Multidimensional Labor Market Protection Index (MLPI): methodological proposition

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Abstract
Given the scarcity of indicators for comparative analyses between countries and regions, the aim of the present article is to propose a multidimensional index of labor protection based on data from 152 countries. Thus, we seek to instrumentalize the debate on protection versus flexibility. The methodology selected to develop the MLPI was inspired by Sartoris (2003) and Hoffmann (1998). MLPI ranges from zero to one, and it allows ranking countries based on current labor legislations. According to the results, MLPI ranged from 0.182 (in Swaziland) to 0.729 (in Slovenia). The United States, which is often considered a flexible market example, ranked the 143rd position in this ranking (MLPI = 0.243) and Brazil recorded index of 0.583; it was featured as country presenting average protection/flexibility.
Keywords: Protection index. Labor market. Flexibility.

Índice Multidimensional de Proteção Trabalhista (IMPT): uma proposição metodológica
Resumo
Diante da escassez de indicadores que permitam análises comparativas entre países e regiões o objetivo deste artigo é propor um índice multidimensional de proteção trabalhista utilizando dados de 152 países. Busca-se, assim, instrumentalizar o debate sobre a proteção versus flexibilização. A metodologia para construção do IMPT foi inspirada em Sartoris (2003) e Hoffmann (1998) e o índice – IMPT - varia entre zero e um e permite ranquear os países a partir das legislações trabalhistas vigentes. Os resultados mostram que o IMPT oscilou entre 0,182 para a Suazilândia e 0,729 para a Eslovênia. Os EUA, geralmente considerado um exemplo de mercado flexível, ficou na posição 143, com um IMPT de 0,243 e o Brasil obteve índice de 0,583, que caracteriza um país com proteção/flexibilidade média.
Palavras–chave: Índice de proteção. Mercado de trabalho. Flexibilidade.

Índice Multidimensional de Protección Laboral (IMPT): una propuesta metodológica
Resumen
Dada la escasez de indicadores que permitan realizar análisis comparativos entre países y regiones, el objetivo de este artículo es proponer un índice multidimensional de protección laboral utilizando datos de 152 países. Así, buscamos instrumentalizar el debate sobre protección versus flexibilidad. La metodología para la construcción del IMPT se inspiró en

Sartoris (2003) y Hoffmann (1998) y el índice - IMPT - varía entre cero y uno y permite clasificar a los países con base en la legislación laboral vigente. Los resultados muestran que el IMPT fluctuó entre 0,182 para Suazilandia y 0,729 para Eslovenia. EE.UU., generalmente considerado un ejemplo de mercado flexible, quedó en la posición 143, con un IMPT de 0,243 y Brasil obtuvo un índice de 0,583, que caracteriza a un país con protección/flexibilidad media.
Palabras clave: Índice de protección. Mercado laboral. Flexibilidad.

1 Introduction

The labor market is the place where institutional relationships that have influence over employment levels, and on their consequent economic and social causal outcomes, are set. The way countries regulate and organize their labor markets is relevant for wealth production, social well-being generation, human development and human dignity.

From a broader perspective, labor markets in different countries likely get organized from two different aspects that, overall, can be called flexible or protective. The most flexible markets are the ones whose labor force is treated as 'good' regulated by the law of supply and demand. Consequently, State legislated interventions in these markets are less expressive or do not exist. More protective labor markets, in their turn, are those where legislated interventions are stronger, since they understand that labor is not a mere 'good'.

Labor market structures are quite different from each other, as well as change from country to country, depending on flexibility and protection degree, which can deeply differ in all continents, and on all these countries' development levels. There are rich countries with high development degree whose labor legislation is protective, but there are countries presenting these same socioeconomic features, whose legislation is flexible. Accordingly, there are poor countries with low development degree that adopt either protective or flexible legislations. Therefore, there is no clarity about the labor legislation model to be adopted in order to allow economic growth followed by human and social development. Nevertheless, it is also not clear how to set comparative protection or flexibility level standards between countries in order to allow comparative analysis based on socioeconomic information.

In light of the foregoing, the aim of the present article was to propose a multidimensional labor market protection index based on building a database encompassing 152 countries. Data collection aimed at making feasible the construction of an index to classify countries based on their labor market protection/flexibility levels.

The name 'multidimensional protection index' was defined based on the understanding that, in order to implement flexibility, it is necessary living a reality based on protection; in other words, the argument pro flexibility rises from the understanding that 'protection' must be discussed based on market flaws, mainly in the labor market. Thus, it was not named 'flexibility implementation indicator'', but "protection". Choices were made based on aspects that can be measured from an observable reality, which allows ordering countries through a summarized index.

The proposed index seeks to help filling a gap observed in flexibility vs. protection debate. Therefore, it emerged as instrument to make comparative analyses between countries, and comparisons to other social and economic development indicators.

Besides the present introduction, this article has four more sections. The next section introduces data collection and organization criteria, and procedures. Section three provides a detailed description of the indicator construction process. The fourth section introduces and discusses the results; the article ends with the final considerations in section five.

