects of our key variables, whereas the models presented in Table 1 simply tested for separate effects of those key variables in two halves of the sample.

Model 9 first shows the results of a hierarchical model with no interaction terms. The subsequent three models each include an interaction term between the level of Corruption and each of the key firm-level variables of interest in turn. In Model 10, the interaction term between foreign ownership and Corruption is negative and statistically significant at a $p < .01$ level, confirming the key role of institutional context in conditioning the effect of multinational ownership. In Model 11, the interaction term between export orientation and Corruption is negative, but not statistically significant. This suggests that, while the effects of firm-level export dependence are different in countries with weak and strong regulatory institutions, the magnitude of the effect is not well explained as a linear function of country-level institutional strength. In Model 12, the interaction term between Regulatory Burden and Corruption is positive and significant at a $p < .01$ level. These results confirm the key role of institutional strength in conditioning the

effect of firm-level relationships with regulators to seek ISO certification.

The results of Model 9 also show that country-level Corruption on its own does not have a significant effect on firm-level decisions to seek certification. Rather, its effect is in conditioning the role of firms' relationships with key stakeholders. Interestingly, the results for the other country-level variables in these models show that, once we control for firm-level determinants of certification decisions, no other country-level factor makes a significant difference. The one exception to this is former Soviet countries, in which firms are less likely to seek certification than in other countries.

Robustness Checks

Finally, we also show the robustness of our main results to several alternative modeling choices. Table S2 in the Online Appendix presents split-sample results omitting ten EU countries, to ensure that EU country commitments to harmonize regulatory practices to not drive the results. We find that this is not the case. Comparing the drivers of firm-level certification decisions between the non-EU countries with stronger and weaker regulatory institutions, we find broadly similar differences for foreign ownership and regulatory burden. For export orientation, the results adhere even closer to our theoretical expectations than in the primary models presented in Table 1, with statistically significant positive coefficients in the weak institutions samples and insignificant coefficients close to zero (some positive and some negative) in the strong institutions samples.

Tables S3 and S4 in the Online Appendix employ alternative codings of the dependent variable, first counting firms with certification still in process as non-certified instead of certified, and second, excluding from the data set firms responding that they did not know if they were certified, instead of counting them as non-certified. The results are broadly similar to the main results, with striking differences in the coefficients for foreign ownership and regulatory burden between the two sets of samples, and smaller differences for the coefficients for export orientation.

Tables S5 and S6 in the Online Appendix employ alternative codings of the foreign ownership and export orientation variables. Instead of using values ranging from zero to one, each set of models uses dichotomous versions, which equal one for any values greater than zero (in Table S5) or greater than 0.1 (in Table S6). The same broad patterns in the results are apparent.

Table S7 in the Online Appendix, finally, uses an alternative measure of exposure to pressure from external audiences which is based on the reported perceptions of firm managers, not on precise levels of foreign ownership or export orientation. Survey respondents were asked to respond to two questions: "How important are each of the following factors in affecting decisions to develop new products or services and markets" and "How important are each of the following factors in affecting decisions with respect to reducing the production costs of existing products or services." For each of three factors, "pressure from domestic competitors," "pressure from foreign competitors," and "pressure from customers," respondents answered with either a "not at all important," "slightly important," "fairly important," or "very important." Assigning these four responses values of 1, 2, 3, and 4, we take the sum of responses for domestic pressure and subtract it from the sum of responses for foreign pressure. This resulting measure captures the extent to which firms are more concerned about foreign competitors, as opposed to domestic competitors, and thus whether they are likely to be more concerned about the perceptions of foreign or domestic stakeholders. As expected, the coefficients for this variable are larger in weak institutional contexts than in strong institutional contexts, further supporting our theoretical expectations.

Conclusion

This paper aims to contribute to the broader discussion on the role of institutions in global politics. Institutions structure the rules of the game, shaping both the state and market incentives faced by societal actors (North 1990; Ostrom 1990). Many scholars seek to explain why market actors undertake private regulatory activity, for example, joining voluntary certification programs, by suggesting important roles for both private politics—incentives created by external commercial linkages—and state coercion. In this paper, we have argued that both of these effects are crucially conditioned by the quality of public regulatory institutions. Where regulatory institutions are strong, public regulation drives private certification as a signal to regulators. Yet where regulatory institutions are weak, private politics undertaken by external commercial actors can substitute for the role of state coercion, driving private regulatory activity as a signal to audiences like multinational owners. Meanwhile, neither motivation substantially drives private regulatory activity in the alternate institutional context.

Our results from an analysis of roughly 10,000 firms in Eastern Europe and Central Asia, while supporting existing theories of private regulatory activity with firm-level data from a new context, identify important institutional scope conditions under which they operate. On one hand, theories emphasizing the role of state agents as key stakeholders may perform well in the context of developed countries with well-functioning regulatory institutions, but should not be expected to be of use in contexts where those regulatory institutions are weak. On the other hand, theories emphasizing the role of signaling to international commercial audiences may be most important in precisely the contexts where private regulatory activity serves to differentiate firms from the weak regulatory contexts in which they operate.

Many authors have studied the complex interactions among different sets of rules in the global economy, especially examining how domestic regulatory systems structure the interests of both state and private actors in interaction with other national, international, and private regulatory regimes (Burley 1993; Raustiala 1997; Knill and Lehmkuhl 2002; Newman and Bach 2004; Farrell and Newman 2010; Buthe and Mattli 2011, Lütz 2011; Lütz, Eberle, and Lauter 2011; Farrell and Newman 2014). However, with a few exceptions (such as Bartley 2011), this literature focuses on advanced industrialized countries with strong regulatory capabilities. Outside of such contexts, the regulatory policy choices of states may matter much less than their capabilities for impartial enforcement. Our paper thus helps to extend this literature beyond the OECD to developing countries, by highlighting how domestic regulatory institutions structure the choices of private actors.

Private regulatory regimes work in the shadow of, and in conjunction with, public institutions. Our findings

demonstrate that foreign commercial audiences and domestic regulators can serve as "functional equivalents" (Börzel and Risse 2010:114) in encouraging certification. Therefore, we caution against over-emphasizing the private—or non-governmental—character of certification standards. The emergence of private certification does not necessarily imply the "retreat" or "hollowing out" of the state (Strange 1996). Neither is certification bound to fail in contexts beyond the "shadow of hierarchy" (Héritier and Eckert 2007:113). Our analysis emphasizes the need to "bring the state back in"— albeit in nuanced ways—to the study of private authority regimes.

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Supporting Information

Additional Supporting Information may be found in the online version of this article:

Table S1. Summary statistics for the variables included in the models, among 10,017 firms in 30 countries unless otherwise specfied.

Table S2. Robustness check omitting EU member countries. Results from logistic regression models of ISO certification in split samples of firm level data.

Table S3. Robustness check counting firms with certification in process as non-certified.

Table S4. Robustness check counting firms responding "don't know" as missing values on the dependent variable.

Table S5. Robustness check using dichotomous versions of foreign ownership and export orientation, equal to one for any values above zero.

Table S6. Robustness check using dichotomous versions of foreign ownership and export orientation, equal to one for any values above 0.1.

Table S7. Robustness check measuring exposure to external audiences as the difference between pressure from foreign competitors and pressure from domestic competitors.

Table S8. Median values of variables used in hypothetical scenarios for simulations resulting in Figure 1.