

# Inter-Governmental Regimes and Recruitment to Private Regimes: GATT/WTO and the ISO, 1951–2005

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## Abstract

Scholars of international relations and public policy recognize that quasi-private actors supply governance services alongside governmental actors. We explore how membership in the dominant trade regime, the General Agreement on Tariffs and Trade/the World Trade Organization (GATT/WTO) influences countries' incentives to join the quasi-private regime, International Organization for Standardization (ISO). Both global regimes seek to remove trade barriers; the former focuses on tariff and non-tariff obstacles, and the latter on technical barriers. While any firm can subscribe to over 18,000 ISO standards, only national standards bodies, one per country, can become ISO members. We posit that given the substantial political costs of joining GATT/WTO and the relatively low entry barriers to joining the ISO, high trading countries might view the ISO as a (partial) functional equivalent of the GATT/WTO. Our empirical analysis of ISO membership dynamics over the period 1951–2005 lends support to our argument.

## Policy Implications

- When faced with barriers to entry at the dominant trade regime, exporting firms and their governments may consider participating in private regimes to influence the trade environment.
- As evidenced in the debates over the reform of UN Security Council and the emergence of the Asian Infrastructure Investment Bank (AIIB), the institutional architecture and the rule-making powers of global regimes should reflect the power configurations of the 21st century, and not of the post-World War II order.
- Creating private regimes in a policy area requires factoring in potential participants' positions with regard to the existing intergovernmental regimes.
- While existing intergovernmental regimes are the key pillars of global governance, their rule-making systems privilege certain perspectives over others. Private regimes can foster polycentricity and bridge democracy deficits by allowing multiple stakeholders to create regimes with different rule structures.

## 1. Choosing trade regimes

Distributional implications of economic openness and its impact on domestic politics have been discussed extensively in the literature (Rogowski, 1989; Stolper and Samuelson, 1941; and more recently Kim, 2017; Osgood, 2017). Producers catering to the domestic market tend to be protectionist and make the case for erecting trade barriers, especially if they face competition from foreign firms. Producers exporting to foreign markets favor a liberal trade policy and exert pressures on country governments to join global and regional regimes such as the World Trade Organization and the North American Free Trade Association.

Less discussed in the development literature is that the process of joining a trade regime can pose political and economic challenges that are beyond the realm of domestic

trade politics. Powerful countries that serve as gatekeepers to that regime might want to extract concessions, or impose excessive burden on potential regime members. Think of them as political "entry barriers" a country must confront when it considers membership in a trade regime. Facing a high entry barrier, this country has two choices. First, it could agree to the demands of the regime gatekeepers. This is a high benefit-high cost scenario. Second, the country might consider joining a trade regime that is an *imperfect* functional substitute yet has a substantially lower barrier to entry. This might be termed as a moderate benefit-moderate cost scenario.

We bring a novel perspective about this issue of *choosing* trade regimes by theorizing and empirically examining why countries seek to join a quasi-private trade regime (International Organization for Standardization, ISO), when they

have the option of joining the leading inter-governmental trade regime (the General Agreement on Tariffs and Trade/World Trade Organization, GATT/WTO). In doing so, we highlight how seemingly domestic-level choices such as export-led industrialization need a nuanced understanding of global politics and the global governance structures.

GATT was established in 1947 to promote international trade by reducing institutional barriers such as tariffs and quotas, and providing institutionalized dispute settlement system. It was succeeded by the WTO in 1995. GATT/WTO is the dominant global trade regime that has shaped the volume and direction of global trade in significant ways. Alongside GATT/WTO, the International Organization for Standardization (ISO) also regulates international trade. Since its inception also in 1947, the ISO has developed over 18,000 product and process standards to reduce technical barriers to trade from a multiplicity of standards.<sup>1</sup>

While not an inter-governmental regime that has been established by an international treaty, the ISO can be considered as a regime that provides a platform for the articulation of national commercial interests. ISO members that participate in the standards making processes consist of national standards setting bodies. To join the ISO, a national standards body needs to be attested by its government as the most representative organization in the country. In some countries, these bodies are officially part of the government.<sup>2</sup> Even when they are not, national delegations to the ISO often include representatives from the government as well as the industry – with the objective to promote the interest of the national firms. In essence, countries can seek to shape global trading rules by participating in the ISO system as well as through GATT/WTO. The challenge for scholars is to explain why and when countries make specific choices about regime participation, a task we undertake in this paper.

While the existing literature has analyzed countries' accession to GATT/WTO (Copelovitch and Ohls, 2012; Davis and

Wilf, 2015, 2017; Neumayer, 2013), there is surprisingly little work that explores the membership dynamics at the ISO. The membership of the ISO has experienced a remarkable increase over the past six decades. As shown in Figure 1, the organization started with 27 founding members (See Appendix 1 for the list of founding members). As of, 2017, the organization has 162 national standards setting bodies as members. To the best of our knowledge, this is the first statistical analysis of the ISO membership drawing on original data we procured from the ISO itself.

This paper presents and empirically tests three alternative explanations about the relationship between GATT/WTO and ISO, as reflected in countries' membership decisions to the latter. First, countries might seek membership at a private regime to enjoy the regime's exclusive member benefits. An observable implication is that countries with a high export share of GDP (henceforth *export salience*) would seek to join ISO, regardless of their membership status in GATT/WTO. Second, a membership at a private regime might be complementary to a membership at an inter-governmental regime.<sup>3</sup> An observable implication is that GATT/WTO membership will encourage ISO membership, especially for countries with high export salience. Third, countries might view a private regime as a (partial) functional equivalent of the dominant inter-governmental regime (Borzel and Risse, 2010). As both ISO and GATT/WTO offer an avenue to influence the global trading environment, countries that do not want to or unable to join GATT/WTO due to political concerns would find the ISO particularly attractive. An observable implication is that non-GATT/WTO members with high export salience are more likely to join the ISO than GATT/WTO insiders with comparable export levels.

