

# Comparing international labour law systems: a methodology for country profiles

*Alexandre Cunha,<sup>1</sup> Diana Sawyer, José Monteiro da Silva, Luca Lazzarini, Marília Rocha, Tamara Santos, Vinícius Vaz Nogueira and Mariana Hoffmann<sup>2</sup>*

This monograph describes the process for selecting five countries which, along with Brazil, will be the subject of an international comparative study regarding labour justice. The process involves clustering 71 countries with certain socio-economic conditions, different models of state organisation and governance, and different labour law systems.

The Grade of Membership (GoM) model was used to cluster the categories of 39 variables into three extreme profiles according to the associations among them, as follows:

- profile 1, with a high level of socio-economic development, well-established rule of law and flexible labour laws;
- profile 2, with an intermediate level of socio-economic development, precarious rule of law and labour laws with a moderate to high level of workers' protection; and
- profile 3, with a low level of socio-economic development, precarious rule of law and a low level of protection for workers.

The model also estimated the proximity or the grade of membership of each of the countries to the three profiles according to the similitude of the characteristics of the country to the respective profiles. This procedure allowed the classification of those countries with characteristics of more than one profile—for example, those countries that predominantly have features of profile 1, some proximity to profile 2 and none of the characteristics of profile 3, possibly those countries recently achieving a high level of development but still retaining some characteristics of the intermediate profile.

## 1 Introduction

This monograph is part of a project with a broader scope, 'Strengthening the Production and Management of Information related to Labour Law to Increase Understanding and Improve the Brazilian Justice System'.<sup>3</sup> One of the objectives of the project is to perform a descriptive international comparative analysis of labour justice systems. Six case studies, including Brazil, will be produced to understand how labour disputes are processed and judged by the judicial system in different contexts. The first stage of the study is, therefore, to select international cases based on criteria that allow different socio-economic realities, legal structures and degrees of labour litigiousness. To cover those three criteria, a set of 39 variables representing socio-economic conditions, the labour market and labour law were chosen from 71 countries around the world.

The selection process comprised the following steps:

- determine three extreme profiles<sup>4</sup> of associated categories of variables in the study, by estimating the probability that a category of a variable will be characteristic of a given profile, through a fuzzy model of GoM (Manton et al. 1994);
- simultaneously, the model estimated the proximity or the grade of membership of each country to each of the profiles, according to the similitude of the characteristics of the country to the set of characteristics of those profiles;
- classification of the countries according to the grades of membership to the three profiles; and
- an external collegiate selection of five countries based on the criterion of degrees of similitude to the characteristics of Brazil.

After the current section 1, section 2 presents the main elements of fitting the model. It presents the model and the Likelihood Function as well as the equations for estimating the parameters and the data used in the model, comprising description of the 39 variables as well as the procedure for their categorisation. Section 3 refers to the outcomes of the model, more specifically the characteristics of the profiles and the classification of the countries according to their grade of membership to the extreme profiles, and section 4 presents the criteria for

the selection of the five countries. Section 5 then presents final considerations regarding the methodology and its full potential.

## 2 Fitting the Grade of Membership model

### 2.1 The model

The GoM model was chosen because, compared to other non-fuzzy clustering models, it allows more flexibility in the classification of the countries, since each country presents a set of three degrees of membership, relative to each of the extreme profiles in the model, permitting a classification with characteristics of a mixture of the defined profiles. It also has the advantage of providing a better fit for a larger number of variables than would have been possible in other crisp multivariate models.<sup>5</sup>

The following elements and conditions are keys to define the model, through 39 indicators or variables for 71 countries and 3 extreme profiles.

I: index of countries in the model ( $i = 1, \dots, 71$ )

J: index of indicators/variables ( $j = 1, \dots, 39$ )

L: index of response categories of the variable ( $l = 1, \dots, L_j$ )

$X_{ijl}$ : a binary variable that indicates the observation of response/category  $L$  of the variable  $J$  in country  $I$ . It takes on the value of 1 if category  $L$  is observed in the country, and 0 otherwise. The main assumption is that the observed categories are independent for different indicators and countries.

K: index of extreme profiles in the model (predefined) ( $k = 1, \dots, 3$ );

$\lambda_{kjl}$ : probability of a response category  $L$  of  $J$  being in the extreme profile  $K$ ;

Under the conditions:  $\lambda_{kjl} \geq 0$  and  $\sum_{l=1}^{L_j} \lambda_{kjl} = 1$

$g_{ik}$ : grade of membership of country  $I$  to extreme profile  $K$  according to its similitude.

Under the conditions  $g_{ik} \geq 0$  and  $\sum_k g_{ik} = 1, i=1, \dots, N$

The objective of fitting the model is to estimate the parameters  $\lambda_{kjl}$  and  $g_{ik}$ . The former will delineate the extreme profiles, and the latter will classify the countries according to the proximity to the extreme profiles.

Those parameters can be estimated by likelihood functions using either of the three assumptions: 1) treating  $g_{ik}$  as fixed and unknown; 2) treating  $g_{ik}$  as realisations of random variables following some distribution; and 3) eliminating the  $g_{ik}$  parameters from likelihood, considering the conditional distribution, given sufficient statistics, as long as these exist. The first two are estimated by methods of maximum joint and marginal likelihood, and the third technique is estimated by the method of maximum conditional likelihood (Erosheva 2002). In this analysis, the parameters were estimated by the method of maximum joint likelihood, based on algorithms implemented in the *sirt* package for the R statistical computing software (Robitzsch 2019).

