

# The ratification of ILO conventions :

## A failure time analysis

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**Abstract:** There are over 180 ILO conventions in many areas of labour law, industrial relations and social security, but they are not ratified universally: for the conventions adopted between 1975 and 1995, the cumulated probability of ratification is about 13 per cent ten years after their adoption. In this paper, the ratification decision is understood as a transition between two states. Using duration analysis, we identify circumstances which are favourable to this transition. For industrialised countries, the ratification of ILO conventions is shown to depend on internal political factors such as the preferences of actors from governments or trade unions. For developing countries, the only variables which are significant relate to the economic costs of ratification. There is no evidence for external pressure bearing on the ratification decision. Among industrialised member states, there is a clear downward trend in estimated ratification probabilities over the last two decades.

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**Key Words:** International labour standards, ILO, international organisations, transition data, duration analysis.

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## **1 Introduction**

The issue of international labour standards continues to figure prominently both in public and academic debate. Trade theorists have analysed their economic effects in a number of recent papers. Less research, however, has been done on the institutions by which international labour standards are actually adopted. In particular, the International Labour Organization (ILO), the United Nations agency which deals specifically with such standards, has rarely been studied from the point of view of positive political economy.

In this paper, we look at a central part of the ILO's standard-setting process. In order to become legally binding on member states, ILO conventions must be ratified by the national legislative authorities. Our question is to the circumstances which induce countries to ratify ILO conventions.

Ratification is entirely voluntary, no sanctions are provided against countries which do not ratify conventions, and there is usually no time limit set for ratification. Moreover, even if a country has ratified a convention, the ILO cannot enforce, by economic sanctions or other coercive measures, the compliance with the standard. These facts cast some doubt over the effectiveness of ILO standard-setting.<sup>1</sup> Recent empirical studies, however, have found that the ratification of ILO conventions has a positive and significant impact on labour costs (Rodrik, 1996) and social spending (Strang and Chang, 1993). Like with any econometric study used for evaluative purposes, the approach taken in these articles rests on strong assumptions since it involves a comparison of an actual situation with a counterfactual. Constructing this counterfactual is problematic if – as is common to cross-country studies – the degree of heterogeneity that cannot be observed by the researcher is large. Yet the findings of these studies appear to be supported by the available descriptive

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<sup>1</sup> Thus Bhagwati (1995: 754) concludes that “many [ILO conventions] have been signed because in effect they are not binding”.

evidence. In a recent study, the OECD (1996: 15) judged the ILO's monitoring system to be "reasonably effective, within its limits of application". Concerning ratification, country reports published regularly in the International Labour Review<sup>2</sup> suggest that ILO conventions do have an influence on the domestic process of political decision-making.

Although a conclusive answer is not possible at this stage, it appears that ratifications frequently result in amendments of existing national law. The ratification decision should thus be seen as more than a merely symbolic act, although it is equally clear that the effectiveness of ILO standard-setting cannot be judged from ratification numbers alone.

An early study of ratification behaviour was written by Ernst B. Haas (1962). He examined the average number of ratifications within country groups defined by their political and economic system and their economic development. According to his tabulations, communist states and emerging economies had the highest frequency of ratification. A further distinction was made between convention subjects.

While Haas gave descriptive evidence only and performed no statistical tests, Senti (1998) recently estimated an econometric model of ratification. In contrast to Haas, Senti looks only at industrialised countries. His independent variables are economic variables (income and openness) and a number of political indexes. He does not detect a significant impact of the economic variables. However, this negative finding could well be due to his inefficient estimation method. In order to be able to perform a linear regression on a continuous dependent variable, Senti averages the ratification numbers over five-year intervals.

The estimations done for this paper are based on a rational actor model of the ratification decision. These decisions are dealt with on an individual basis.

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<sup>2</sup> In the series "The contribution of international labour standards to national labour law".

An important characteristic of the data is that ratifications of conventions adopted many years before are a frequent phenomenon. Hence the variable to be explained is not only ratification itself, but also the duration up to ratification. This suggests the use of hazard rate models. These models were originally used in biostatistics, and have frequently been applied in economics. There have also been some successful applications to political research. Particularly interesting is the example concerning the adoption of European Commission legislative initiatives by the European Council of Ministers (see Golub, 1999, and König and Schultz, 1994).

The remainder of the paper is structured as follows. We first introduce the legal framework for ILO labour standards. In the section that follows, three broad hypotheses concerning ratification behaviour are formulated. Next, we derive the empirical model and discuss the independent variables used. Section five introduces the dataset and the estimation technique, and the sixth section contains the empirical results.

## **2     *The institutional framework***

The adoption and supervision of international labour standards <sup>3</sup> has been the most important task of the ILO ever since its foundation in 1919. The ILO adopts, at the annual International Labour Conference, two kinds of standards: conventions and recommendations. Only conventions can be ratified and thus become legally binding on member states. Recommendations are most frequently used to supplement conventions, either giving more detail on the contents of the standard or sometimes setting a higher standard than the Convention.

The International Labour Conference is a quasi-parliamentarian entity with a strongly formalised decision procedure. It adopts labour standards by a

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<sup>3</sup> A more detailed account of the institutions is given in Boockmann (2000).

majority of two thirds of the delegates. A peculiar feature is the tripartite composition of the Conference. Each member state sends four delegates to the Conference: two from the government <sup>4</sup>, and one each from the trade unions and the employers' organisations. The latter two delegates are appointed by the government, but the ILO Constitution requires the appointment to be made "in agreement with the industrial organisations, if such organisations exist, which are most representative of employers or workpeople" (Article 3,5). It further provides that "every delegate shall be entitled to vote individually on all matters which are taken into consideration by the Conference" (Article 4,1), giving union and employer delegates the right to vote independently of their governments' views.

ILO conventions cover many areas of labour legislation, social regulation and social security systems. Table 1 provides a breakdown of ILO conventions by subject category, using the ILO's own classification system.

In the left part of the table, all conventions adopted between 1919 and 1997 are listed, while the right part contains only those conventions that are used in the estimation subsample (see section 5). Working conditions, including health and safety issues, form the largest single subject area for international labour standards. Other areas where a large number of standards have been adopted are basic human rights (mainly dealing with the right of association, non-discrimination and forced labour), social security and child work (although in the latter two categories, there has been little activity during the 1975-95 period). Many conventions affect only certain occupations or sectors. In particular, seafarers' conventions have a special status because they are adopted at separate ILO maritime conferences.

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<sup>4</sup> Most often from the labour department but sometimes also from the foreign department, as can be seen from the lists of delegates published in the Records of Proceedings of the International Labour Conference.

**Table 1. Number of Conventions by subject category**

Subject categories	1919-97		1975-95	
Basic human rights	11	(0.06)	3	(0.08)
Employment	9	(0.05)	3	(0.08)
Social policy	1	(0.01)	0	(0.00)
Labour administration	6	(0.03)	3	(0.08)
Industrial relations	1	(0.01)	1	(0.03)
Conditions of work	47	(0.25)	13	(0.36)
<i>among these, occupational safety and health standards</i>	20	(0.11)	9	(0.25)
Social security	21	(0.12)	1	(0.03)
Employment of women	6	(0.03)	0	(0.00)
Employment of children and young persons	13	(0.07)	0	(0.00)
Migrant workers	5	(0.02)	2	(0.06)
Indigenous and tribal peoples	6	(0.03)	0	(0.00)
Other special categories (seafarers, older workers, fishermen etc. )	53	(0.30)	10	(0.28)
Other subjects	2	(0.01)	1	(0.02)
All subjects	181	(1.00)	36	(1.00)

Note: Numbers in brackets are percentage shares. These may not sum to 1.00 due to rounding errors.