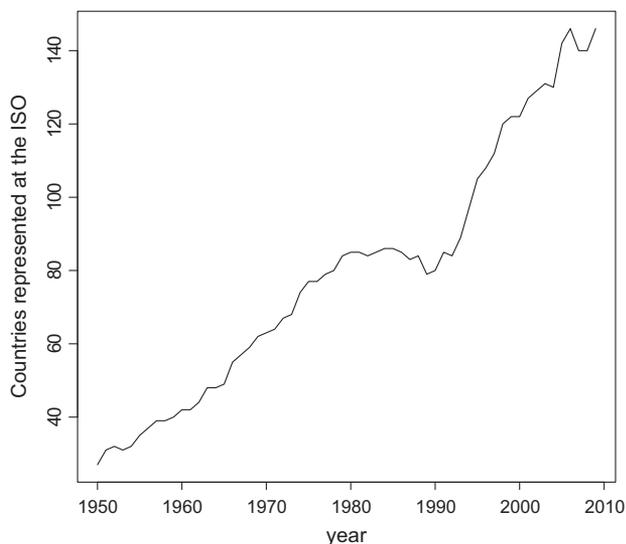
Our empirical result covering 95 countries in the period between 1951 and 2005 lends support for the third perspective suggesting the (partial) functional equivalence between the ISO and GATT/WTO. Our findings have important implications for the study of global regulation and global governance. We suggest that global regulatory processes are primarily political constructs – although they obviously have functional payoffs for countries that participate in them. If countries are not willing to join a given regime due to its high political or economic costs, they might settle for its partial functional equivalent that provides lower benefits but at the same time imposes lower costs as well.

The paper proceeds as follows. In section 2, we provide brief backgrounds of GATT/WTO and the ISO. In section 3 we elaborate the three explanations for accession to the ISO and derive testable hypotheses. In section 4, we present our model, variables, and empirical analysis. We conclude in the final section .

## 2. Reducing trade barriers via global regimes

Since its inception in 1947, the GATT has served as the pre-eminent global trade regime focused on reducing tariffs and other institutional barriers. Over the years, the GATT expanded the range of issues covered in eight rounds of multilateral rounds or talks. In 1995, the GATT was

Figure 1. Trend in ISO membership.



succeeded by the WTO.<sup>4</sup> While there is an extensive debate about the virtues of free trade and protectionism (Bhagwati, 2003; Krugman, 1987) and about the extent to which WTO has increased trade (Rose, 2004 but see Goldstein et al., 2007 and Subramanian and Wei, 2007), few dispute that the WTO now provides the most important and visible institutional infrastructure to promote global trade.

Non-governmental global regimes have a bearing on international trade as well. The ISO is perhaps one of the most prominent among them. Why so? Impediments to trade are not limited to tariffs and quotas. They also include technical barriers emanating from differing product and process standards. The ISO is an outcome of global efforts towards standardization of industrial practices and processes (Murphy and Yates, 2008), which would help reducing information acquisition costs, contracting costs, and technical barriers to trade. While international level standards setting organizations began to emerge at the onset of the 20th century (e.g., the International Electrotechnical Commission (IEC) founded in 1906), the standardization movement received a major boost after the conclusion of World War II. To coordinate the reconstruction efforts in Western Europe, the United Nations established the United Nations Standards Coordination Committee (UNSCC) in 1946. In the same year, the UNSCC and International Federation of the National Standardizing Association (IFNSA) were merged to create the International Organization for Standardization. The ISO was formally launched in February 1947, the same year as the GATT.

While both the ISO and GATT/WTO have sought to reduce trade barriers for the past 70 decades, their membership dynamics differ in one important way. The GATT regime emerged together with the Bretton Woods institutions (IMF and World Bank) in the context of American hegemony (Ikenberry, 2001; Stein, 1984). Davis and Wilf's (2017) empirical analysis on the WTO accession shows that the US's (and later the EU's) foreign policy goals have continued to shape the decisions over membership. Let alone the allies of the Soviet Union, countries such as Mexico did not seek to join the GATT due to domestic liberalization obligations it imposed. Yet, other countries that were geopolitically aligned with the core founding members, such as Japan and South Korea, were allowed to join GATT at low cost without having to bear the political costs of domestic liberalization.

To the contrary, ISO founders included national standards setting bodies from the USSR and communist Poland and Hungary. The USSR, and later Russia, has served an important role at the ISO with Russian being adopted as one of the three official languages along with English and French. Russia has also supplied three ISO presidents, two during cold war (A.E. Vyatkin, 1962–1964; V.V. Boytsov, 1977–1979). Willy Kuert, the former Secretary of the Swiss Standard Organization (SNV) and founding delegate of the ISO, recalls:

I was astonished that the Soviet Union delegates were such good working delegates. They proposed some very good ideas and were prepared to accept democratic rules. ... Then there was a lengthy discussion about [official] languages [of the ISO].

Naturally enough, English and French were proposed first. Then the Soviet delegates wanted to have Russian treated in exactly the same way as English and French ... Soviet Union was prepared to translate all the documents and to send translation to every member of the new organization ... We could accept this proposal and it was set down (ISO, 1997).

Unlike GATT/WTO, the ISO does not require any policy change such as liberalization of domestic policies. To attract more countries in the developing world, the ISO has also offered two types of memberships. Full members participate in technical committees that develop standards and vote on standards (the collective choice level in the Ostrom framework) (Ostrom, 1990). Correspondent member countries participate, at a lower annual fee, in the meetings devoted to the development of ISO standards as observers.<sup>5</sup> In all, the entry barriers to joining the ISO are lower than that of GATT/WTO.

One factor, however, might discourage countries to join the ISO. Unlike the GATT/WTO's tariff reduction and dispute resolution that are excludable club benefits,<sup>6</sup> the ISO produces open-access standards that are akin to global public goods. Any organization can access the ISO's standard documents (with a small user fee; between 30 to 120 Swiss franc per document depending on the length) and freely adopt the standards. The ISO thus potentially faces a free rider problem. Any firm can voluntarily subscribe to the ISO standards, irrespective of whether the firm's national standards body is a member of the ISO. Why should countries invest valuable financial and human resources for participating in the ISO's standard making processes if their firms can independently utilize the latest available standards and enjoy the benefits of reduced trade costs?<sup>7</sup>

Joining a regime can have two connotations. First, a country might simply serve as a 'consumer' of the governance services provided by a regime. The second, and politically more important, dimension is joining a regime with the objective to participate in its governance. To use the terminology employed by Ostrom (1990), the former (using the services provided by a regime) is an 'operational choice decision' while the latter (participation in governance) is a 'collective choice decision'. Participation in collective choice governance reflects the desire of actors to have a seat on the governance table, and to participate in rule making processes. By joining the ISO, countries seek a forum where they can participate in rule making, instead of seeking a forum where they are expected to receive more favorable treatment as consumers of governance and regulatory services. ISO may then be viewed as offering a path to participate in the rule making processes at a significantly lower cost than GATT/WTO.

### 3. The effect of WTO/GATT on decision to join ISO: three explanations

In this section, we elaborate three potential explanations for countries' accession to the ISO and derive three corresponding empirically testable hypotheses.