Considering the random binary variable  $X_{ijl}$  with values 0 and 1, and given that  $x_{ijl} = 1$  if country  $I$  responds to indicator  $J$  in category  $L$ , then the probabilities of response to extreme profiles, denoted by  $\lambda_{kjl}$ , are the response probabilities to category  $L$  for indicator  $J$  by a member belonging completely to the  $k$ -th extreme profile ( $\lambda_{kjl} = Pr(x_{ijl} = 1 | g_{ik} = 1$ ). Thus,

$$Pr(x_{ijl} = 1 | g_i) = \sum_{k=1}^K g_{ik} \cdot \lambda_{kjl}$$

and the likelihood function to be maximised is given by

$$L(\lambda, \mathbf{g} | \mathbf{x}) = \prod_i \prod_j \prod_l \left( \sum_k g_{ik} \lambda_{kjl} \right)^{x_{ijl}},$$

in which  $\lambda = \{\lambda_{kjl}; k=1, \dots, K, j=1, \dots, J, l=1, \dots, L_j\}$  are the category parameters,  $\mathbf{g} = \{g_{ik}; i=1, \dots, I, k=1, \dots, K\}$  are the country parameters, and  $\mathbf{x} = \{x_{ijl}; i=1, \dots, N, j=1, \dots, J, l=1, \dots, L_j\}$  are answers observed for all countries (Manton et al. 1994).

The solution for  $g_{ik}$  and  $\lambda_{kjl}$  can be found by equating the first-order derivative of  $L(\lambda, \mathbf{g} | \mathbf{x})$  related to  $g_{ik}$  and  $\lambda_{kjl}$  to 0, subject to the restrictions of  $0 \leq g_{ik} \leq 1$  and  $0 \leq \lambda_{kjl} \leq 1$ . A set of parameters ( $g_{ik}$ , for example) is estimated initially, maintaining the other constant ( $\lambda_{kjl}$ ) and, therefore, obtaining an iterative estimation (Guedes et al. 2016).

The parameter estimation equations are given by

$$\widehat{g}_{ik} = \frac{1}{y_{i++}} \sum_{l=1}^{L_j} \sum_{j=1}^J x_{ijl} \frac{g_{ik}^* \lambda_{kjl}^*}{p_{ijl}} \text{ and}$$

$$\widehat{\lambda}_{kjl} = \frac{\sum_{i=1}^I x_{ijl} \frac{g_{ik}^* \lambda_{kjl}^*}{p_{ijl}}}{\sum_{i=1}^I x_{ij+} \sum_{l=1}^{L_j} \frac{g_{ik}^* \lambda_{kjl}^*}{p_{ijl}}},$$

where  $y_{i++} = \sum_j \sum_l x_{ijl}$  and  $p_{ijl} = \sum_k g_{ik}^* \lambda_{kjl}^*$

(Manton et al. 1994).

### 2.2 Data, variables and categories

#### Dimensions in the model

To delimit the country profiles, indicators were defined, subdivided into 10 dimensions: 1) demographic; 2) education; 3) health; 4) income; 5) labour market; 6) productive sector; 7) work relations; 8) state governance; 9) judicial system; and 10) labour law. Appendix A presents the indicators with their respective dimensions, descriptions, categories and data sources.

Dimensions 1, 2, 3 and 4 cover countries' social and economic aspects—such as dependency rates for youth and elderly people, life expectancy, Gini index and years of schooling, among others—which were included to distinguish the countries' different stages of demographic transition and the distinct life situations of their populations. Indicators in dimensions 5, 6 and 7 deal specifically with the countries' labour market measures, such as the main productive sectors for jobs and unemployment rates, among others. These dimensions are used to delimit countries according to their most predominant economic activities, the composition of the employed population and the prevalence of different work relations. Dimension 8 describes the State's organisational model (federal, unitary or other), and dimension 9 covers aspects related to the rule of law and the State's level of fragility,<sup>6</sup> as well as the countries' legal tradition.

Finally, dimension 10 takes into consideration, through specific indicators, five areas of labour law: work relations and different forms of employment (including the regulation of the legal form of different parties and rules related to part-time, fixed-term and outsourced work); laws regarding the duration of working time (daily and weekly); rules and procedures for laying off workers; laws governing workers' representation; and laws concerning collective action. A total of 39 indicators were elaborated and/or gathered, as can be seen in Appendix A.

### The reference period

To maximise the availability of information in the data set, we have considered data within the period 2013–2020 for all indicators, taking the most recent year or the year with the fewest missing data as the source of information. The year 2020 was used for some estimated International Labour Organization (ILO) indicators.

### The number of countries in the model

There was an initial list of 235 countries, with population volume estimated by the United Nations Population Division (UN DESA 2019). Using population size as a cut-off point, countries with a population above the median global population (5.38 million) were selected.<sup>7</sup> Of the 120 remaining countries, those with a Fund for Peace Fragile States Index over 90 (those on alert, high alert and very high alert) and non-secular States were removed (Fund for Peace 2019). Finally, States not recognised as countries by the United Nations were also removed. After these filters were applied, a list of 86 countries remained. However, 15 of these countries did not present data for all indicators of the labour law dimension, which hindered estimates of the extreme profiles of the model. Therefore, we have opted to exclude them from the analysis, and the final list comprises 71 countries.