Once a labour standard is adopted, it is the obligation of the member states to submit it to the legislative authority within 12 months.<sup>5</sup> As already mentioned, ratification itself is voluntary, although the ILO has made the ratification by all member states of seven “fundamental human rights

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<sup>5</sup> See the ILO „Handbook of Procedures relating to international labour Conventions and Recommendations“, Part II, paragraph 12. For federal states where the responsibility for labour regulation lies at the regional level, this limit is 18 months (Handbook of Procedures, Part II; paragraph 7.

conventions” a primary target of its political activities.<sup>6</sup> Conventions can only be ratified in full; amendments at the national stage are not admissible.<sup>7</sup> If a convention is ratified, the member state must make effective the provisions specified in it. In many cases, this means that national labour law must be revised or new legislation must be introduced. In some countries, with ratification, the convention becomes directly binding on workers and employers; in others, separate legal measures have to be taken.<sup>8</sup>

Following ratification, the most direct obligation which arises for a member state is to report in regular intervals on the application of the convention in legislation and practice. These reports are the principal information sources for the supervisory system of the ILO. There is also a procedure whereby governments, unions or employer associations can submit complaints to the ILO if they believe that a country does not comply with its obligations from the ratification of a convention. If a discrepancy is found between the provisions of a ratified convention and the situation in a member state, this is made public and a negotiation process sets in between the country and the tripartite Conference committee on the application of standards. Since there are no formal sanctions, the worst which countries have to fear is a loss of international reputation.

Member states may denounce conventions which they had previously ratified. However, a denunciation is possible only at certain times, stipulated in the texts of the conventions themselves (usually during one year within a ten-year interval). The vast majority of denunciations take place in the context of the revision of conventions. In the estimation sample, there are no conventions

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<sup>6</sup> Bartolomei de la Cruz et al. (1996: 129).

<sup>7</sup> However, some conventions allow for a certain degree of flexibility, e.g. offering countries different ways of implementing standards.

<sup>8</sup> For an extensive discussion of the direct or indirect application of ILO conventions, see Leary (1982).

which were revised, and there was only one individual denunciation.<sup>9</sup> Hence we neglect this issue in the following.

### **3 Three hypotheses on ratification behaviour**

The starting point for a rational choice theory of ratification behaviour must be the consequences of formally signing up to a convention. Does ratification actually restrict future decisions on labour legislation, or is it only a weak commitment which can be abandoned if this is in the interest of national actors? The question of *compliance* arises not only for ILO conventions, but in a similar way for international environmental standards, human rights standards, or maritime conventions.

In the political science literature, opinions differ vastly on the degree of compliance with international agreements. On one side, there is the traditional “realist” view that states keep their promises only as long as it is in their narrow self-interest. At the other extreme, Chayes and Chayes (1993) argue that, rather than calculating the costs and benefits of a defection, states “operate under a sense of obligation to conform their conduct to governing norms”.

A theoretical treatment of this issue is beyond the scope of this paper. Instead, we take it for granted that ratification creates a legal obligation to introduce or maintain the international standard. We assume that breaches of this obligation are made public by the ILO’s supervisory procedures and entail a loss of international standing. If the responsible political actors aim to maintain their reputation, they will be more inclined to ratify conventions which can subsequently be implemented. Therefore, conventions are *ceteris paribus* the more likely to be ratified the easier their implementation can be accomplished. If these assumptions are true, the following hypothesis should also hold:

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<sup>9</sup> Brazil denounced Convention No. 158 in 1995.

**Hypothesis 1:** Countries are more prepared to ratify conventions that entail lower economic and administrative costs.

Economic costs are welfare losses of domestic actors from higher non-wage labour costs. In a general equilibrium model with full employment in all countries, labour or social regulation may be conceptualised as an additional good in individuals' utility functions, while at the same time changing the production possibility frontier of the country. An international minimum standard will either be non-binding (if optimal domestic "consumption" of the regulation is already above the international standard) or cause a level of regulation that is higher than the Pareto optimal level (Srinivasan, 1997).<sup>10</sup> In the presence of labour markets imperfections, the introduction of new regulation is also likely to result in welfare losses in the form of higher unemployment.

Introducing legislation and cooperating in the ILO's reporting system may also place a heavy workload on a country's bureaucracy and may therefore be avoided.<sup>11</sup> This will be especially true for small countries with few administrative staff and for developing countries. There is evidence that the administrative burden is sometimes important even for large industrialised countries.<sup>12</sup>

Within each country, costs and benefits from ratification will fall differently on individuals. Since no country can be forced to ratify conventions, the interests of domestic political actors (such as voters, parliamentarians or interest groups) and the rules of the domestic political game ultimately decide over ratification. ILO conventions will, however, only have an impact on domestic political debate if they affect the political constraints under which

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<sup>10</sup> If, however, implementation of the international standard is linked to transfer payments, the standard may be constrained Pareto optimal (Srinivasan, 1997).

<sup>11</sup> Unless the bureaucracy values more work positively, as in Niskanen's (1971) model.

<sup>12</sup> See Haase (1990: 241).

actors operate, e.g., the re-election constraint.<sup>13</sup> If the political constraints were unchanged, the actors favouring ratification could just as well campaign for a purely domestic standard. There are three mechanisms by which the existence of a convention can impact on the political constraints.

- By the obligation to submit conventions to the legislative authority, gatekeeping rights of certain domestic actors (i.e., veto rights concerning the issues to be brought before the legislative assembly) may be abolished.
- If there are direct benefits to a country from ratification (such as an increase in international standing), this opens a new policy dimension. As a consequence, an existing political equilibrium in the relevant area of regulation may be overturned.<sup>14</sup>
- International conventions may serve as cooperative devices for interest groups on which to centre their political demands. If there are increasing returns to scale from lobbying, a pooling of political resources may be worthwhile. In such a situation, an international standard may be a natural focal point on which to coordinate political strategies.

As a result, one can state the following hypothesis:

**Hypothesis 2:** A ratification takes place if (a) it is in the regulatory interest of a winning coalition of domestic political actors and (b) the existence of a convention changes the political game such that this regulatory interest can be better served by ratification than by a purely domestic regulation.

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<sup>13</sup> This, of course, is the essence of the public choice theory of international organisation. In the words of one of its main proponents, a national politician „will not participate in international decision-making, unless, by doing so, he can obtain an agreement which (A) satisfies him personally; or (B) helps him to gain votes; or (C) reduces his cost, in terms of votes lost, of implementing his own favoured domestic policies” (Vaubel 1986: 42f.).

<sup>14</sup> This argument bears some analytical resemblance to the introduction of “non-policy issues” in the election model of Enelow and Hinich (1984).

Despite the voluntary character of ratification, there may exist various ways in which pressure for ratification can be exerted from abroad, of which moral suasion may be only the most publicly perceptible one. While there is no evidence for any institutional links, development aid may be donated with an implicit understanding that the recipient country improves workers' rights or working conditions. The same may be true for the granting of credits, both by individual countries and multilateral agencies like the World Bank. It is also conceivable that ratifications of ILO conventions play a role in trade negotiations, although, again, no formal link exists.

**Hypothesis 3:** Pressure from abroad may impact on the ratification decision. Most vulnerable to this pressure are countries which receive transfers or subsidised credits from abroad and comparatively open economies.

#### **4 Empirical specification and variables used in estimation**

The dependent variable in our estimations will be the likelihood of ratification at each point of time. Since the data give the days at which a convention was ratified, time will be modelled continuously rather than as a sequence of discrete intervals. The model explains the limit of the probability of a ratification, conditional on the ratification not being made up to the particular point of time, when the time interval in question becomes arbitrarily small. This limit is called the hazard rate:

$$\lambda(t) = \lim_{\Delta t \rightarrow 0} \frac{1}{\Delta t} \Pr[t \leq T < t + \Delta t | t < T],$$

where  $t$  indexes time and  $T$  is the ratification date. In the following, the proportional hazard model of Cox (1975) will be applied:

$$\lambda(t) = \lambda_0(t) \psi(z' \gamma) \tag{1}$$

The hazard rate is composed of two parts. The second part contains, for each observation, a  $k \times 1$  vector of observed determinants of ratification

(including a constant),  $z$ , and a  $k \times 1$  parameter vector  $\gamma$  common to all observations. The function  $\psi$  will be assumed to be exponential such that the hazard cannot become negative. The first component is the baseline hazard which depends only on the time elapsed since the adoption of the convention. This part of the hazard rate captures duration dependence. It is assumed that the duration dependence is independent of any of the covariates.