### Explanation 1: countries join the ISO as it offers 'exclusive' member benefits

While the ISO produces open-access standards, the membership at the ISO organization provides two types of exclusive benefits. First, the full membership allows a unique opportunity to shape the global standards. Standardization is more than a coordination process. It can shape the division of rents (Besen and Farrell, 1994). Scholars have documented how technical standards can create a competitive advantage for countries/firms whose preferred technological specifications are incorporated as global standard, especially in relatively new industries. The classic videotape format war between VHS and Beta format in the 1980s illustrated this politics over divisions of such rents (Cusumano et al., 1992). In the 1990s, there was a struggle over standardization of the 56K modems that were introduced under competing and incompatible standards (Augereau et al., 2006).<sup>8</sup>

As Pascal Lamy, former WTO Secretary General observed: 'Whereas it is natural for countries to be 'standard-takers', rather than 'standard-setters', for products that are not of key economic interest to them, it is not natural they be 'takers' for the ones that are.'<sup>9</sup> In his address to the 34th ISO General Assembly, Lamy noted the division of labor between the ISO and the WTO: 'Let me begin by stating my conviction that the work you do – the work of setting international standards – is crucial for international trade. As you know, the WTO has no direct role in setting technical standards. Standard-setting is not our area of competence. It is yours'.<sup>10</sup>

In essence, participation in a prominent global standard setting organization allows countries who strive to be technology and market leaders to strategically develop newer systems and standards by managing formal standardization (Choung et al., 2011, 2012). To this end, national standards bodies often work in close cooperation with domestic firms in exporting industries to ensure that technical standards produced by the ISO do not disadvantage, or even provide the competitive advantage for, their domestic firms in global commerce. For instance, the hosting member of, 2015 ISO General Assembly, the Korean Agency for Technology and Standards (KATS; under the Ministry of Trade, Energy, and Industry), took the Assembly as an opportunity to invite delegates from over 160 countries to Korea's leading firms in major exporting industries and to showcase the firms' potential to lead global standardization. Daesik Jae, head of the KATS, proclaimed that 'the hosting of the ISO General Assembly, for the first time since it joined the organization in 1963, has enabled South Korea to strengthen *standardization diplomacy* and gain a greater *leadership in global standardization* [emphasis added]'.<sup>11</sup>

Second, even only as a correspondent member, a country's national standards setting body can secure up-to-date information on standards and technical issues. This is important because ISO standard making processes extend over a substantial period. This allows ISO members to learn about emerging technical issues in areas of their interest (via attending technical committees) ahead of time before the

final standards are adopted by the ISO General Assembly. These national bodies can then translate these standards into domestic regulation and promote them among exporting firms. Such technical knowledge can have significant payoffs. For example, it can allow firms not to get locked into declining technologies, which lead to perverse path dependencies, and can help setting the directions of R&D investments. Also, if firms know the basic contours of new technological standards, they might be able to negotiate more effectively with their trading partners. Observing standards making processes could also be a valuable learning experience for developing countries who, after successfully managing the dominant foreign standards acquired, can step by step move towards an improvement/execution stage, and eventually to a planning/proposing standards stage (Choung et al., 2011, Vialle, 2012).

In essence, the benefits from participation in the ISO rule-making and accessing information on future standards are club benefits that the ISO confers on its members. Such benefits are excludable as well as distinct from the ones offered by GATT/WTO membership. If this perspective holds,

**Hypothesis 1:** High export salience increases the probability of a country's joining the ISO regardless of the country's GATT/WTO membership.

### Explanation 2: countries join the ISO as it offers benefits that are complementary to the benefits of joining GATT/WTO

GATT/WTO and the ISO are often portrayed as complementary regimes in global trade governance with the former focusing on eliminating tariff and other institutional barriers and the latter on technical barriers. If countries seek to influence their global trading environments, they will eventually need to address both types of trade barriers. Given that tariff is the most direct instrument to shape trade costs, reducing technical barriers through adopting global standards arguably brings little change when an exporting country face formidable tariff barriers. When this country has already addressed the tariff barriers via GATT/WTO, it would then have additional incentives (to realize fully the returns on its GATT/WTO investment) to address technical barriers through ISO participation.

When it comes to technical barriers, the WTO Agreement on Technical Barriers to Trade (TBT Agreement, 1995) urges regulators of member states to use relevant international standards as the basis for technical regulations.<sup>12</sup> The standards promoted by the ISO, although not public, are considered to reflect the broad international technical consensus. The TBT Agreement was indeed negotiated 'in full awareness of the importance of the private sector in setting, applying, and assessing conformity with technical standards' (Wouters and Geraets, 2012, p. 487). Shaping and/or securing up-to-date knowledge of those important private standards would thus play an increasingly important role in the WTO's dispute settlement system (Mavroidis and Wolfe, 2017).

Standards as non-tariff barriers are also discussed in the Agreement on Sanitary and Phytosanitary (SPS Agreement, 1995). Ochieng and Majanja's (2010) study of the EU's imposition of the SPS Measures on Kenyan horticultural products showcases how the developing countries' lack of technical knowledge may serve as an obstacle for compliance with the WTO rules and further be an obstacle for defending trade-related rights in the WTO's dispute settlement system. For the Kenyan horticulture producers, engaging with the dispute settlement system did not appear to be a strategic option. Since the EU was 'insisting the horticultural producers to comply with its SPS measures, the producers find they arguably have less moral authority to bring a challenge at the WTO' (Ochieng and Majanja, 2010, p. 328).

Although whether and to what extent the SPS Agreement covers private standards is still a matter of controversy (Wolff, 2008; Wouters and Geraets, 2012), being a member of the ISO and taking part in (or at least actively monitoring) the makings of standards affecting their key exporting industries could help developing countries in a situation like Kenya to better comply with and utilize the rules of the WTO. Indeed, the ISO has an observer status on the WTO Committee on SPS Measures and has developed two widely adopted SPS-related international standards (e.g., ISO 22000 on food safety management system and ISO 22005 on traceability in the feed and food chain). The ISO technical committee on *Food products* (ISO/TC 34) has developed 748 standards and documents. As of 2016, 77 countries participate in the work of ISO/TC 34, and another 58 have observer status. Hence, we propose:

**Hypothesis 2:** High export salience increases the probability of joining the ISO for GATT/WTO members, more so than for countries outside the GATT/WTO.