### Categorisation of variables

The fitting of the GoM model (Manton et al. 1994) requires categorical variables as inputs. All indicators, except those of dimension 10 (labour law), for which the selected variables were already of a categorical nature or which had some sort of categorisation pre-established by the institution responsible for the data compilation, kept their initial standard. On the other hand, the selected continual variables were evaluated according to several aspects. The quartiles of the variables were analysed, and groupings were implemented using Euclidean distance.<sup>8</sup> From these two strategies, each categorised variable was evaluated individually, and their cut-off values were rounded and established ad hoc, to maintain a degree of consistency in terms of each country's belonging to each category and avoiding categories with a small number of countries.

Regarding indicators of dimension 10 (labour law)—whereby, from a general perspective, the value 0 represents little to no worker protection and 1 represents considerable or maximum worker protection. The source of those data was the Cambridge (CBR) Labour Regulation Index. These indicators, referred to in Appendix A (Camb\_*n*), were categorised as:

- Camb\_4, 27, 28, 32, 35 and 39 indicators: Seeking to allow for a comparison of the evolution of legislation in a given country

across time, these indicators attribute values from 0 to 1. Therefore, values within the [0; 0.5] interval are considered 0, and values in the [0.5; 1] interval are considered 1. A qualitative analysis is performed for values equal to 0.5, depending on the case, for the 2013 legislation, and afterwards the value from 0 to 1 is attributed to the country.

- Camb\_14 and 15 indicators: Values are normalised on a scale of 0 to 1 and then categorised in intervals of 0.25.
- Camb\_1, 2, 5, 7, 19, 20, 25 and 26: Each indicator is divided into three or four categories, and the values attributed by the Cambridge Index to each category were maintained.

## 3 Outcomes

### 3.1 Determining extreme profiles

Once the parameters  $g_{ik}$  and  $\lambda_{kjl}$  are estimated, the defining characteristics of each profile are established by the comparison between the  $\lambda_{kjl}$  values and the marginal frequencies of  $l$  responses to the  $j$ - $fm_{jl}$  indicators. Therefore, the  $l$  category is considered a marker for the  $k$  profile when the values for  $\lambda_{kjl}$  are equal to or higher than the respective marginal frequency in 50 per cent of indicators, or  $\lambda_{kjl}/f_{m_{jl}} \geq 1.50$ . The extreme profiles could be described as:

- Profile 1: High/medium level of elderly age-dependency rate; high proportion of the population with tertiary education; high ratio of gross domestic product (GDP) originating from labour income; reduced weekly working hours; not following procedural layoff procedures is one of the criteria used to define a layoff as unfair; part-time workers have the same rights as full-time workers; unionisation is described in the constitution as a matter of public interest; employers do not have bargaining obligations; conciliation between employer and employee is not mandatory; workers with fixed-term contracts have the same rights as full-time workers; low rate of people employed in family businesses; low rate of autonomous workers; low Gini index; high gross national income (GNI); very high life expectancy; and high proportion of employees in the service sector
- Profile 2: Low level of elderly dependency; moderate proportion of the population with tertiary education; low ratio of GDP originating from labour income; workers' legal status defined by law; collective bargaining is expressly permitted by the constitution; there are restrictions on establishing fixed-term contracts; average proportion of autonomous workers; high Gini index; average to high GNI; high life expectancy; and high proportion of employees in the industry sector
- Profile 3: High level of youth dependency and extremely low elderly dependency; extremely low proportion of the population with tertiary education; high ratio of the economically active population in the workforce; very low ratio of GDP originating from labour income; high weekly working hours; part-time workers do not have the same rights as full-time workers; layoffs are permitted only if considered 'fair', depending on jurisprudence/law; the law does not impose restrictions

on fixed-term work contracts; and fixed-term workers do not enjoy the same rights as full-time workers.

Europe and East Asia; and countries in group 3 are concentrated in Africa and Asia.

### Classification of countries by grade of membership to extreme profiles

With the profiles thus determined, the groups of countries were formed according to cut-offs defined for the value of the grade of membership to the extreme profile ( $g_{ik}$ ). For ( $g_{ik}$ ) values above 0.65, the country was considered as belonging to the group with the characteristics of the  $k$  extreme profile in question. The remaining countries were classified in mixed groups, based on values of grades of membership to the other extreme profiles.

Therefore, 54 countries were classified in groups with extreme profiles. The groups and respective countries, in order of grade of membership to the group, are:

- Group 1: Countries with a high level of socio-economic development, well-established rule of law and some degree of flexibility in labour laws: Australia, Austria, Belgium, Canada, Switzerland, Germany, Denmark, Finland, France, United Kingdom, Netherlands, Sweden, United States, Spain, Hungary, Slovakia, New Zealand, Czech Republic, Singapore, Portugal, Italy, South Korea, Bulgaria and Poland
- Group 2: Countries with an intermediate level of socio-economic development, fragile rule of law and labour laws with a moderate to high level of workers' protection: Brazil, Algeria, Ecuador, Mexico, Paraguay, Tunisia, Turkey, Venezuela, Dominican Republic, Argentina, Serbia, Kazakhstan, Colombia, Kyrgyzstan, Thailand, Malaysia, Romania, Nicaragua, Bolivia and Chile
- Group 3: Countries with a low level of socio-economic development, fragile rule of law and low workers' protection: India, Rwanda, Tanzania, Zambia, Bangladesh, Angola, Ghana, Senegal and Cambodia.

Seventeen of the 71 countries did not have a grade of membership above 0.65 for any of the three profiles.