There are a number of reasons why, in our context, duration dependence will arise. The first is that the pressure on a country to ratify a convention can increase over time. This seems particularly likely in the case of „human rights“ conventions.<sup>15</sup> On the other hand, conventions may lose their relevance over time and even become obsolete, so that very few new ratifications are to be expected. The baseline hazard also captures the increased likelihood of ratification due to the obligatory submission of the convention in the 12 or 18 months following its adoption. Since there are reasons both for a rising and a falling baseline hazard, the functional form for this hazard should be flexible enough to allow for non-monotonicity.

The  $z$  variables relate to the economic and administrative costs of ratification, as well as to political pressure from domestic, foreign or international actors. Table 2 shows the covariates used in the estimations together with the data sources used.

Economic costs are measured by a first group of variables. Per capita income enters both linearly and quadratically. The other two variables in this category are dummy variables which indicate whether the convention is a revision of an earlier one, and whether the country had ratified this „predecessor“ convention.<sup>16</sup> The ratification of a „predecessor“ convention

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<sup>15</sup> „A state is subjected to a good deal of direct, intensive and recurrent pressure to ratify. The Organization proceeds by a process of attrition, directed at wearing down the resistance of states“ (McMahon 1966:185).

<sup>16</sup> The final articles of each convention state whether the convention revises and updates a previous one.

should enhance the likelihood of ratification of the revising convention because the national status quo is likely to be closer to the provisions of the new convention.

**Table 2. Variables used in estimation**

<b>Variable used in estimation</b>	<b>Hypothesis</b>	<b>Data Source</b>
Real GDP per Capita	1 (Costs)	World Bank (1999)
Existence of Predecessor Convention, Dummy	1 (Costs)	ILOLEX database
Ratification of Predecessor Convention	1 (Costs)	ILOLEX database
Democracy, Dummy	2 (Internal Pressure)	Alvarez et al. (1996)
Left Majority in Parliament, Dummy (interacted with Democracy Dummy)	2 (Internal Pressure)	Gorvin (1989), political science webpages, and Parliaments' websites
Voting at the International Labour Conference by Government, Union and Employer Delegates	2 (Internal Pressure)	ILC Record of Proceedings
Development Aid, Percent of GDP	3 (External Pressure)	World Bank (1999)
IBRD Loans and IDA Credits, Percent of GDP	3 (External Pressure)	World Bank (1999)
IMF Credits	3 (External Pressure)	World Bank (1999)
Population	1 (Costs)	World Bank (1999)
Openness	3 (External Pressure), 1 (Costs)	World Bank (1999)

Hypothesis 2 (internal pressure) is represented by the next three variables or groups of variables. There is, first, a dummy variable for democracies, taken from Alvarez et al. (1996).<sup>17</sup> In a democracy, delegates to the legislative

<sup>17</sup> These authors classify 152 countries into the following regime types: autocracies, bureaucracies, presidentialism and parliamentarianism. For our purposes, the former two and the latter two categories are merged to „dictatorships“ and „democracies“. Furthermore, we had to extend the end of the observation period from 1990 to 1995, using the criteria given in Alvarez et al. The following countries from the sample of Alvarez et al. changed their classification from „dictatorships“

assembly are more likely to represent population groups whose working conditions are positively affected by the standard than in an oligarchy, hence we expect a positive sign. Diverging preferences between political parties in democracies are captured by a left-right dummy. Since conventions must be ratified by the legislative authority, this variable refers to parliamentary majorities. It is set equal to one if a socialist or a social-democratic party or a coalition in which such a party is the dominant partner commands an absolute majority in the lower house of parliament.<sup>18</sup>

A further set of independent variables more directly measures the preferences of the main actors in labour market regulation, i.e., governments, unions and employers. Our measure rests on voting behaviour of the delegates to the International Labour Conference at the final roll-call vote on the convention in question. If, for example, the employer delegate of country *i* voted in favour of the convention, the dummy variable which indicates employers' consent is set to one. If he or she voted against or formally abstained, the dummy variable indicating employers' opposition is set to one. The base group is the case that the delegate did not participate in voting. Union and government preferences are measured in the same way; however, the "no"-Dummy is omitted for unions because it hardly ever happens that a union delegate votes against a convention, or openly abstains.<sup>19</sup>

Concerning external pressure (hypothesis 3), we use variables which relate to the potential rather than actual pressure from abroad. Potential pressure

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to „democracies“ after 1990: Benin, Cape Verde, Guinea-Bissau, Guyana, Paraguay, Poland and South Africa. The democratisation of most of Eastern Europe is already noted in Alvarez et al.

<sup>18</sup> For the classification of parties, Wilfried Derksen's website „International directory of parties“, was used (URL: <http://www.agora.stm.it/elections/parties.htm>).

<sup>19</sup> Since every country sends two government delegates to the conference, the dummy variables were coded as follows: „yes“—both government delegates in favour or one government delegate in favour, the other not present; „no“—both government

consists in the possibility of withdrawal of aid or credits or the vulnerability of a country with respect to trade sanctions. The variables used are development aid, World Bank credits or IMF lending (all of them as per cent of GDP) and the standard openness measure (imports plus exports as per cent of GDP). In the aid variable, both bilateral and multilateral programmes are included. With the World Bank and the IMF variables, we also check whether there is a link between these United Nations agencies and ILO policies. Potentially, the coefficients of these variables suffer from an endogeneity problem. Only if external pressure remains a threat and is not actually exerted, is the level of aid and credits exogenous to the ratification decision. If, on the other hand, countries are actually rewarded or punished, these variables are endogenous.

A different problem arises for the openness variable. Apart from measuring the degree to which countries can potentially be punished by trade sanctions, this variable also reflects the economic costs of ratification, since relatively closed economies need to worry less about their level of labour costs than open economies. The expectation for the sign of the coefficient differs between these two interpretations: according to the pressure hypothesis, more open economies should ratify more conventions, while according to the cost hypothesis, they should ratify less.

We also include total population numbers. Since the administrative costs of ratifying a convention are largely fixed, there may be economies of scale. In that case, a positive impact of country size on the ratification probability is expected.

To reduce the vast heterogeneity of behaviour across countries, separate estimations are performed for groups of countries. We categorise countries into three groups: industrialised democracies, Eastern bloc countries, and all other

countries.<sup>20</sup> For want of a better expression, we will refer to the last group as “developing countries”. Since the number of countries is small in the Eastern bloc group and data are available only up to 1989, we estimate ratification hazard rates only for the other two groups. In the estimation subsample, the number of industrialised countries is 22 and the number of developing countries is 86.

A group of subject dummy variables is defined along the classification scheme seen from table 1. Finally, calendar time enters as an independent variable to assess possible changes in ratification behaviour over time.

## **5 Data and estimation procedure**

### **5.1 Sample definition and descriptive evidence**

The data set used in the estimations has three dimensions. What is to be explained is the ratification or otherwise by country  $i$  of convention  $j$  at time  $t$ . In line with econometric terminology, we will describe ratifications as *transitions* between two states (from not yet having ratified the convention to having ratified it). The period of time during which ratification is an option to the country is called a *duration* or a *ratification spell*. We neglect the decision to denounce a convention because, as mentioned in section 2, denunciation is a very rare event. The state of having ratified a convention is thus viewed as an absorbing state.

In duration data analysis, different sampling schemes can be used with a number of implications for the estimation methods (see Lancaster, 1990, chapter

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<sup>20</sup> Industrialised democracies are the founding members of the OECD, together with Japan, Finland and New Zealand, but excluding Turkey (Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, The Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, the U.K., and the U.S.A). The Eastern bloc countries are Albania, Bulgaria, Hungary, Poland, Romania, and the Soviet Union, while

8). An important distinction is between stock data and flow data. In stock data, one observes, at a fixed calendar date, a number of observation units which are at risk of making a transition. A drawback of this scheme is that units with a low risk of transition are over-sampled. In flow data, by contrast, units are observed from the moment at which they become at risk. We follow this principle, including only countries for which we have full covariate information over the whole period since adoption.