**Explanation 3: countries join the ISO as it offers benefits that can partially substitute for the benefits of joining GATT/WTO**

As discussed in section 2, not all countries with high stakes in global trade could (or were willing to) join GATT/WTO. Davis and Wilf (2015) find that the mean value of trade as percentage of GDP for GATT/WTO members and that of non-members are not significantly different. The GATT/WTO accession process has historically allowed the US and its allies to deploy this trade regime as a foreign policy tool. In contrast, geopolitics played a marginal role at the ISO whose founding members exhibited more geographical and ideological diversity than those of the GATT/WTO. On top of its political inclusiveness, the organization culture of the ISO is oriented towards technical issues, as opposed to legal or political issues that are the hallmarks of GATT/WTO (Barton et al., 2008). While the national standards bodies certainly articulate the national interest at the ISO, national delegations are often led by engineers and technical experts, not by politicians and trade lawyers.

Such political inclusiveness and technocratic organizational culture would be attractive features of the ISO forum, which offers member countries the opportunity to interact with other countries on various trade-related matters. For GATT/WTO insiders, this might be of marginal value; after all, they have plenty of opportunities to interact at GATT/WTO meetings. On the other hand, the ISO forum offers substantial benefits to exporting countries still outside the GATT/WTO. In 1999, China hosted the ISO General Assembly in Beijing. The country was at that time still in the process of negotiating its WTO entry. Chinese vice premier Wu Bangguo delivered a welcome address to the Assembly where some 400 representatives from 96 countries and ten international organizations attended. He emphasized how 'the Chinese government is doing what it can to do away with unnecessary impediments which technical regulations and standards tend to impose on trade'. Also mentioned in the address was the technical barriers faced by developing countries: 'An important theme ISO has consistently committed itself to is helping developing countries solve the problems of resources and technologies and management in standardization efforts, so as to bridge the gap between developed and developing countries in this regard'. Taking the hosting of the Assembly an opportunity to win further support for its WTO accession, Wu also noted: 'great efforts have been made to gain a full understanding of the obligations to be assumed by China and the rights to which the country will be entitled upon entry into the WTO'.<sup>13</sup>

In essence, the ISO is likely to be a valuable forum for countries that are not (yet) members of the WTO, as the participation in the ISO gives them rare opportunities to interact in a multilateral setting with others in the global trading regime. Indeed, the first three hosts of the ISO conference on challenges of developing countries were all non-GATT members: Russia hosted the very first such conference as part of the 1967 General Assembly in Moscow. The second was hosted by Mexico (1973), and the third by Algeria (1976).<sup>14</sup> Safeguarding trading interests by participating in a private trade regime, ISO, can allow these countries to circumvent the structural advantages enjoyed by developed countries in inter-governmental regime processes.

The above discussion suggests that even when the specializations of GATT/WTO and ISO as trade regimes are formally distinctive and can be mutually complementary, countries might utilize ISO as a partial and transitory substitute for GATT/WTO to influence the trade environment. We thus propose:

**Hypothesis 3:** High export salience increases the probability of joining the ISO for countries outside the GATT/WTO, more so than for countries inside the GATT/WTO.

#### 4. Model, variables, and findings

To test our hypotheses, we examine 95 countries for the time period between, 1951 and, 2005.<sup>15</sup> Our primary

modeling choice is Cox proportional hazard (CPH) model. We model the 'hazard' of experiencing our event of interest, the accession to the ISO, as a function of a set of covariates and baseline hazard. Let  $Z$  denote the vector of possibly time-varying covariates, then the hazard rate at time  $t$  is:

$$\lambda(t; Z(t)) = \lambda_0(t)e^{\beta z(t)} \quad (1)$$

The event, joining the ISO, may or may not occur at a given time interval. The baseline hazard function,  $\lambda_0(t)$  is estimated non-parametrically. Differences in covariate values then proportionally increase or lower the hazard of the ISO accession.<sup>16</sup> In our case, a country at 'risk' of joining the ISO is observed each year, beginning from either 1951 (or the year of gaining independence from colonial rule, if it is later than 1951) until the year of joining.<sup>17</sup> A country is removed from the 'risk set' once it joins the ISO. If a country does not join the ISO in a given interval, the country's record can be viewed as right censored. 14 out of 95 countries that have not joined until 2005 are treated as right-censored at all available intervals.

In addition to the single event CPH model, we also estimate: (1) competing risks CPH models where we treat the ISO accession and the WTO accession as two competing events; and (2) probit selection models that take into account the endogeneity of the GATT/WTO membership in the first place in examining the GATT/WTO members' decision to join the ISO. Results from these additional models are reported in Robustness Check subsection. In the Appendix, we also report the results from a discrete time version of proportional hazard model (i.e., a logit model with duration term; Beck et al., 1998).<sup>18</sup>

## Variables

Our key covariates of interest are: (1) GATT/WTO membership; (2) Export Salience (% GDP); and (3) their interaction. The data on export salience are from Penn World Table (PWT) and Correlates of War Project (COW). GATT/WTO membership data are from Goldstein et al (2007).

Several additional covariates are included to control for alternative drivers of ISO membership. Advanced and/or large economies are more likely to search for competitive advantage by shaping or opposing certain standards. They also have resources to actively participate in ISO meetings. Hence, our model controls for economic development (logged GDP per capita) and size of the economy (logged GDP). World society scholars suggest that countries tend to follow global blueprints of appropriate behaviors and membership in international inter-governmental organizations (IGOs) serves as the conveyor belt for the diffusion of such global blueprints (Meyer et al., 1997). If so, countries more open to norms of global governance and international cooperation might be more likely to join the ISO. Therefore, we control for level of participation in the inter-governmental organizations (from COW). The variable is measured as a percentage of total number of existing IGOs that a country has joined. We separately control for membership in

economic integration agreements (from the NSF-Kellogg Institute Database on Economic Integration Agreements), which might more closely reflect countries' interest in trade-related global governance regimes. Countries may join a particular regime if the countries in their region or neighborhood have done so. Hence, we control for regional ISO membership rate (as a percentage of countries in the region), lagged by one year.<sup>19</sup> In addition to the aforementioned set of basic control variables, several additional variables are included in robustness checks. Descriptive statistics are reported in the appendix.

## Findings

Table 1 reports our main findings. The models include a total of 1,688 country-year observations across 95 countries, of which 81 countries joined the ISO at some point in time during 1951–2005. We report exponentiated coefficient estimates to facilitate interpretation. The p-values are based on country-clustered robust standard errors.