These were categorised in mixed groups:

- 1-2 mixed groups: Cuba ( $g_1 > g_2$ ), Greece ( $g_1 > g_2$ ), Russia ( $g_1 > g_2$ ), Uruguay ( $g_1 > g_2$ ), Belarus ( $g_1 < g_2$ ) and Ukraine ( $g_1 = g_2$ )
- 1-3 mixed groups: China ( $g_1 > g_3$ ), Egypt ( $g_1 > g_3$ ), Sri Lanka ( $g_1 > g_3$ ), Peru ( $g_1 > g_3$ ), Philippines ( $g_1 > g_3$ ), Honduras ( $g_1 < g_3$ ), Indonesia ( $g_1 < g_3$ ), Morocco ( $g_1 < g_3$ ), Viet Nam ( $g_1 < g_3$ ) and Azerbaijan ( $g_1 = g_3$ )
- 1-2-3 mixed groups: South Africa.
- Coherent results can be noted by analysing the resulting groupings and the characteristics of each group. This is also evident when a certain geographic proximity is noted. For example, countries in group 1 are concentrated in Europe, except for Australia, New Zealand, Singapore and the United States; those in group 2 are concentrated in Latin America, with a few in Eastern

### 4 Countries chosen for the case study

The GoM score for profile 2 for Brazil was 0.998, meaning a very high adherence to the characteristics of the extreme profile.

It is worth stressing that data for indicators of labour law (dimension 10) are only up to date until 2013. This means that, in the case of Brazil, this indicator does not reflect the changes implemented in the 2017 labour reform.

The rise of flexible forms of work has gained increased attention from governments, companies and workers' organisations in recent years. The increased flexibility of the labour market came about in tandem with changes to the global organisation of production, liberalisation of commerce, processes of economic restructuring and legislative reform. It is believed that this trend will increase competitiveness in increasingly technological markets in a constant state of flux. Flexibility is often understood as opposing 'rigidity' in labour, which is characterised by protective legislation, with collective bargaining agreements and a clear definition of labour in law. The 2017 labour reform in Brazil fits this trend (see Krein, Gimenez, and Santos 2018 and Carvalho 2017).

Therefore, the incorporation of changes originating from the 2017 reform of Brazilian legislation could alter the results obtained, bringing the country's labour law closer to practices in countries in group 1.

The main criterion for the selection of the five countries was to have GoM scores representing characteristics in a continuum between profiles 1 and 2. The final selection was made in discussion with peers, as follows:

- two countries with grades of membership above 0.70 to profile 1 and which share some characteristics with other profiles: South Korea, with grades of membership to profiles 1, 2 and 3: 0.732, 0.143 and 0.125, respectively, and Portugal, with grades of membership of 0.788, 0.211 and 0.001, respectively. These countries represent countries in transition from intermediate socio-economic development to high socio-economic development;
- two countries with a high grade of membership (0.998) to profile 2: Mexico and Brazil, which are very similar to the extreme profile, representing countries in an intermediate state of socio-economic development;
- one country with intermediate socio-economic development which also shares some characteristics with countries with high socio-economic development: Argentina, with grades of membership of 0.771 and 0.228, respectively, to profiles 2 and 1; and
- one country without predominating characteristics, or in other words, with grades of membership equally distributed among the three profiles: South Africa, with grades of membership of 0.319, 0.418 and 0.263 to profiles 1, 2 and 3, respectively.

Table 1 presents the selected countries, as well as their grades of membership to each of the profiles.

**TABLE 1**

List of countries selected for case study, according to grades of membership to profiles

Continent	Country	Grade of membership to profile 1 (a)	Grade of membership to profile 2 (b)	Grade of membership to profile 3 (c)
Asia	South Korea	0.732	0.143	0.125
Europe	Portugal	0.788	0.211	0.001
America	Argentina	0.228	0.771	0.001
America	Brazil	0.001	0.998	0.001
America	Mexico	0.001	0.998	0.001
Africa	South Africa	0.319	0.418	0.263

Note: (a) countries with a high level of socio-economic development, well-established rule of law and some flexibility regarding labour laws; (b) countries with an intermediate level of socio-economic development, fragile rule of law and a moderate to high level of workers' protection; (c) countries with a low level of socio-economic development, fragile rule of law and a low level of workers' protection.

Source: Authors' elaboration.

## 5 Final considerations

This brief presented the outcomes of the adjustment of the GoM model applied to a set of data for 71 countries. Variables from various dimensions were selected to reflect the general characteristics of countries in terms of socio-economic development, labour markets and labour law systems.

Based on cut-off criteria for membership to each extreme profile, countries were classified in three groups. In brief, these three groups are characterised by: 1) countries with a high proportion of employees in the service sector, a high proportion of the population with tertiary education, high elderly dependency ratio, life expectancy of over 65 years, high income, low inequality, advanced/final stage of demographic transition and a labour market with a moderate to flexible level of workers' protection; 2) countries with a high proportion of employees in the industry sector, low elderly dependency ratio, life expectancy of 60–65 years, medium to high income, high inequality, intermediate/advanced level of demographic transition and with a moderate to strong labour market in terms of workers' protection; and 3) countries with a high proportion of employees in the agricultural sector, very low elderly dependency ratio, life expectancy of under 55 years, medium-low/low income, intermediate/initial stage of demographic transition and a labour market with a low level of workers' protection.

Outcomes were evaluated based on the groupings obtained and adherence to regional patterns of development. The model adopted allows the countries to be treated more flexibly without focusing exclusively on the groupings created. In other words, countries can be evaluated according to their grade of membership to each of the extreme profiles. Uruguay, for example, presented a grade of membership of approximately 0.55 to Brazil's group and of 0.45 to the group of countries with high income and low social inequality. In fact, the country presents socio-economic and development characteristics that bring it close both to European countries and to its neighbours in South America.