Availability of information on the covariates limits the period of observation to the years 1975 to 1995. Given the sampling scheme, this means that only ratifications of conventions adopted in this interval can be included in the dataset. These are conventions 141 to 176. We exclude all conventions adopted by the special maritime conference because this sector is, due to its international nature, believed to be fundamentally different from the scope of the other conventions. This results in a loss of a further seven conventions, bringing the number of conventions in the dataset to 29. For a distribution of the subject categories of these conventions, see the right column in table 1 above.

In the 1975-95 interval, there have been 635 ratifications on these 29 conventions. This means that of the 163 ILO member states of 1995, each had ratified, on average, 3.9 conventions from this group during the observation period. There are, however, huge differences in ratification behaviour. Table 3 shows the distribution of ratification numbers across countries. A relative majority of the countries had not ratified a single convention adopted within the observation period. However, many of these countries had joined the ILO only in the 1990s. At the top of the table, 13 countries had adopted more than a dozen conventions. The list is headed by Sweden, which had ratified 22 conventions, followed by Norway (19), Finland and Spain (18), Mexico, Uruguay and Cyprus (14), and Brasil (13).

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data on former Czechoslovakia and East Germany could not be obtained. For the years after 1989, Eastern bloc countries are re-classified as developing countries.

**Table 3. Frequencies of ratification  
(Conventions C141-C176)**

Number of ratifications (1975-1995)	Number of countries
more than 12	8
11-12	4
9-10	13
7-8	9
5-6	23
3-4	23
1-2	38
0	45
635	163

To obtain a measure of the probability of ratification, we use the Kaplan-Meier survivor function estimate. In our case, the survivor function is defined as the probability of not having ratified a certain convention  $t$  days after its adoption, where  $t$  is a running index of time. In our figures, we will depict the failure function, which is simply one minus the survivor function. It gives the probability of ratification up to date  $t$ .<sup>21</sup>

In order to obtain meaningful results in duration analysis, we have to reduce our sample of ratifications slightly. If a country enters the ILO after the adoption of the convention in question, the ratification spell starts with a different event. Since it is unlikely that the stochastic processes are the same for both starting events, we exclude all countries for the ratification of a particular

<sup>21</sup> Formally, the Kaplan-Meier estimator of ratification is given as

$$\hat{F}(t) = 1 - \hat{S}(t) = 1 - \prod_{j|t_j \leq t} \frac{n_j - r_j}{n_j}$$

where  $n_j$  is the number of countries not having ratified up to time  $t_j = t$  and  $r_j$  is the number of ratifications which the convention receives at time  $t_j$ ; see Kalbfleisch and Prentice (1980: 12).

convention which have not been members at the date of its adoption. For the same reason, if a country has not been a member over the whole period in which the convention was open to ratification, it is eliminated from the dataset for those conventions which have been adopted prior to its most recent re-entry.<sup>22</sup> Likewise, data on countries which were split up or united are excluded for conventions adopted prior to the territorial change.<sup>23</sup> This leaves us with a data set of 4024 ratifications spells, of which 508 or 12.6 per cent were uncensored, i.e. ended with a ratifications.<sup>24</sup>

Figure 1 shows the cumulated ratification probabilities for all conventions, separately for industrialised democracies and developing countries. On the vertical axis, we measure the probability of ratification. On the horizontal axis, we measure time in days after ratification.

The ratification function differs significantly between the two country groups.<sup>25</sup> At all durations after adoption, the probability of having ratified a convention is much higher for industrialised countries. The shape of the Kaplan-Meier failure function differs, too. For industrialised countries, it is clearly concave. This means that the hazard (i.e., the probability of ratification at any particular moment, given non-ratification up to that moment) is declining. For developing countries, the failure function is almost linear and even becomes slightly convex at long durations. Hence, these countries do not only ratify fewer conventions than industrialised countries, but on average, they also do so later.

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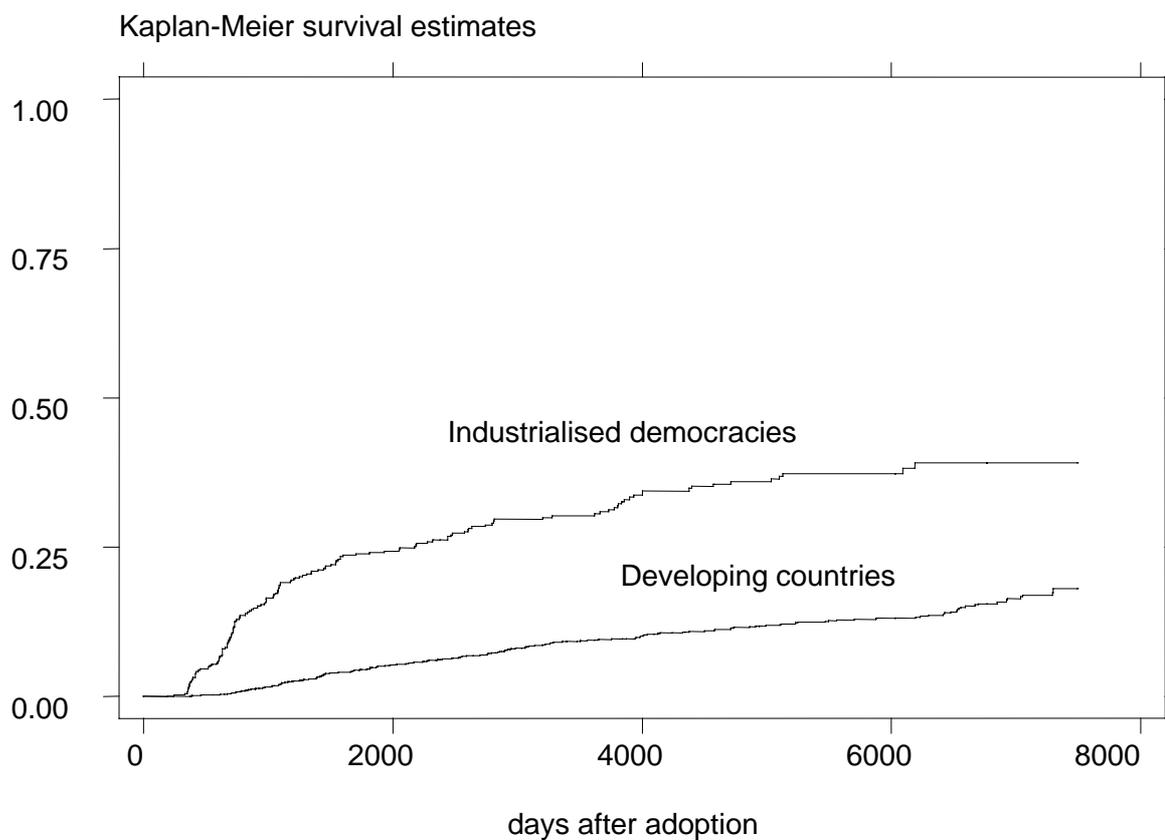
<sup>22</sup> We make an exception, however, for countries with short absences (up to five years) from the ILO, like the U.S. which left the ILO from 1977 to 1980.

<sup>23</sup> This concerns Czechoslovakia, Germany, the Soviet Union, Yemen, and Yugoslavia. Other territorial changes have not been accounted for.

<sup>24</sup> In the estimations, the data set is further reduced to 2958 spells and 414 ratifications, thus 14 per cent of all spells were uncensored in the estimation sample. The loss of observations is due to the lack of covariate information for certain countries and to the exclusion of Eastern bloc countries.