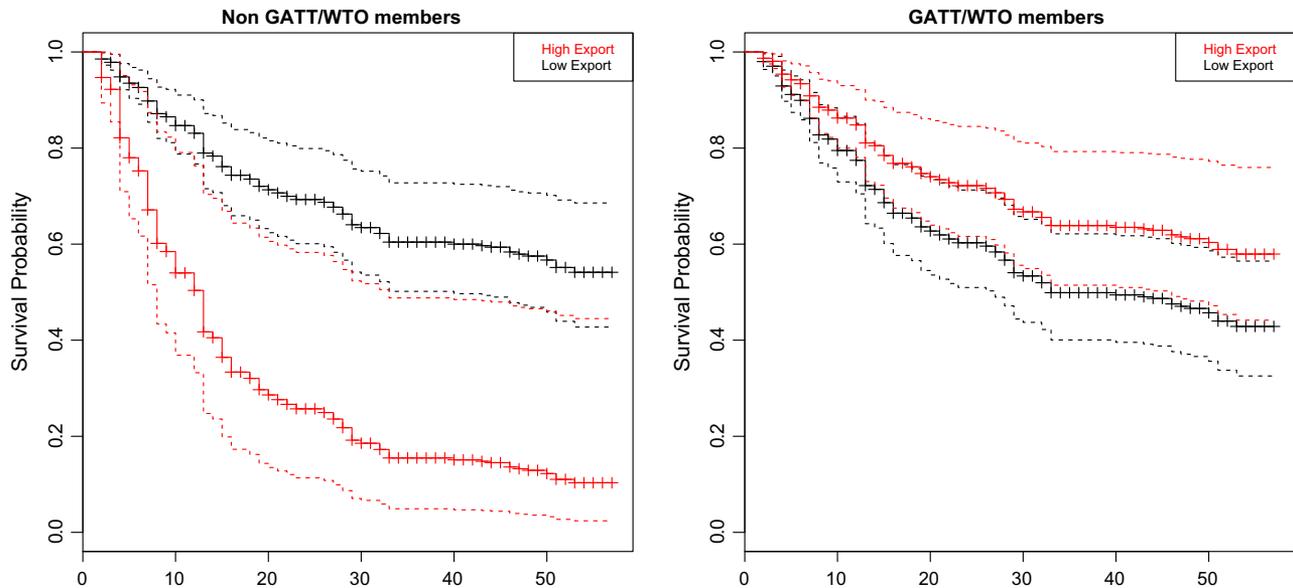
Model 1 is the null model without the interaction term of *export salience* and *GATT/WTO membership*. Contrary to Hypothesis 1, *export salience* is not statistically significant. *GATT/WTO membership* is not statistically significant either. Model 2 is our main model that includes the interaction of *export salience* and *GATT/WTO membership*. The model allows testing Hypotheses 2 and 3. The coefficient estimate of the lower order term *export salience* captures the effect of *export salience* for those 'outside' the GATT/WTO. A percentage point increase in *export salience* increases the hazard of joining the ISO by 3 per cent ( $1.03 - 1.00 = 0.03$ ) when a country is not a member of GATT/WTO. Interpreting in broader terms, for a country outside GATT/WTO, a one standard deviation (15 percentage points) increase in *export salience* increases its hazard of joining the ISO by 45 per cent.

What if the country is in GATT/WTO? The exponentiated interaction term coefficient estimate (0.96) is significant and 'below' 1.00. The coefficient estimate of the lower order term *GATT/WTO membership*, while below one, lacks substantive meaning in and of itself because the estimate indicates the effect of being a GATT/WTO member when the value of *export salience* is zero. To examine how countries with high stakes in global trade make decisions about ISO accession, we visualize the effect of *GATT/WTO membership* at more realistic levels of *export salience* in Figure 2. To aid substantive interpretation, we report the survival probability (i.e., probability of 'not yet' being an ISO member) in the y-axis. The x-axis indicates time (i.e. number of years in the risk set). The left-side figure is for non-GATT/WTO members, and the right-side figure is for GATT/WTO members. In each figure, red solid line represents countries with high *export salience* (50 per cent of GDP), and black solid line represents countries with low *export salience* (5 per cent of GDP).<sup>20</sup> All other covariates are set at their respective median values.

For non-GATT/WTO members, survival probability is lower (or, joining ISO is more likely) when *export salience*

**Table 1.** Determinants of ISO accession

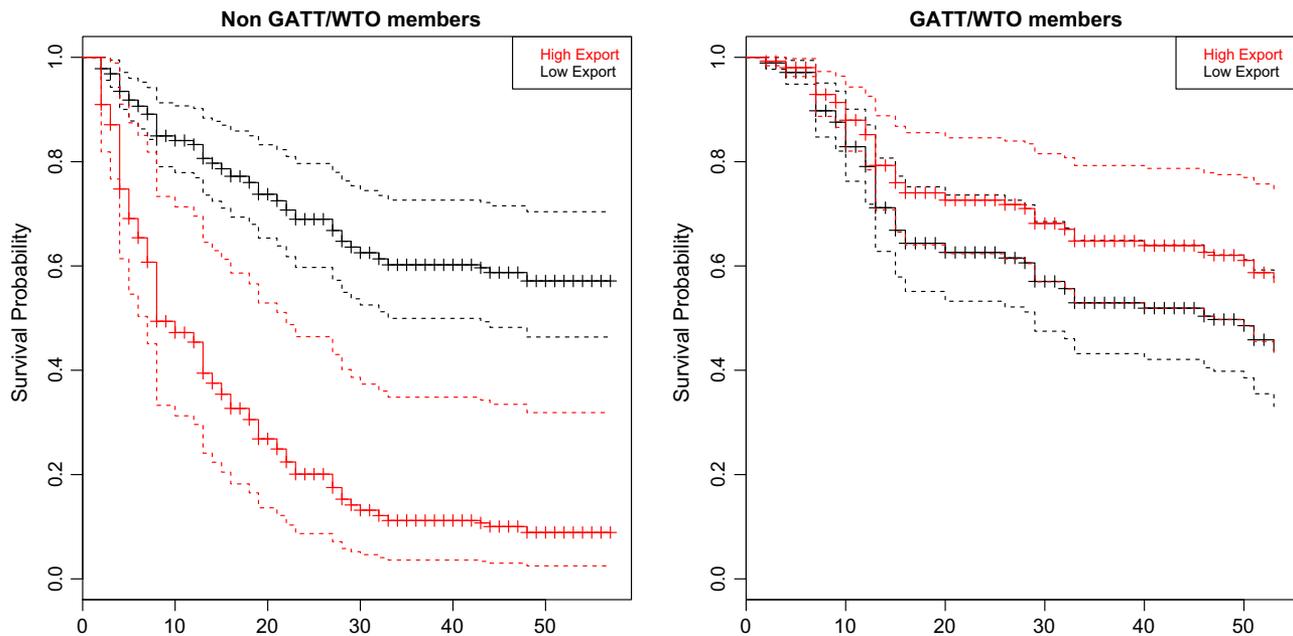
	Model1 Null		Model2 Interaction		Model3 Stratified Interaction	
	exp(coef)	Pr(> z )	exp(coef)	Pr(> z )	exp(coef)	Pr(> z )
GDP per capita (logged)	0.743	0.030	0.670	0.009	0.640	0.001
Export Salience	1.004	0.671	1.030	0.041	1.033	0.006
GATT/WTO member	0.978	0.934	1.676	0.074		
Export x GATT/WTO member			0.962	0.007	0.960	0.001
GDP size (logged)	2.461	0.000	2.523	0.000	2.560	0.000
Economic Integration Agreement (EIA)	1.009	0.480	1.004	0.741	1.006	0.606
IGO membership rate	1.007	0.706	1.017	0.346	1.019	0.297
Regional ISO membership rate	1.019	0.026	1.023	0.003	1.023	0.003
Observations at risk		1688		1688		1688
Events (ISO Accession)		81		81		81