Finally, we have tried to establish a list of heterogeneous countries, according to the variables analysed for the adjustment of the GoM model, for a case study that seeks to understand how labour lawsuits are processed and judged by the judicial system in different contexts. However, it is important to note that the data for labour law are from 2013, and Brazil's 2017 labour reform brought the country closer to the more flexible rules of countries of profile 1, with a higher level of socio-economic development.

1. Institute for Applied Economic Research (Ipea) and International Policy Centre for Inclusive Growth (IPC-IG).

2. All other authors from the International Policy Centre for Inclusive Growth (IPC-IG).

3. The project is a partnership between the National School for the Formation and Improvement of Labour Magistrates (*Escola Nacional de Formação e Aperfeiçoamento de Magistrados do Trabalho—ENAMAT*) of the Superior Labour Court (*Tribunal Superior do Trabalho—TST*), the International Policy Centre for Inclusive Growth (IPC-IG) and the Institute for Applied Economic Research (Ipea), through the United Nations Development Programme (UNDP)

4. The number of the profiles was predefined by the authors, and the profile defined by the associated categories of the variables with high probability of pertaining to a given profile is known as an extreme/pure/reference profile. The extreme profile does not necessarily represent the most prevalent profile, although it ensures that there is at least one country with the same characteristics of the profile.

5. The GoM model has been widely used in research. For some of the early publications with details about the properties of the model, among many others, see: Woodbury and Manton (1989), Manton et al. (1994), Berkman, Singer, and Manton (1989), Singer (1989) and Erosheva (2002). For a model using Brazilian data, see among others: Sawyer (2002), Cerqueira and Sawyer (2007) and Alves (2008).

6. Fragility understood as those States with vulnerability to conflict or collapse. It was assessed by the Fragile States Index (Fund for Peace 2019) and used to filter the States to be included in the model, excluding those with very high vulnerability.

7. Uruguay and New Zealand, despite being below the population median line, were added due to their regional relevance, as well as their socio-economic and legal characteristics. New Zealand, for example, has an administrative authority with the power to decide labour disputes and controversies, while Uruguay has judges with ample judicial inquiry powers, equal to criminal proceedings (Lapl Law, Art. 1).

8. Euclidean distance groups were generated through the *arules* package for the R statistical computing software (Hahsler, Chelluboina, Hornik, and Buchta 2011).

## Appendix A — Description of indicators

ID	Indicator	Dimension	Categories	Source
CD_TX	Ratio of youth dependency (100 * population 0–14/population 15–64) (2020)	Demographic	0–25: low 25–40: average-low 40–60: average-high 60–100: high	United Nations Population Division—World Population Prospects
OAD_TX	Ratio of elderly dependency (100 * population 65+/population 15–64) (2020)	Demographic	0–10: low 10–20: average-low 20–30: average-high 30–50: high	United Nations Population Division—World Population Prospects
POP_THOU	Total population (2019) (in millions) This indicator was used solely as a filter for the selection of countries to be used for the implementation of the GoM model.	Demographic	0–10: very low 10–25: low 25–50: average 50–90: high 90+: very high	United Nations Population Division—World Population Prospects
EDU_LP	Proportion of adults (aged 15–64) with a sub-primary maximum schooling level (2015) (%)	Education	0–10: low 10–25: average-low 25–50: average-high 50–100: high	Vienna Institute of Demography < <a href="http://dataexplorer.wittgensteincentre.org/wcde-v2/">http://dataexplorer.wittgensteincentre.org/wcde-v2/</a> >
EDU_P	Proportion of adults (aged 15–64) with a maximum schooling level equal to complete basic education (2015) (%)	Education	0–15: low 15–30: average-low 30–45: average-high 45–100: high	Vienna Institute of Demography < <a href="http://dataexplorer.wittgensteincentre.org/wcde-v2/">http://dataexplorer.wittgensteincentre.org/wcde-v2/</a> >
EDU_S	Proportion of adults (aged 15–64) with a maximum schooling level equal to complete secondary education (2015) (%)	Education	0–15: low 15–30: average-low 30–45: average-high 45–100: high	Vienna Institute of Demography < <a href="http://dataexplorer.wittgensteincentre.org/wcde-v2/">http://dataexplorer.wittgensteincentre.org/wcde-v2/</a> >
EDU_T	Proportion of adults (aged 15–64) with a maximum schooling level equal to complete tertiary or higher education (2015) (%)	Education	0–10: low 10–20: average-low 20–30: average-high 30–100: high	Vienna Institute of Demography < <a href="http://dataexplorer.wittgensteincentre.org/wcde-v2/">http://dataexplorer.wittgensteincentre.org/wcde-v2/</a> >
EXP15	Life expectancy at 15 (in years) (average between 2015 and 2020)	Health	0–55: low 55–60: average 60–65: high 65–70: very high	United Nations Population Division—World Population Prospects
GINI	Gini index (net household income) (most recent year for each country between 2014 and 2017)	Income	0–30: low inequality 30–35: average-low inequality 35–40: average-high inequality 40–100: high inequality	The Standardized World Income Inequality Database (SWIID)
GNI	GNI per capita (gross national income divided by total population) (2018) (in US dollars)	Income	0–995: low income 995–3,895: average-low income 3,895–12,055: average-high income 12,055+: high income	World Bank