2   Theoretical fundamentals and literature review

Jobs, as way to use labor, are addressed based on several approaches. The two main theoretical approaches in the economic literature are introduced below. They are the bases of arguments pro and against the need of governmental interventions in the labor market. According to the classical theory, as observed in the first section, labor is understood as trading asset or 'good', since the person 'sells' its workforce – to provide for ones' livelihood - by a given price, which is provided by market balance. Accordingly, the labor market must be ruled by the supply and demand law, as any other good. Assumingly, this understanding, naturally, presupposes a flexible legislation or even lack of legislation specific for labor regulation. Such a freedom to buy and sell depending on buyers and sellers' needs allows the necessary adjustments in the market, besides giving opportunities to all (ROMITA, 2003).

According to Pedroso (2003), "free market creates opportunities for all individuals, as long as they are willing to forgo certain rights, and to accept remuneration below the expected and to be prone to change places and occupations" (PEDROSO, 2003, p.145). According to this concept, also known as liberal, jobs must follow the market supply and demand law; moreover, it shall not suffer with interventions that could compromise market balance. Only balance can lead to full employment, with collective gains, since markets of all goods are benefited from it, including the labor market.

This theory was ratified by Simonsen (1983), who argued that employment level is linked to real salary. If the real salary rises, people offer more manpower and reduce their time off. Thus, the higher the real salary, the higher the manpower offer; however, people tend to make the option for not working in case the real salary gets too low. This reality assumes a free and flexible environment.

The concept, according to which, the higher the real salary, the higher the manpower offer, is also observed in the theoretical section, when Ricardo's theory of subsistence-salary is approached. Based on Stirati (1992), when the subsistence salary is higher than the real salary, manpower offers increase, since workers' quality of life will improve.

Hence, full employment is one of the neoclassic macro-economy pillars, which is determined by labor market balance. According to this theory, the intersection (balance point) must be real, so that, by putting aside any pathology or intervention, there will still be one single real product, and one single real salary, in compliance with full employment. In light of the foregoing, the economy will be

balanced and there will not be unemployment, and workers' preferences between leisure and work will also be balanced (SIMONSEN, 1983).

The approach, according to which, labor is a 'good', was also advocated by Yazbek and Silva (2001), who stated that labor and social well-being belong to individuals, families and communities' private spheres. State intervention, based on the understanding of citizens' needs, is not much recommended. In case labor remuneration is the result of market balance level, income for consuming products from other markets will also be balanced. Therefore, workers' employment and total remuneration must follow the supply and demand law in order to be balanced.

However, there is a counter position to this theoretical pole when it comes to the labor market approach. There is ambiguity in the Keynesian theory, which goes against the liberal theory. According to Keynes (1982), economic balance can happen outside full employment, and it contradicts the liberal theoretical pole, according to which, balance would only happen at full employment.

Thus, balance based on unemployment emerges as core point in the discussion about the Keynesian theory, which justifies corrective interventions. Employment level is not set by salary; actually, it differs from the classic theory. According to Keynes (1982), employment level is set by the added demand; thus, it would be a mistake stating that the free market will lead to full employment, which is the natural state of balance. Accordingly, active correction measures would be highly recommended. On the other hand, coexistence with, sometimes, high unemployment would be a recurrent situation in economy.

Sussekind (2004) stated that the generation of new job positions and income can only be ensured by progress and economic growth, and this concept is in compliance with the Keynesian thought. Therefore, this must be the very aim of the State, which must focus on social guarantees resulting from economic dynamism, rather than from 'welfarism'. Thus, the State must induce growth as way to overcome unemployment and social issues.

Therefore, in general terms, we have two theoretical poles: the liberal one, which states that the economy will be balanced at full employment; and the Keynesian one, according to which, balance can happen outside full employment. The first one denies intervention, whereas the second one recommends it. In the very core of this discussion, one finds the labor market and, in the center of the labor market, one finds the workers.

Studies about flexibility vs. protection have been gaining growing attention in the literature from the perspective of different analyses (ALEMAYEHU; TVETERAAS, 2020) (LEE, 2019) (LIOTTI, 2020)(GURVICH, ET; VAKULENKO, [s.d.]) (FRANKLIN; LABONNE, 2019) (DOMÉNECH; GARCÍA; ULLOA, 2018) (PISÁR; HUŇADY; ĽAPINOVÁ, 2018). Lee (2019) used data from the Indica region and did not find significant evidences that labor market contradictions and adjustments are faster in more flexible regions. On the other hand, this author highlights that contractions in less flexible regions head towards filling the existing vacancies; he observed new hiring processes under this situation.

Liotti (2020), in his turn, analyzed labor Market flexibility effects on poverty in 15 European countries, between 2005 and 2016. Results in his study suggested that higher labor market flexibility is positively correlated to higher

poverty among employed people. This outcome did not significantly change when he assessed the economic crisis effect.