**Figure 2.** Effect of export salience and GATT/WTO membership on ISO accession (based on model 2).

is higher. That is, at any given time point, countries with high exports are more likely to join the ISO than countries with low exports. For GATT/WTO members, survival probability does not vary much by *export salience*; the confidence bands overlap. We can also compare the survival probabilities of GATT/WTO outsiders and insiders that have similarly high level of *export salience* (i.e., red lines in each figure). In the 10th year, non-GATT/WTO members have survival rate of around 60 per cent, whereas GATT/WTO members show survival rate over 90 per cent. In the 20th year, the survival rate for non-GATT/WTO members drops to under 30 per cent whereas that for GATT/WTO members is around 70 per cent. In sum, we find that high-exporting GATT/WTO outsiders are more likely to join the ISO than the similarity high-exporting

GATT/WTO members. Again, this is consistent with Hypothesis 3.

In model 3, instead of considering *GATT/WTO membership* as one of the covariates, we allow GATT/WTO members and non-members to have different baseline hazard functions. By doing so, we relax the assumption that the hazard for GATT/WTO members are proportional to that for non-GATT/WTO members throughout the time period of our study.<sup>21</sup> We then allow the effect of our key variable of interest, *export salience*, to vary by *GATT/WTO membership*. The results from model 3 are visualized in Figure 3. While the shapes of the baseline hazard functions are allowed to vary between GATT/WTO members (right) and non-members (left), our finding with regard to the effect of *export salience* is consistent with the finding from model 2.

**Figure 3.** Effect of export salience and GATT/WTO membership on ISO accession (based on model 3).

### Robustness checks

In Table 2 we report several robustness check specifications. In model 4, we replace the *export salience* variable with *exports to GATT/WTO* (% GDP). If countries view the ISO as a (partial) functional equivalent of GATT/WTO (as suggest by Hypothesis 3), countries that are outside GATT/WTO but exporting heavily to GATT/WTO members might have stronger incentives to join the ISO. This is because such countries would recognize their disadvantages (i.e., higher tariffs and institutional barriers; less opportunity for interaction), especially in relation to their competitors who might have joined the GATT/WTO. Consistent with our reasoning, we find that a percentage point increase in *exports to GATT/WTO*

increases the hazard of ISO accession by non-GATT/WTO countries by 4.2 per cent. The estimated effect is greater than the effect of the *export salience* variable, 3 per cent, estimated in model 2.

Recall that our analysis so far excluded countries that had joined ISO between 1947 and 1950 because data on some of our key covariates are only available from 1951 and onwards. This inevitability excludes all founding members of the ISO. In model 5, we include ISO founding members in the analysis by coding their year of joining as 1951. In model 6, we take into account the fact that some countries may have access to GATT/WTO's exclusive benefits without being a formal member, through a colonial relationship with

**Table 2.** Determinants of ISO membership: robustness checks

	Model4 Export Salience as Export to GATT/WTO		Model5 Including ISO Founders		Model6 Including Informal GATT Members		Model7 Controlling for UN Voting	
	exp(coef)	Pr(> z )	exp(coef)	Pr(> z )	exp(coef)	Pr(> z )	exp(coef)	Pr(> z )
GDP per capita	0.645	0.002	0.766	0.039	0.693	0.019	0.681	0.013
Export Salience	1.042	0.000	1.022	0.106	1.058	0.000	1.031	0.034
GATT/WTO member	1.698	0.058	1.686	0.046	2.126	0.010	1.776	0.070
Export x GATT/WTO member	0.957	0.001	0.968	0.025	0.941	0.000	0.964	0.010
GDP size	2.585	0.000	2.096	0.000	2.615	0.000	2.640	0.000
EIA	1.005	0.656	1.001	0.943	1.004	0.744	1.000	0.987
IGO	1.017	0.389	1.009	0.341	1.010	0.625	0.998	0.932
Regional ISO Membership	1.026	0.001	1.024	0.000	1.023	0.005	1.017	0.035
Voting with Russia							1.099	0.912
Observations at risk		1688		1707		1635		1617
Events (ISO Accession)		81		100		78		77

other major trading nations (Goldstein et al., 2007). The *GATT/WTO membership* variable in model 6 includes these countries as GATT/WTO members as well. In model 7, we include an additional control variable: voting patterns at UN General Assembly (% overlap with Russia) (Dreher et al., 2009). This more explicitly accounts for the possibility that ISO membership dynamics are also influenced by geopolitics.

Across all specifications, our finding about the effect of *export salience* on non-GATT/WTO countries' ISO accession holds: the exponentiated coefficient of the lower order *export salience* is above 1 and statistically significant (borderline significant in model 5 with the p-value of 0.1). A percentage point increase in *export salience* increases the hazard of ISO accession the most when a country is neither a formal nor an informal member of GATT/WTO (5.8 per cent increase, model 6). Across all specifications, the ISO accession-accelerating effect of *export salience* is nullified for GATT/WTO members, as indicated by the interaction term estimates.

Our models thus far have treated *GATT/WTO membership* as an exogenous variable. This might be problematic as our key variable of interest, *export salience*, influences both a country's decision to join GATT/WTO and its decision to join the ISO. We adopt two strategies to address this issue. First, we estimate the CPH model in the competing risks setting (Table 3). Second, we estimate a selection model (Table 4).