<b>ID</b>	<b>Indicator</b>	<b>Dimension</b>	<b>Categories</b>	<b>Source</b>
FLF_TX_EMPLOY	Percentage of women in the workforce relative to the total working-age population (aged 15–64) (%) (most recent year for each country between 2015 and 2019)	Labour market	0–25: low 25–30: moderate-low 30–35: moderate-high 35–100: high	ILO—ILOSTAT
LFP_TX	Rate of participation in the workforce (people in the workforce/economically active population) (%) (most recent year for each country between 2015 and 2019)	Labour market	0–50: very low 50–60: low 60–70: average 70–100: high	ILO—ILOSTAT
LI_TX_GDP	Share of GDP from labour income (%) (most recent year for each country between 2015 and 2019)	Labour market	0–35: very low 35–45: low 45–55: average 55–100: high	ILO—ILOSTAT
UNEMP_TX	Unemployment rate (%) (most recent year for each country between 2015 and 2019)	Labour market	0–3: very low 3–5: low 5–7: moderate 7–10: high 10–30: very high	ILO—ILOSTAT
AGR_TX_EMPLOY	Share of the population employed in agriculture (population employed in agriculture/employed population) (%) (most recent year for each country between 2015 and 2019)	Productive sector	0–10: very low 10–25: low 25–40: average 40–100: high	ILO—ILOSTAT
IND_TX_EMPLOY	Share of the population employed in industry (population employed in industry/employed population) (%) (most recent year for each country between 2015 and 2019)	Productive sector	0–15: very low 15–20: low 20–25: average 25–30: high 30–100: very high	ILO—ILOSTAT
SRV_TX_EMPLOY	Share of the population employed in the service sector (population employed in the service sector/employed population) (%) (most recent year for each country between 2015 and 2019)	Productive sector	0–30: very low 30–45: low 45–60: average 60–75: high 75–100: very high	ILO—ILOSTAT
CFW_TX_EMPLOY	Share of workers in family businesses (population dedicated to working in family businesses/employed population) (%) (most recent year for each country between 2015 and 2019)	Work relations	0–5: very low 5–15: low 15–25: average 25–100: high	ILO—ILOSTAT
EMPS_TX_EMPLOY	Share of employed people in relation to the total employed population (%) (most recent year for each country between 2015 and 2019)	Work relations	0–25: very low 25–50: low 50–75: average 75–100: high	ILO—ILOSTAT
EMPR_TX_EMPLOY	Share of employers relative to the total of the employed population (%) (most recent year for each country between 2015 and 2019)	Work relations	0–1.5: very low 1.5–3: low 3–4.5: average 4.5–100: high	ILO—ILOSTAT
OAW_TX_EMPLOY	Share of self-employed workers relative to the total employed population (%) (most recent year for each country between 2015 and 2019)	Work relations	0–15: low 15–35: average 35–100: high	ILO—ILOSTAT



ID	Indicator	Dimension	Categories	Source
political_system	Governance (2019)	Political system	Unitary Federation Other	Multiple sources
-	Fragile States Index (2019) This indicator was used solely as a filter for the selection of countries to be used for the implementation of the GoM model, except for countries with a fragility index over 90 (States on alert, high alert and very high alert).	Judicial system	0: very stable State to 120: very high alert State	The Fund for Peace
rule_of_law	Rule of Law Index (2019)	Judicial system	Very weak Weak Average-weak Average-strong Strong Very strong	World Justice Project
legal_systems	Legal system tradition (2019)	Judicial system	Common law Civil law Customary law Mixed (various combinations)	JuriGlobe—World Legal Systems Research Group—University of Ottawa
Camb_1	The worker's legal status is defined by law or can be freely defined between employee and employer (2013)	Labour law	0; 0.5: defined by employer and employee 0.5; 1: the law allows for the status to be determined by the nature of the contract established between parties 1: the law determines the status of the employee based on certain criteria (e.g. form of payment, duration of occupation etc.)	CBR Labour Regulation Index
Camb_2	Do part-time workers have the same rights as full-time workers? (2013)	Labour law	0; 0.5: other hypotheses different from 0.5 and 1 0.5; 1: the judicial system recognises a limited right to equal treatment for half-time workers (e.g. there are broader workers' rights so that they are not treated arbitrarily at their jobs) 1: the judicial system recognises the right to equal treatment	CBR Labour Regulation Index
Camb_4	Does the law impose restrictions on the establishment of fixed-term work contracts? (2013)	Labour law	0: other hypotheses different from 1 1: the law imposes a substantial restriction on the conclusion of a fixed-term contract (e.g. only allowing temporary contracts for work that is temporary by nature, such as seasonal work, substitution of workers due to maternity leave etc.)	CBR Labour Regulation Index



ID	Indicator	Dimension	Categories	Source
Camb_5	Do temporary workers have the same rights as full-time workers? (2013)	Labour law	0; 0.5: other hypotheses different from 0.5 and 1 0.5; 1: the judicial system recognises a limited right to equal treatment for temporary workers (e.g. there are broader workers' rights so that they are not treated arbitrarily at their place of work) 1: the judicial system recognises the right to equal treatment	CBR Labour Regulation Index
Camb_7	Outsourcing is allowed, controlled or forbidden (2013)	Labour law	0; 0.5: other hypotheses different from 0.5 and 1 0.5; 1: the judicial system applies substantial restrictions on their use (only allowing outsourcing if some conditions are met, such as the demonstrable need of the employer to meet fluctuations in labour demand) 1: forbidden	CBR Labour Regulation Index
Camb_14	Maximum weekly working hours allowed, excluding overtime (2013)	Labour law	0; 0.25: very high working hours (46.25–50 hours or more) 0.25; 0.50: high working hours (42.5–46.25 hours) 0.50; 0.75: moderate working hours (38.75–42.5 hours) 0.75; 1: reduced working hours (38.75–35 hours or less)	CBR Labour Regulation Index
Camb_15	Maximum daily working hours permitted, including breaks (2013)	Labour law	0; 0.25: very high working hours (15.5–18 hours or more) 0.25; 0.50: high working hours (13–15.5 hours) 0.50; 0.75: moderate working hours (10.5–13 hours) 0.75; 1: reduced working hours (8–10.5 hours or less)	CBR Labour Regulation Index
Camb_19	Are there procedural requirements to dismiss a worker? If so, the indicator also measures whether non-compliance with these requirements leads to the layoff being deemed without just cause or illegal (2013)	Labour law	0; 0.33: there are no procedural prerequisites for dismissal 0.33; 0.67: not following procedural dismissal procedures is one of the criteria for defining the layoff as unjust 0.67; 1: not following procedural requirements for dismissal usually leads to the layoff being considered unjust 1: dismissal is unjust if the employer does not follow procedural layoff requirements	CBR Labour Regulation Index