<sup>25</sup> A logrank test yielded a test statistic of 231.79 (critical value for 5 per cent significance: 5.99)

**Figure 1. Kaplan-Meier estimates of the cumulated probability of ratification**



Overall, the probability of having ratified a convention after 10 years is 31.4 per cent for industrialised countries, 9.6 per cent for developing countries and 12.6 per cent for all countries taken together, including Eastern bloc countries.

In figure 2, we display the standard life table estimator of the ratification hazard. It is calculated as the number of ratifications in interval  $t$  over the number of countries at risk during interval  $t$ , adjusted for cases of censoring and divided by interval length (Kalbfleisch and Prentice, 1980: 15).<sup>26</sup> Vertical lines give standard deviations.

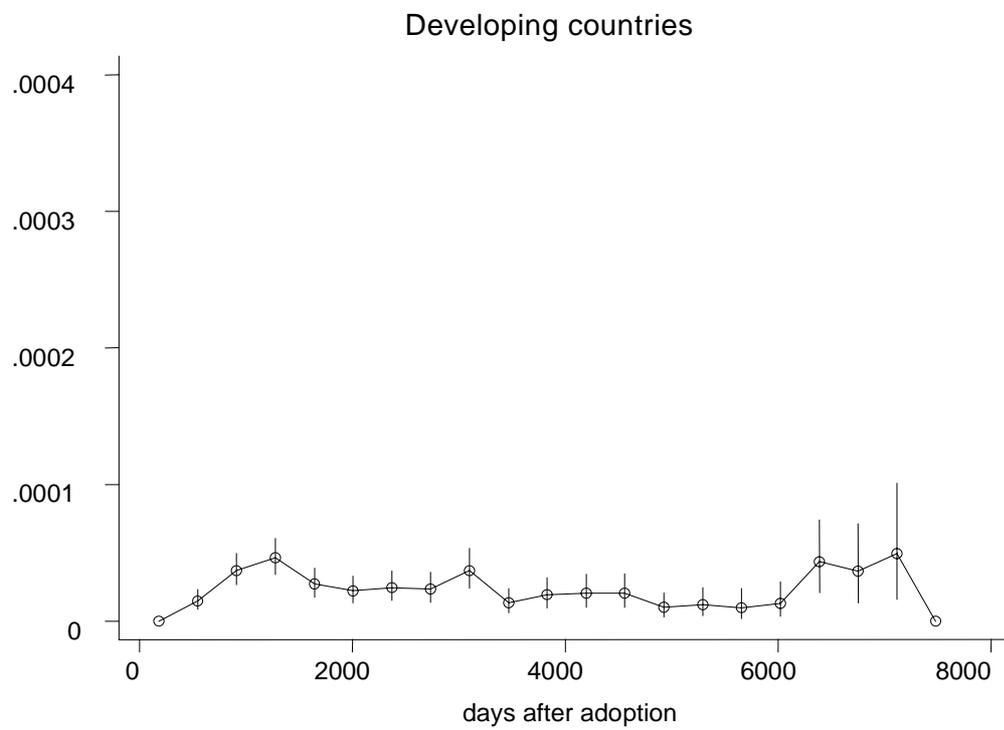
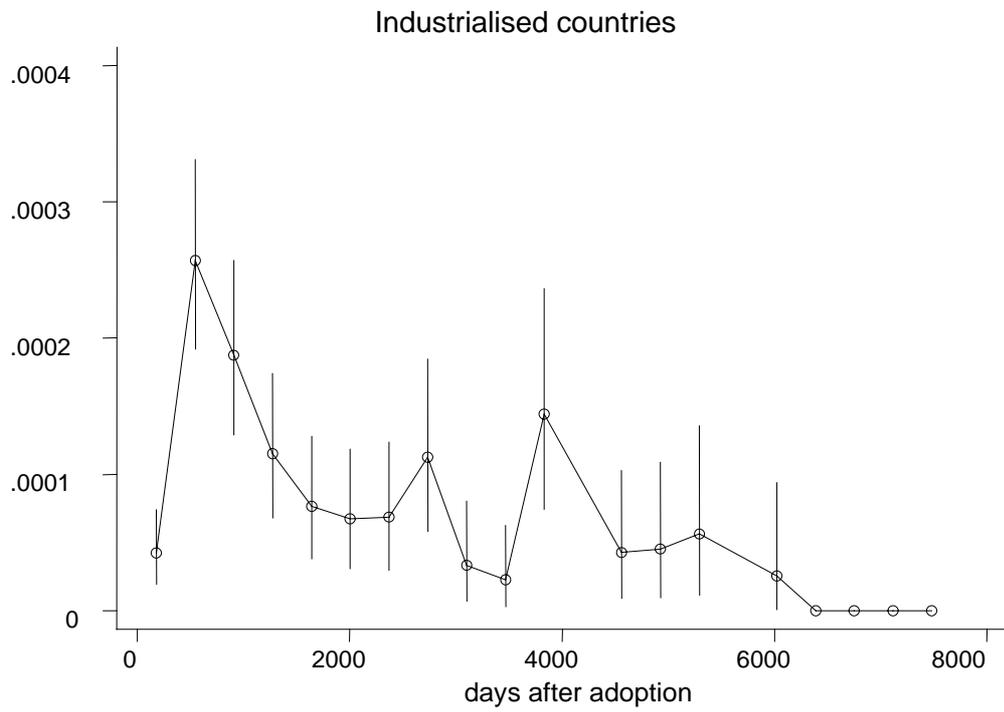
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<sup>26</sup> Formally, the estimator is given as

$$\hat{q}_j = \frac{r_j}{(n_j - m_j / 2)(t_j - t_{j-1})},$$

with  $m_j$  as the number of censorings during interval  $j$  and  $t_j$  the starting date of the interval.

**Figure 2. Life table estimates of the empirical hazard of ratification**



Starting from the date of adoption, there is a marked decline in the ratification probabilities over time for industrialised countries. The hazard peaks in the second year from adoption, which could be explained by the obligatory submission of conventions to the legislative assemblies. However, one needs to be extremely careful interpreting the graph because the shape of the hazard function could also be produced by calendar time effects. A decline in the probability of ratification over calendar time would manifest itself in a falling hazard estimate because observations at long durations are available only from later years, while observations for the first years after adoption are obtained from all years of the observation period. For developing countries, we observe a much lower hazard. A striking difference is that, as was expected from the Kaplan-Meier plot, the hazard does not decline over the duration. The empirical hazard peaks at 18 years after adoption; however, the number of observations is very small at this duration, which is reflected in the large standard deviations.

Table 4 displays sample means and standard deviations for the covariates used in estimation, separately for industrialised and developing countries.

## 5.2 Estimation method

Since the focus of our attention is on the covariate influence, we do not specify the complete distribution of the ratification spells but use Cox's (1975) partial likelihood approach. In the proportional hazard model, the total likelihood can be decomposed into two multiplicatively connected parts. The maximisation of one of them, based on the observed ordering of the transitions in the dataset, yields consistent parameter estimates.<sup>27</sup>

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<sup>27</sup> Lancaster (1990: 233 ff).

**Table 4. Sample means and standard deviations**

Variable	Industrialised democracies		Other countries (except Eastern bloc)	
	Mean	Std. Dev.	Mean	Std. Dev.
Real GDP per Capita (in 1985 US-\$)	13132.01	3027.46	3196.17	3685.15
Existence of Predecessor Convention, Dummy	0.28	0.45	0.27	0.44
Ratification of Predecessor Convention	0.08	0.27	0.03	0.18
Democracy, Dummy	1.00	0.04	0.30	0.46
Left Majority in Parliament, Dummy	0.16	0.37	0.06	0.24
Union delegate voting yes	0.91	0.28	0.60	0.49
Union delegate voting no <sup>a</sup>	0.00	0.03	0.01	0.08
Employer delegate voting yes	0.57	0.50	0.43	0.50
Employer delegate voting no <sup>a</sup>	0.35	0.48	0.14	0.35
Government delegates voting yes	0.85	0.36	0.54	0.50
Government delegates voting no <sup>a</sup>	0.10	0.30	0.05	0.22
Development Aid, Percent of GDP	—	—	8.62	13.27
IBRD Loans and IDA Credits, Percent of GDP (interacted with non-industrialised)	—	—	3.41	3.17
IMF Credits	—	—	1.21	1.94
Population (millions)	37.03	60.89	35.15	132.73
Openness: (exports + imports) / GDP	69.87	41.39	72.17	51.10

<sup>a</sup>“No” votes are votes against plus declared abstentions, as defined in the text. One minus the proportion of “yes” votes minus the proportion of “no” votes gives the proportion of undeclared abstentions.