In models 8 and 9 in Table 3, we estimate the hazard of joining ISO in the competing risks setting. In this setting, there are two competing events observable for each country at risk at a given time interval. At any time before experiencing the first event, countries are at risk of both events. Countries can either join the ISO (prior to joining WTO) or join WTO (prior to joining ISO). For instance, a country that joined ISO in 1996 and then WTO in 2002 will remain in the risk set (i.e., in the sample) until the year 1996. Only partial information is available on the country's choice regarding the WTO membership: the country was not a member at least until the year 1996.

Model 8 estimates the cause-specific hazard function  $\lambda_{ISO}(t)$ , which represents the hazard of joining the ISO at a moment in time, given that the competing event of joining WTO has *not* occurred thus far. Model 9 estimates the cause-specific hazard function  $\lambda_{WTO}(t)$ , which represents the hazard of joining the WTO at a moment in time, given that the competing event of joining ISO has *not* occurred. Both models include *UN voting patterns* and *democracy* (Polity2) as control variables in addition to the basic set of covariates. Unlike the ISO accession, the GATT/WTO accession has a well-recognized political dimension; indeed, many suggest that it was an important tool of American foreign policy during the cold war. Consequently, the former USSR and its allies tended to be excluded from this trade regime. These countries also tended to be less democratic. Thus, we expect *UN voting patterns* and *democracy* to shape the hazard of GATT/WTO accession.

Consistent with the estimates from our previous models, model 8 finds that increase in *export salience* increases the hazard of joining the ISO. Interestingly, model 9 reports that a rise in *export salience* 'reduces' the hazard of joining the WTO. One explanation for such a counterintuitive estimate is the influence of the competing event, ISO membership. As high exporting countries tend to join ISO early on and leave the risk set, fewer high exporting countries remain in the risk set to join the WTO in model 9. The finding provides additional supporting evidence for Hypothesis 3. *UN voting pattern* and *democracy* variables are not statistically significant in model 9, although the signs of estimates are in the expected direction: voting with Russia reduces the hazard of WTO accession while *democracy* increases the hazard of WTO accession.

In models 10 and 11, we estimate selection models to take into account the endogeneity of the *GATT/WTO membership* in the first place in examining the GATT/WTO members' decision to join the ISO. We consider a country's membership status at ISO and GATT/WTO in a given year as binary outcomes (i.e., member = 1 or non-member = 0).

**Table 3.** Determinants of ISO membership: competing risks CPH

	Model8		Model9	
	Event: ISO Accession		Event: WTO Accession	
	exp(coef)	Pr(> z )	exp(coef)	Pr(> z )
GDP per capita	0.932	0.594	2.019	0.023
Export Salience	1.009	0.017	0.956	0.027
GDP size	1.784	0.000	1.428	0.085
EIA	0.994	0.676	1.047	0.063
IGO	1.003	0.909	0.942	0.014
Regional ISO Membership	1.013	0.148	0.893	0.000
Voting with Russia	2.942	0.349	0.181	0.318
Democracy	1.039	0.176	1.067	0.139
Observations at risk	937		937	
Events	41		23	

**Table 4.** Determinants of ISO membership: selection models

	Model10		Model11	
	Excluding ISO Founders		Including ISO Founders	
Selection				
	Estimate	Pr(> z )	Estimate	Pr(> z )
Intercept	-2.087	0.000	-2.425	0.000
GDP per capita	-0.144	0.000	-0.127	0.000
GDP size	-0.090	0.000	-0.060	0.002
Export Salience	0.007	0.000	0.007	0.000
EIA	0.012	0.000	0.007	0.006
IGO	0.106	0.000	0.108	0.000
Voting with Russia	-0.352	0.013	-0.516	0.000
Democracy	0.043	0.000	0.052	0.000
Trend	0.117	0.000	0.129	0.000
Trend <sup>2</sup>	-0.001	0.000	-0.001	0.000
Observations		4053		5184
Outcome				
Intercept	-1.784	0.000	-3.031	0.000
GDP per capita	-0.093	0.017	-0.136	0.001
GDP size	0.761	0.000	0.809	0.000
Export Salience	0.001	0.703	0.001	0.554
EIA	-0.004	0.284	0.004	0.353
IGO	-0.116	0.000	-0.065	0.000
Regional ISO Membership	0.012	0.000	0.019	0.000
Trend	-0.083	0.000	-0.103	0.000
Trend <sup>2</sup>	0.001	0.000	0.001	0.000
Observations		2516		3587
Rho	-0.837	0.000	-0.545	0.005

The dependent variable in the selection equation is the *GATT/WTO membership*. The dependent variable in the outcome equation is the *ISO membership*, conditioned on *GATT/WTO membership*. Unlike the CPH models where we focused on events of initial accession, the focus on membership status allows us to include cases of withdrawal and suspension in memberships. We use *UN voting pattern* and *democracy* as exclusion restrictions or variables that affect the selection into the GATT/WTO regime but do not directly influence our substantive outcome of interest, ISO membership. The results are summarized in Table 4. While *export salience* is a significant driver of *GATT/WTO membership*, it is not a driver of ISO membership for those countries that are already GATT/WTO members. These findings lend additional support to Hypothesis 3, which suggests that *export salience* is less likely to drive ISO accession for the GATT/WTO insiders.

## Conclusion

Our paper shows how a private regime can share the trade policy space with inter-governmental regimes. While any firm can adopt ISO's standards, the key question pertains to who joins the ISO organization and why. We find that for

high export countries outside the GATT/WTO system, ISO membership offers one route to at least partially influence the country's global trading environment. That is, those outside GATT/WTO face a truncated institutional opportunity set to influence their global trading environment and have stronger incentives than GATT/WTO insiders to look for alternative ways to accomplish this objective.

This paper raises important issues for future research. First, if private regimes can indeed serve as partial functional equivalent for inter-governmental regimes, how might this bear upon the issues of accountability and democracy? Our case is interesting because the inter-governmental regime (GATT/WTO) is found wanting on the issue of inclusiveness while the private regime seems to be more welcoming irrespective of geopolitical considerations. We recognize that ISO might be a unique organization given its technical expertise; not all private regimes would necessarily have such low entry barriers. Could private regimes better serve the cause of democracy in inclusion in global governance that is deficient in mainstream inter-governmental regimes? We believe that this issue should be examined empirically.

Second, our analysis suggests that countries' view on the utility of the ISO (i.e., a private regime) varies across their

export salience (i.e., a structural attribute shaping the demand for a governance service) and their position in GATT/WTO (i.e., an inter-governmental regime supplying the governance service). This has important policy implications for actors that seek to advance new private regimes. The actors include the ISO and its members who, in recent decades, have introduced standards in areas that are outside its traditional expertise. These include quality control (Guler et al., 2002), environmental protection (Perz et al., 2009) and corporate social responsibility (Castka and Balzarova., 2008). These policy areas are already populated with governmental and private regimes. It will be instructive for scholars and policy makers to explore how the changes in structural attributes of potential participants and their position in the existing regimes interactively shape the attractiveness of the new regimes, and in turn, determine the contours of global governance in the future.