ID	Indicator	Dimension	Categories	Source
Camb_20	Are there specific causes in legislation that legitimise dismissal? If so, the indicator defines the degrees (2013)	Labour law	<p>0; 0.33: dismissal can be carried out without specific criteria, based on will alone</p> <p>0.33; 0.67: dismissal is only allowed if it is classified as 'just', depending on the law/jurisprudence</p> <p>0.67; 1: dismissal is legal depending on a broad set of criteria (e.g. technical, misconduct, redundancy)</p> <p>1: dismissal is only allowed in cases of serious employee misconduct</p>	CBR Labour Regulation Index
Camb_25	Right to unionisation: The indicator considers whether the right to form unions exists or not, if it is explicitly or implicitly (for example, included in freedom of association) granted in the constitution or if unions are considered as matters of order/public interest (2013)	Labour law	<p>0; 0.33: other hypotheses different from 0.33, 0.67 and 1</p> <p>0.33; 0.67: reference to unionisation in constitution (different from those in category 0.67–1) or there is a reference to freedom of association, which includes the creation of unions</p> <p>0.67; 1: unionisation is described in the constitution as a matter of public interest</p> <p>1: the right to form unions is explicitly mentioned in the constitution</p>	CBR Labour Regulation Index
Camb_26	The right to collective bargaining (or the celebration or the establishing of collective agreements) is granted explicitly or implicitly by the constitution of countries, or is classified as a matter of public order or public interest, or is absent (2013)	Labour law	<p>0; 0.33: other hypotheses different from 0.33, 0.67 and 1</p> <p>0.33; 0.67: reference to collective bargaining in the constitution (different from those in category 0.67–1)</p> <p>0.67; 1: collective bargaining is mentioned as a matter of public interest</p> <p>1: collective bargaining is explicitly allowed by the constitution</p>	CBR Labour Regulation Index
Camb_27	Presence or absence of the employer's obligation to negotiate (2013)	Labour law	<p>0: employer is not required to negotiate</p> <p>1: employer is required to negotiate with employees</p>	CBR Labour Regulation Index
Camb_28	Legislation covers (or not) the extension of collective bargains (national or sectoral) to third parties (2013)	Labour law	<p>0: collective bargains cannot be extended to non-signatory workers or unions</p> <p>1: there is a possibility to extend agreements to third parties; extensions can be automatic, subject to government approval or subject to a conciliation or arbitration procedure</p>	CBR Labour Regulation Index



<b>ID</b>	<b>Indicator</b>	<b>Dimension</b>	<b>Categories</b>	<b>Source</b>
Camb_32	Are unofficial strikes legal or illegal? (2013)	Labour law	0: other hypotheses different from 1 1: strikes are not illegal simply for being unofficial	CBR Labour Regulation Index
Camb_35	Lockout permission (2013)	Labour law	0: allowed 1: not allowed	CBR Labour Regulation Index
Camb_39	Conciliation between employees and employers is compulsory or not (2013)	Labour law	0: compulsory conciliation 1: non-compulsory conciliation	CBR Labour Regulation Index

## Appendix B — Profile characteristics

Indicator	Dimension	Profile 1	Profile 2	Profile 3
Youth dependency ratio (100 * population 0–14/population 15–64) (2020)	1) Demographics	Very low	Average	High
Elderly dependency ratio (100 * population 65+/population 15–64) (2020)	1) Demographics	Average High	Low	Very low
Proportion of adults (aged 15–64) with a sub-primary maximum schooling level (2015) (%)	2) Education	Very low	Low	Average High
Proportion of adults (aged 15–64) with a maximum schooling level equal to complete basic education (2015) (%)	2) Education	Very low Low	Low	High
Proportion of adults (aged 15–64) with a maximum schooling level equal to complete secondary education (2015) (%)	2) Education	Average	Low	Very low
Proportion of adults (aged 15–64) with a maximum schooling level equal to complete tertiary or higher education (2015) (%)	2) Education	High	Low Average	Very low
Life expectancy at 15 (in years) (average values between 2015 and 2020)	3) Health	Very high	High	Low Average
Gini index (net household income) (most recent year for each country between 2014 and 2017)	4) Income	Low Average-low	Average-high High	High No data
GNI per capita (gross national income divided by total population) (2018) (in USD)	4) Income	High income	Medium-high income	Low income Medium-low
Percentage of women in the workforce relative to the total working-age population (aged 15–64) (%) (most recent year for each country between 2015 and 2019)	5) Labour market	Average-low Average-high	Low	High
Rate of participation in the workforce (people in the work force/economically active population) (%) (most recent year for each country between 2015 and 2019)	5) Labour market		Very low	High
Share of GDP from labour income (%) (most recent year for each country between 2015 and 2019)	5) Labour market	High	Low	Very low High
Unemployment rate (%) (most recent year for each country between 2015 and 2019)	5) Labour market	Low	Very high	Very low
Share of the population employed in agriculture (population employed in agriculture/employed population) (%) (most recent year for each country between 2015 and 2019)	6) Productive sector	Very low	Low	Average High
Share of the population employed in industry (population employed in industry/employed population) (%) (most recent year for each country between 2015 and 2019)	6) Productive sector		Alta	Very low