A complication of the estimation problem is the presence of country-specific unobservable effects. In the following, we compare three different estimators. The first is the standard Cox estimator which does not allow for country-specific effects. The second is a Cox estimator which specifies, for each country, a country-specific effect multiplied with the common baseline hazard. These country-specific effects are then parametrically estimated using dummy variables. The third estimator is even more flexible, allowing for an arbitrary country-specific baseline hazard. It is referred to as the stratified Cox model.

### *The standard Cox model*

Let us assume for the moment that all conventions are ultimately ratified by all countries, i.e. there is no right-censoring. Roughly stated, the Cox estimator maximises, over all points of time at which an exit is observed, the probability of exit of the individual that actually leaves at that time, given that any individual exits at that time and given the number of exits up to that time. Some discussion of the concept of time used is necessary at this point. Let us denote  $t^{ij}$  as the time which has elapsed after the adoption of convention  $j$  up to its ratification by country  $i$ , where  $i = 1, \dots, I$  and  $j = 1, \dots, J^i$ , with  $J^i$  the number of conventions which can be ratified by country  $i$ .<sup>28</sup> In other words,  $t^{ij}$  is not calendar time but the duration from the start of the ratification spell.

To arrive at the desired probability measure, the concept of the *risk set* is needed. We will define  $R_{ij}^k$  as the set of conventions not ratified by country  $k$  at the instant before  $t^{ij}$ ; our notion of the risk set is thus country-specific. Let  $l$  be a convention from this set.

Using equation (1), country  $i$ 's hazard rate for ratifying convention  $j$  at time  $t^{ij}$  is

$$\lambda_{ij}(t^{ij}) = \lambda_0(t^{ij}) \exp[z_{ij}(t^{ij})' \gamma].$$

Conditioning on the fact that some country ratifies a convention from its risk set at duration  $t^{ij}$ , we obtain the likelihood contribution for country  $i$  and convention  $j$  at time  $t^{ij}$ :

$$f_{ij}(t^{ij}) = \frac{\lambda_0(t^{ij}) \exp[z_{ij}(t^{ij})' \gamma]}{\prod_{k=1, l \in R_{ij}^k} \lambda_0(t^{ij}) \exp[z_{kl}(t^{ij})' \gamma]}.$$

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<sup>28</sup> Recall that, due to the sampling scheme, we discard information for conventions adopted prior to the accession of a country to the ILO, hence the maximum number of conventions from the sample which can be ratified by a country may vary.

In the denominator, we have the probability that any of the  $I$  countries ratifies a convention from its risk set. One immediately observes that the regression constant and the baseline hazard  $\lambda_0(t)$  cancel out from this formulation. The fact that the baseline hazard does not have to be specified parametrically makes the partial likelihood approach a very flexible estimation technique.

To find the partial likelihood function of the whole sample, the contributions from all ratifications are formed in an analogous way, and the product of them is taken:

$$L = \prod_{i=1}^I \prod_{j=1}^{J^i} \frac{\exp[z_{ij}(t^{ij})'\gamma]}{\prod_{k=1}^I \prod_{l \in R_{ij}^k} \exp[z_{kl}(t^{ij})'\gamma]}. \quad (2)$$

This partial likelihood function is maximised with respect to the parameter vector  $\gamma$ . Right-censored spells, i.e. non-ratification of conventions at the end of the observation period, can easily be accommodated by the partial likelihood technique by excluding them from the risk set at the time of censoring (see Lancaster, 1990: 250ff.).

### *The fixed effects estimator*

The Cox partial likelihood estimator derived this far treats all observations as independent. However, it is very likely that country-specific effects are present in our data. From the Kaplan-Meier estimates, we observe that the shapes of the empirical hazard rates differ widely between industrialised and developing countries, and these groups are in themselves very heterogenous. A certain amount of this heterogeneity is probably not captured by the observed covariates, e.g., certain properties of the labour law which make it difficult to implement international labour conventions, the system of social security, or the wage bargaining system.

Since these factors are likely not to vary much over time, we estimate a model with a fixed country-specific effect. The proportional hazard then becomes:

$$\lambda_{ij}(t) = \lambda_0(t) \mu_i \exp[z_{ij}(t)' \gamma]$$

with  $\mu_i$  a factor which is constant over time and specific to each country. In this case, the partial likelihood is given as

$$L = \prod_{i=1}^I \prod_{j=1}^{J^i} \frac{\mu_i \exp[z_{ij}(t^{ij})' \gamma]}{\prod_{k=1|l \in R_{ij}^k}^I \mu_k \exp[z_{kl}(t^{ij})' \gamma]}. \quad (3)$$

As long as the  $\mu$ 's are not equal for all countries, they do not cancel out from the partial likelihood function (unlike the constant and the baseline hazard). In our estimator, we treat the  $\mu$ 's as fixed parameters and maximise the partial likelihood function (3) with respect to them and to the parameters  $\gamma$ .<sup>29</sup>

### *The stratified Cox estimator*

The underlying assumption of the fixed-effects estimator is that, conditionally on the country fixed effects and the observed independent variables, all durations are independent. The baseline hazard  $\lambda_0(t)$  is shifted up and down according to the fixed effects estimate. This means that the country-specific effect is assumed to be the same both over all conventions as well as over the whole time after the adoption of a convention.

Our third estimator is more general by allowing each country to have a separate baseline hazard  $\lambda_{i0}(t)$ . Allowing for country-specific duration dependence is important if some countries are predisposed to ratify conventions earlier or later than others. Characteristics of the legal process and the political

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<sup>29</sup> The  $\mu$ 's could also be treated as random effects. For a random effects proportional hazards model, see Guo and Rodriguez (1992).

system are examples for variables that come to mind in this context. The complete hazard rate is in this case

$$\lambda_{ij}(t) = \lambda_{i0}(t) \exp[z_{ij}(t)' \gamma]$$

Note that, compared to the fixed effects estimator (3), the  $\mu_i$  are absorbed in the  $\lambda_{i0}(t)$ .

The principle of the stratified partial likelihood estimator is to decompose the total likelihood into several sub-likelihoods specific to each stratum (Kalbfleisch and Prentice, 1980: 87f.; Lancaster, 1990: 268ff.). Each contribution to a sub-likelihood gives the probability of ratification of convention  $j$  by country  $i$  at time  $t_j^i$ , conditional on the fact that country  $i$  ratified any convention at time  $t_j^i$ . We write  $t_j^i$  instead of  $t^{ij}$  to indicate each of the the  $J^i$  failure times of country  $i$ , as opposed to the  $J^i$  failure times of the whole sample.

The country-specific sub-likelihoods are then given as

$$L^i = \prod_{\substack{j=1 \\ l \in R_j^i}}^{J^i} \frac{\exp[z_{ij}(t_j^i)' \gamma]}{\exp[z_{il}(t_j^i)' \gamma]}.$$

The risk set  $R_j^i$  comprises the conventions not yet ratified by country  $i$  at the time  $t_j^i$ , i.e. before country  $i$ 's ratification of convention  $j$ . It is evident that the country-specific baseline hazard cancels out from the sub-likelihood. Taking the product over all countries, one obtains the likelihood of the whole sample:

$$L = \prod_{i=1}^I L^i = \prod_{i=1}^I \prod_{j=1}^{J^i} \frac{\exp[z_{ij}(t_j^i)' \gamma]}{\exp[z_{il}(t_j^i)' \gamma]}. \quad (4)$$

Unlike the country-specific time-dependence function, the covariates are assumed to influence the hazard rate in the same way in each country, hence there is only one coefficient vector which is obtained by maximising the function (4) with respect to  $\gamma$ .