Lastly, our paper speaks to the burgeoning literature on the effect of private regimes on traditional suppliers of governance services (Abbott, 2012; Green and Auld, 2017; Murphy and Kellow, 2013). Much of the privatization literature focus on supplier replacement issues: a government supplier replaced by a non-governmental one. The voluntary private regulation literature debates whether private regulation undermines or preempts public regulation (Maxwell et al., 2000). At the global level, some scholars note the retreat of the state (Strange, 1996). However, the role of private actors extends well beyond the replacement issues. There might be an implicit division of labor or institutional complementarity between them. In many ways, both at the domestic and international spheres, we live in mixed economies with multiple vendors supplying governance. Thinking of governance services as complex products embedded in governance chains allows us to assess the pros and cons of supplier heterogeneity and model how different governance suppliers can serve both as competitors and collaborators. Instead of framing the issue confronting governance and legal scholars as the retreat of the state per se, this approach will allow them to think about optimal vendor mix to effectively provide a specific governance product. We hope our paper will motivate future scholars to explore this dimension of private authority.

## Notes

1. For perspective, as of 2016, over one million facilities across 170 countries have joined the ISO 9001 quality standards introduced in 1987.
2. For example, the Standardization Administration of the People's Republic of China was set up by the State Council of China. The Bureau of Indian Standards is a part of the Ministry of Consumer Affairs, Food & Public Distribution. The description of all member bodies is available here: [http://www.iso.org/iso/about/iso\\_members/](http://www.iso.org/iso/about/iso_members/)
3. Two goods are complementary if they have negative cross elasticities of demand: an increase in the price for product A leads to decreased demand for product B. In contrast, product A and B are substitutes, if they have positive cross-elasticities of demand. For our purpose, we consider two global regimes to be complements if a country's membership in one regime increases the probability of joining the other. In contrast, two regimes are substitutes, if a country's membership in one regime decreases the probability of joining the other.
4. The WTO and the GATT differ in some ways, for example, their dispute settlement mechanism and the scope of issues they cover (Brown, 2009; Kuruvila, 1997). Some view WTO as the more legalized version of the GATT (Goldstein and Martin, 2000). For the purpose of our paper, we view the WTO as a continuation of the GATT regime because both serve the same fundamental objective of trade liberalization through the elimination of tariff and non-tariff barriers. Indeed, the GATT regime is officially labeled as the 'predecessor' organization on the WTO website (wto.org).
5. Though not important for our analysis, in the 1990s, the ISO introduced a new membership category: subscriber status. Subscriber member countries are regarded as being in a preparation period to be either correspondent or full member. In 2017, only three countries belong to this category. [http://www.iso.org/iso/about/iso\\_members.htm](http://www.iso.org/iso/about/iso_members.htm) [Accessed 26 Mar 2018].
6. WTO is referred to as the 'club of clubs' as it contains several plurilateral agreements such as the Agreement on Government Procurement Agreement (Lawrence, 2006).
7. For being members of the ISO, countries incur non-trivial costs because they are expected to pay membership fees, attend and observe technical committee meetings (where the standards are drafted) and the general assembly.
8. Standards may also have a national security dimension. Think of the issue of multiplicity of gauges in railway track systems, which was a part of the military strategy to deny easy transportation to the enemy (Van Evera, 1998). Prior to World War 1, the Russian empire, fearing German attack, insisted that Russian broad gauge railways differ from the German standard gauge.
9. [https://www.wto.org/english/news\\_e/sppl\\_e/sppl34\\_e.htm](https://www.wto.org/english/news_e/sppl_e/sppl34_e.htm) [Accessed 26 Mar 2018].
10. [http://www.iso.org/iso/home/news\\_index/news\\_archive/news.htm?refid=Ref1463](http://www.iso.org/iso/home/news_index/news_archive/news.htm?refid=Ref1463) [Accessed 26 Mar 2018].
11. The Ministry of Trade, Energy, and Industry press release 14 September 2015: [http://www.motie.go.kr/motie/nc/press/press2/bbs/bbsView.do?bbs\\_seq\\_n=157535&bbs\\_cd\\_n=81](http://www.motie.go.kr/motie/nc/press/press2/bbs/bbsView.do?bbs_seq_n=157535&bbs_cd_n=81) [Accessed 26 Mar 2018].
12. [http://www.wto.org/english/tratop\\_e/tbt\\_e/tbt\\_e.htm](http://www.wto.org/english/tratop_e/tbt_e/tbt_e.htm); 12/8/2014 [Accessed 26 Mar 2018].
13. People's Daily, 21 October 1999, China Vows to Adopt World Technical Standards: [http://en.people.cn/english/199910/21/enc\\_19991021001010\\_TopNews.html](http://en.people.cn/english/199910/21/enc_19991021001010_TopNews.html) [Accessed 26 March 2018].
14. <https://docs.wto.org/gattdocs/q/.%5CTR%5CMTNNTM%5CW177.PDF> [Accessed 26 March 2018].
15. While our sample universe includes all countries that existed in the international system during the period 1951–2005, the number of countries in our analysis is determined by the availability of data on the variables of interest.
16. More specifically, the exponentiated coefficient estimate can be translated into percentage change in hazard for a unit change in the covariate value. An  $e^{\beta}$  estimate of 1.10, for instance, would mean a 10 per cent increase in the hazard of ISO accession.
17. While the ISO was founded in 1947, data on some of our key covariates are available from 1951 and onwards. Our main model, therefore, excludes countries that joined ISO between 1947–1950. As a robustness check, we report the results by coding the joining year of these excluded countries as 1951.
18. We assume that the baseline hazard is smooth and apply a smoothing spline.
19. The regions are: Africa, South America, North America, North and South Asia, Western Asia (Middle East), Southern Europe, Western and Northern Europe, Eastern Europe, Oceania.
20. The dotted lines indicate 67 percent confidence intervals.
21. We test the proportionality assumption of our null and interaction models and find no evidence of non-proportionality. This suggests that the interaction approach (model 2) is valid.

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## Supporting Information

Additional Supporting Information may be found online in the supporting information tab for this article:

**Appendix S1.** Founding members of ISO and GATT

**Appendix S2.** Descriptive statistics I

**Appendix S3.** Descriptive statistics II

**Appendix S4.** Logit estimation with a smoothed duration term

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