Indicator	Dimension	Profile 1	Profile 2	Profile 3
Share of the population employed in the service sector (population employed in the service sector/employed population) (%) (most recent year for each country between 2015 and 2019)	6) Productive sector	Very high	Average	Very low Low
Share of workers in family businesses (population dedicated to working in family businesses/employed population) (%) (most recent year for each country between 2015 and 2019)	7) Work relations	Very low		Low Average High
Share of employed people in relation to the total employed population (%) (most recent year for each country between 2015 and 2019)	7) Work relations			Very low Low
Share of employed people in relation to the total employed population (%) (most recent year for each country between 2015 and 2019)	7) Work relations	Alta	Average	Very low Low
Share of self-employed workers relative to the total employed population (%) (most recent year for each country between 2015 and 2019)	7) Work relations	Low	Average	High
Governance (2019)	8) State governance system	Federation		Other
Law system tradition (2019)	9) Judicial system			Common Consuetudinary
Rule of Law Index (2019)	9) Judicial system	Strong Very strong	Very weak Weak Average-weak	Weak
The worker's legal status is defined by law or can be freely defined between employee and employer (2013)	10) Labour law		The law determines the status of the employee based on certain criteria (e.g. form of payment, duration of occupation etc.)	Defined by employee and employer
Maximum weekly working hours allowed, excluding overtime (2013)	10) Labour law	Reduced working hours (38.75–35 hours or less)		High working hours (42.5–46.25 hours) Very high working hours (46.25–50 hours or more)
Maximum daily working hours permitted, including breaks (2013)	10) Labour law		High work hours (13h a 15,50h)	Very high working hours (15.5–18 hours or more)
Are there procedural requirements for dismissing a worker? If so, the indicator also measures whether non-compliance with these requirements leads to the layoff being deemed without just cause or illegal (2013)	10) Labour law	Not following procedural dismissal requirements is one of the criteria for defining the layoff as unjust		Not following procedural requirements for dismissal usually leads to the layoff being considered unjust
Do part-time workers have the same rights as full-time workers? (2013)	10) Labour law	The judicial system recognises the right to equal treatment		Other hypotheses different from 0.5 and 1



Indicator	Dimension	Profile 1	Profile 2	Profile 3
Are there specific causes in legislation that legitimise dismissal? If so, the indicator defines the degrees (2013)	10) Labour law		Dismissal can be carried out without specific criteria, based on will alone Dismissal is only allowed in cases of serious employee misconduct	Dismissal is only allowed if it is classified as 'just', depending on the law/jurisprudence
Right to unionisation: The indicator considers whether the right to form unions exists or not, if it is explicitly or implicitly (for example, included in freedom of association) granted in the constitution or if unions are considered as matters of order/public interest (2013)	10) Labour law	Unionisation is described in the constitution as a matter of public interest		Reference to unionisation in the constitution (different from those in category 0.67–1) or there is a reference to freedom of association, which includes the creation of unions
The right to collective bargaining (or the celebration or the establishing of collective agreements) is granted explicitly or implicitly by the constitution of countries, or is classified as a matter of public order or public interest, or is absent (2013)	10) Labour law	Collective bargaining is mentioned as a matter of public interest	Collective bargaining is explicitly allowed by the constitution	Reference to collective bargaining in the constitution (different from those in category 0.67–1) Other hypotheses different from 0.33, 0.67 and 1
Presence or absence of the employer's negotiation obligations (2013)	10) Labour law	Employer is not required to negotiate		Employer is not required to negotiate
Legislation covers (or not) the extension of collective bargains (national or sectorial) to third parties (2013)	10) Labour law			
Are unofficial strikes legal or illegal? (2013)	10) Labour law	Strikes are not illegal simply for being unofficial		Strikes are not illegal simply for being unofficial
Lockout permission (2013)	10) Labour law			
Conciliation between employees and employers is compulsory or not (2013)	10) Labour law	Conciliation is not compulsory		
Does the law impose restrictions on the establishment of fixed-term work contracts? (2013)	10) Labour law		The law imposes a substantial restriction on the conclusion of a fixed-term contract (e.g. only allowing temporary contracts for work that is temporary by nature, such as seasonal work, substitution of workers due to maternity leave etc.)	Other hypotheses different from 1

Indicator	Dimension	Profile 1	Profile 2	Profile 3
Do temporary workers have the same rights as full-time workers? (2013)	10) Labour law	The judicial system recognises the right to equal treatment	The judicial system recognises a limited right to equal treatment for temporary workers (e.g. there are broader workers' rights so that they are not treated arbitrarily at their place of work)	Other hypotheses different from 0.5 and 1
Outsourcing is allowed, controlled or forbidden (2013)	10) Labour law		Forbidden	

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SBS, Quadra 1, Bloco J, Ed. BNDES, 13º andar – 70076-900, Brasília, DF – Brazil +55 61 2105 5000 ▪ [ipc@ipc-undp.org](mailto:ipc@ipc-undp.org) ▪ [www.ipcig.org](http://www.ipcig.org)