The stratification of the likelihood function is computationally inexpensive and does not result in huge efficiency losses if it is done unnecessarily (Kalbfleisch and Prentice, 1980: 88). A possible drawback of the procedure is that only coefficients of variables that vary over the  $J^i$  ratification spells of each country are identified from the data. If the covariates were constant over time, this would mean that one could use only convention-specific variables but no country-specific variables. If, however, covariates which are country-specific but not convention-specific can vary over time, they take different values at the different durations  $t_j^i$  for each ratification spell unless the conventions are adopted (i.e., ratification spells start) at the same calendar date. In our data set, there are adoptions over the whole period from 1975 to 1995. Given sufficient variation in the independent variables over time, the coefficients of variables which are country-specific but not convention-specific should thus be identified.

## **6 Empirical Results**

In this section, we present estimation results for the partial likelihood functions (2) to (4). As mentioned previously, all estimations are performed separately for country groups. Table 5 presents results for industrialised countries, while the results for developing countries are displayed in table 6.

For industrialised countries, the only unambiguous finding concerning the cost variables is that countries which have ratified the predecessor convention (if such a convention exists) are significantly more likely to also ratify the revising convention. If, by contrast, a country did not ratify the predecessor convention, ratification is less likely than in cases where a predecessor convention did not exist. The first of these findings is more robust than the second. The estimated coefficients suggest that the degree to which pre-existing legislation would have to be changed in order to conform with the convention matters for the ratification decision. By contrast, the GDP terms become insignificant once

**Table 5. Ratification of ILO Conventions, 1975-95, industrialised countries**

Variable	Standard Cox		Fixed Effects		Stratified	
	Coeff.	Std.Dev.	Coeff.	Std.Dev.	Coeff.	Std.Dev.
<i>Cost variables</i>						
Real GDP per capita	<b>-0.387</b>	0.166	0.050	0.336	-0.318	0.391
Real GDP p.c., squared	<b>0.016</b>	0.007	0.007	0.013	0.022	0.015
Population (millions)	<b>-0.009</b>	0.003	<b>0.149</b>	0.068	0.051	0.077
Predecessor convention, dummy	-0.525	0.338	<b>-0.857</b>	0.389	-0.655	0.378
Ratification of predecessor, dummy	<b>0.946</b>	0.369	<b>1.198</b>	0.419	<b>0.899</b>	0.413
<i>Internal pressure variables</i>						
Left majority in Parliament, dummy	<b>0.702</b>	0.174	<b>0.578</b>	0.215	0.265	0.234
Union: yes	1.426	0.803	1.523	0.832	1.434	0.819
Employers: yes	0.733	0.592	0.504	0.616	0.700	0.624
ILC voting						
Employers: no	0.904	0.569	0.739	0.601	0.759	0.613
Gov't: yes	-1.606	0.935	<b>-2.321</b>	1.065	<b>-2.142</b>	1.021
Gov't: no	<b>-3.114</b>	1.109	<b>-3.689</b>	1.236	<b>-3.593</b>	1.194
<i>External pressure variable</i>						
Openness	<b>-0.010</b>	0.003	<b>0.044</b>	0.016	<b>0.047</b>	0.019
<i>Other variables</i>						
Subject dummies	YES		YES		YES	
Country fixed effects	NO		YES		YES	
Time trend	<b>-0.058</b>	0.023	<b>-0.155</b>	0.037	<b>-0.138</b>	0.039
<hr/>						
Number of observations	5678		5678		5678	
Observation units (Countries x Conv.)	636		636		636	
Number of ratifications	183		183		183	
Log likelihood initial	-1093.5		-1093.5		-509.9	
Log likelihood final	-1013.8		-889.0		-438.9	

Note: Coefficients which are significant at the 5 per cent level (t-test) printed in bold type.

country-specific heterogeneity is controlled for. Population (as a proxy for administrative cost per capita) has a significantly positive sign only in the fixed effects specification.

Turning to the coefficients on the internal pressure variables, the coefficient on the political party variable has the expected sign and is highly significant in the standard Cox as well as the fixed effects specifications, but takes a much lower value and loses its significance once country-specific baseline hazards are allowed for. The variable which captures trade unions' preferences, voting in favour of the convention at the International Labour Conference, takes a positive coefficient which is robust across estimations and is in each case significant at the ten per cent level. This can be taken as evidence that unions exert pressure for the ratification of conventions of which they approve.<sup>30</sup> By contrast, employer delegates' voting behaviour seems unrelated to the ratification decision. A government vote against the convention significantly decreases the likelihood of ratification. Surprisingly, votes in favour of the convention are also correlated with a lower ratification hazard as compared to abstentions. This result can be explained by the fact that almost all government abstentions in the subsample of industrialised countries concern Iceland or the United States. Iceland did not send delegates to the Conference until the 1980s, and for U.S. delegates, abstentions are mainly recorded as a consequence of the temporary cessation of ILO membership. Both kinds of abstentions should not be interpreted as measuring the preferences concerning a particular convention.

The coefficient for the openness variable takes a negative sign (consistent with the costs hypothesis) in standard Cox estimation but becomes positive once the cross-country variation is eliminated. This could mean that countries, as they open up their markets, become more concerned about their reputation

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<sup>30</sup> Since the base category is trade union abstention over the convention, an alternative explanation could be that this variable measures trade union strength. Weak unions

concerning labour standards. It could also be interpreted as evidence in favour of Rodrik's (1998) hypothesis that the opening of trade creates additional income risks and thus raises the demand for social spending and protective legislation. Obviously, the openness variable interacts with total population, which also changes its sign in the estimations which take account of country-specific heterogeneity.

An interesting result is that the propensity to ratify conventions is significantly declining over time in the group of industrialised countries. Overall, we note a slight loss of efficiency in the stratified compared to the two unstratified estimations.

In contrast to the results for the industrialised countries, we do find a significant and positive impact of per capita income on the ratification probability for developing countries. With increasing levels of income, however, the effect becomes smaller, as the negative sign for the squared term indicates.<sup>31</sup> As in the industrialised sample, there is a highly significant impact of the ratification of a "predecessor" convention. In magnitude, the effect is even larger than among developed countries. We conclude that the impact of economic costs on the ratification of ILO conventions is stronger for developing than for industrialised countries. This view is reinforced by the sign of the openness variable, which is, unlike in the industrialised subsample, consistent with the cost hypothesis.

The variables relating to internal political actors are all insignificant in the subsample of developing countries. In the case of left party control of parliament, this might perhaps be due to problems of classification. More interesting is the fact that none of the voting variables is in any way related to

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may lack the resources to send delegates to the Conference, and at the same time cannot exert sufficient domestic pressure for ratification.

<sup>31</sup> In all three estimations, the maximum of the polynomial lies between 6,000 to 7,000 US-\$. The income terms are jointly significant at the five per cent level in the standard Cox and fixed effects models.

**Table 6. Ratification of ILO Conventions, 1975-95, developing countries**

Variable	Standard Cox		Fixed Effects		Stratified	
	Coeff.	Std.Dev.	Coeff.	Std.Dev.	Coeff.	Std.Dev.
<i>Cost variables</i>						
Real GDP per capita	<b>0.672</b>	0.157	<b>2.091</b>	0.653	<b>1.482</b>	0.731
Real GDP p.c., squared	<b>-0.049</b>	0.018	<b>-0.166</b>	0.058	-0.119	0.065
Population (millions)	0.001	0.000	-0.007	0.006	0.000	0.006
Predecessor convention, dummy	<b>-0.777</b>	0.288	<b>-0.738</b>	0.291	<b>-0.713</b>	0.293
Ratification of predecessor, dummy	<b>1.368</b>	0.351	<b>1.256</b>	0.368	<b>1.091</b>	0.378
<i>Internal pressure variables</i>						
Democracy, Dummy	0.192	0.160	0.049	0.289	-0.166	0.361
Left majority in Parliament, dummy	-0.376	0.308	-0.552	0.373	-0.334	0.392
Union: yes	0.124	0.169	0.075	0.186	-0.100	0.191
Employers: yes	-0.199	0.174	-0.215	0.210	-0.158	0.208
ILC Employers: no	-0.319	0.235	-0.295	0.262	-0.132	0.264
voting Gov't: yes	0.070	0.209	-0.024	0.231	-0.046	0.241
Gov't: no	0.233	0.291	0.113	0.311	-0.087	0.322
<i>External pressure variables</i>						
Development aid	-0.008	0.013	0.002	0.018	0.012	0.018
World Bank loans	0.065	0.039	-0.033	0.068	-0.132	0.088
IMF credits	<b>0.095</b>	0.043	0.158	0.095	0.107	0.117
Openness	<b>-0.012</b>	0.002	-0.014	0.007	-0.015	0.008
<i>Other variables</i>						
Subject dummies	YES		YES		YES	
Country fixed effects	NO		YES		YES	
Time trend	-0.005	0.022	0.001	0.025	0.023	0.027
Number of observations	24412		24412		24412	
Observation units	2322		2322		2322	
Number of ratifications	231		231		231	
Log likelihood initial	-1637.2		-1637.2		-623.7	
Log likelihood final	-1530.1		-1423.5		-570.0	

Note: Coefficients which are significant at the 5 per cent level (t-test) printed in bold type.

the ratification hazard. There are two potential explanations which can be given to this finding. First, political constellations may change more frequently in developing countries. A government or union leadership that voted in favour of a convention may be succeeded by another which takes a different stance. A second explanation could be that Conference delegates from developing countries do not base their voting decisions on their true preference. Instead, by voting in favour of a convention they want to be seen as cooperating in this political forum. This view is given support by the fact that government delegates sometimes vote in favour while at the same time officially stating that their country is not in a position to ratify the convention.

Most of the other variables have insignificant coefficients. Among the external pressure variables, there is a positive sign for the amount of IMF credits received by a country, but it loses its significance in the fixed effects and stratified estimations. It appears that countries which are dependent on foreign aid or credits do not feel compelled to show their acceptance of international labour standards. Unlike among industrialised countries, the propensity to ratify conventions has not declined over time in the developing countries subsample.

Table 7 shows the quantitative effects of the independent variables. It displays the hazard ratio which gives the effect of a unit change in any of the covariates.<sup>32</sup> Apart from GDP and population, the independent variables are either dummy variables or are measured in percentage points, hence the numbers can easily be interpreted. The ratification of a predecessor convention has a large effect on the ratification hazard of the revising convention: among developing countries, the predicted hazard is almost three times higher. Among the political variables, the largest effect is produced by union voting behaviour.

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<sup>32</sup> Formally, the hazard ratio is given as

$$\frac{\lambda(t; z_1 \gamma)}{\lambda(t; z_2 \gamma)} = \exp[(z_1 - z_2) \gamma],$$

hence the hazard ratios are simply the exponentiated coefficients.

**Table 7. Effect on the hazard rate of a unit change in the independent variable**

Independent variable	Industrialised countries	Developing countries
Population (millions)	1.05	1.00
Predecessor convention, dummy	0.52	0.49
Ratification of predecessor, dummy	2.45	2.98
Democracy, dummy	–	0.85
Left majority in Parliament, dummy	1.30	0.72
Union: yes	4.19	0.90
ILC voting dummies		
Employers: yes	2.14	0.85
Employers: no	2.01	0.88
Gov't: yes	0.12	0.95
Gov't: no	0.03	0.92
Development aid (per cent of GDP)	–	1.01
World Bank loans (per cent of GDP)	–	0.88
IMF credits (per cent of GDP)	–	1.11
Openness (per cent of GDP)	1.05	0.98
Year	0.87	1.02

Note: Results are based on the stratified estimator

The quantitative effects of the loans and credits variables may appear to be large (an increase or decrease in the hazard of 11 to 12 percent for each one percentage point change in these variables), but one has to take into account that a change of one percentage point in World Bank loans or IMF credits relative to GDP is a very large change.

The decline over time in the ratification hazard among industrialised countries seems to be fairly dramatic: each year, the hazard falls by 13 per cent. Apparently, the model attributes the decline found in the empirical hazard mostly to the lower ratification probabilities in later (calendar) years.

The three different specifications used are nested, with the standard Cox estimator being the most restrictive and the stratified estimator the least

restrictive approach. Different statistical tests can be performed to check which of these specifications is most appropriate.

Consider first the fixed effects versus the standard Cox estimator. Likelihood ratio tests showed that the country dummies were jointly significant in both the industrialised and the developing subsamples, with tests statistics of 249.59 in the first group and 213.33 in the second.<sup>33</sup>

Next, we performed a Hausman test of the stratified versus the standard Cox estimator, as proposed by Ridder and Tunalı (1999). This test rejected the unstratified estimator in the industrialised countries subsample, but failed to reject it for developing countries. The test statistics were 32.95 with 21 degrees of freedom for industrialised countries, which is just significant at the five per level, and 12.85 with 25 degrees of freedom for developing countries. However, the last result could well be due to the large number of insignificant regressors in the latter estimations, which negatively affects the power of the test.

To evaluate all three estimators individually, Table 8 contains results for the test of the proportional hazard assumption proposed by Grambsch and Therneau (1994), based on the residuals calculated from the Cox regressions. The test statistic is distributed as a  $\chi^2$  random variate, with the degrees of freedom equal to the number of estimated coefficients. As can be seen, the proportional hazards assumption is rejected for both unstratified estimators in the industrialised countries subsample and for the standard Cox estimator for developing countries. Taken together, the test results reinforce our a priori belief that it is important to control for country-specific heterogeneity in the estimations.

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<sup>33</sup> Critical values at five per cent significance are 31.41 and 76.77, for 20 and 58 degrees of freedom, respectively. Note that several country dummies were dropped due to collinearity.

**Table 8. Tests of proportional hazards assumption**

<b>Country group</b>	<b>Specification</b>		
	<i>Standard</i>	<i>Fixed Effects</i>	<i>Stratified</i>
Industrialised countries	<b>45.02</b> (21)	<b>74.99</b> (43)	17.10 (21)
Developing countries	<b>39.13</b> (25)	134.89 (111)	27.09 (25)

Note: Test statistics which reject the null hypothesis of the proportional hazard assumption at the 5 per cent significance level are printed in bold type. Numbers in parentheses are degrees of freedom.

### **Conclusions**

In duration data analysis, economic development has been found to be one of the principal reasons which affect the ratification of ILO conventions. In more highly developed countries, ratification occurs much more frequently, presumably because these countries do already possess a large inventory of labour regulations and social standards. This finding stands in marked contrast to statistical results by Haas (1962) for earlier periods, who found that industrialised countries did not ratify conventions much more frequently than others. The impact of pre-existing legislation is also visible in the increased likelihood of ratification if the country had already ratified a previous convention on the same subject.

Among developing countries, variables relating to the economic costs of ratification are the only ones which significantly affect the ratification probability. Their influence is much more visible here than for the subsample of developed countries.

For industrialised countries, some political variables are found to have an impact on the probability of ratification. As a measure of union preferences, the

voting behaviour of the trade union delegate at the International Labour Conference is quantitatively the most important one. Another factor – significant in two out of three specifications – is the ideology of the parliamentary majority. The significance of these variables suggests that in industrialised countries, ILO conventions are used as a vehicle for political change by domestic political actors. This could explain why, in the study by Strang and Chang (1993), ILO conventions are found to impact on social spending only in industrialised but not in developing countries.

An issue we have not addressed is whether countries influence each other in the ratification decision. In this paper, we have assumed that each ratification occurs conditionally independent of the ratifications by other countries. However, it seems plausible that the pressure to ratify rises, and economic costs of ratification decline, with the number of countries which have already bound themselves to the convention. This question needs to be addressed in further research.

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