It is also worth highlighting the relevance of studies focused on understanding the impact of flexibility on well-being and social protection policies. Thus, the effect of flexibility on monetary poverty was investigated (LIOTTI, 2020), as well as the association among 'financialization', losses in labor sharing and flexibility effects on workers (PARIBONI; TRIDICO, 2019); the association between labor market flexibility and governmental expenses with social protection (JALÓN AYMERICH, 2019); and how labor flexibility affects the choice for optimum policies and retirement decisions (PARK; LEE; SHIN, 2021).

Returns from incentives, labor productivity and market efficiency are also topics in several empirical studies about flexibility and protection. There is positive association between flexibility and return from both actions and the labor market (LEUNG et al., 2018). According to these authors, these results are in compliance with greater labor mobility and with competition in flexible labor markets, a fact that makes organization capital investment even more risky from shareholders' viewpoint.

The effect of making regional inequality reduction flexible was analyzed by Poggi (2019), in Spain. His results suggest that the 2010 reform, which turned the market in Spain more flexible, seem to have improved labor market's efficiency, although regional differences remained, overtime. He also investigated the relevance of local democracy for the labor market, since it has positive influence over regional efficiency.

Other aspects, such as the flexibility effect on yield improvement (BJUGGREN, 2018) and on the best allocation of vacancies (LEE; LEE, 2020), were also investigated. More specific aspects, like that of the food delivery sector (based on digital platforms) have also attracted the interest of recent research (PIASNA; DRAHOKOUPIL, 2021) (SUN; YUJIE CHEN; RANI, 2021). The effect of flexibility implementation in the labor market to attract foreign investment was investigated in countries at different investment levels (OLIVEIRA; FORTE, 2021) (RONG et al., 2020). Furthermore, flexibility effect on commerce stimuli (LEE; PARK, 2018) and the association between flexibility implementation and expenses, with protection (MINA, 2021), have also attracted investigation efforts.

It is also important pointing out studies that have questioned the quality of flexibility and protection measures, as well as that have stressed the need and relevance of making improvements in them (ROY; DUBEY; RAMAIAH, 2020) (BHATTACHARJEA, 2021).

Diversity of aspects and lack of clarity, from Oliveira's (2015) viewpoint, make the discussion about flexibility vs. protection return during economic crises, given the need of creating new job positions. Accordingly, it is also natural opening room for questions about the best way to protect workers. Based on his position, the literature that puts protection aside also states that authoritarian State paternalism is a false protection because it disregards investments that create new job positions. On the other hand, according to the literature in favor of protection states, workers need protection at crisis time, since they are the weakest part in the labor relationship.

Plá Rodriguez (2000) states that such a discussion is not new. It dates back to the Industrial Revolution, when the relationship between employee and employer emerged as social issue. Based on this controversy, Martins (2000) stated that it is timely investigating arguments from each line of thinking, because, although it seems to be a merely economic discussion, it has straight impact on the life of each individual and on nations' social development.

According to Torres and Ferreira (2003) it is essential creating indices and indicators for society. Theoretically, using tools resulting from empirical data is the way to express a summarized reality; moreover, these data can be used as reference in decision-making processes. Interventions that take into account indicators and indices are, oftentimes, more efficient; therefore, they reach their goals faster. This author states that indices and indicators help achieving social consensus about hard choices, in face of shortage of resources.

3   Database construction

3.1 Criteria to select and match the variables

Data collection was split into two stages: the first one aimed at identifying how the main labor rights provided by the countries, in order to regulate their labor markets are built and what they are; the second stage sought to identify and collect the most recent data available, in the largest number of countries possible. Thus, this data collection process aimed at providing subsidies to make feasible the comparative analysis applied to the protection/flexibility implementation relation based on labor rights.

Labor rights data, whenever there is a specific legislation, such as in Brazil and France, were collected from information in the legislation, itself. Whenever countries did not have it, and when the rights and duties were the outcome of collective agreements or of negotiations between employees and employers, such as in Germany, option was made for using common items in all these agreements and what is actually performed in these countries - as long as the agreed procedures were legitimized by the government.

Data collection followed two basic criteria: (1) indicators officially reported by the assessed countries were taken into consideration, regardless of the inner methodology of each country; such an indicator had to be officially acknowledged by State bureaus; (2) the most recent information available was collected, mainly the ones disclosed within the last 24 months. It was done in order to make sure that the last officially disclosed data were used in the analysis, but their outspread had to be done within 24 months before data collection.

Information was mostly collected from documents and bureaus that disclose data written in English language, and it was a barrier at the time to seek for information about the legislation in Muslim countries. Sometimes, documents were only available in Arabian language; thus, the solution was to look for these countries' embassies and consulates. Finally, in case of closed countries, like North Korea and Belarus, it was not possible finding data to be included in the analysis; therefore, they were disregarded.

Accordingly, 44 of the 195 countries acknowledged by the UN, including the Vatican and the Palestinian territory, were excluded from the analysis, due to two basic reasons: first, because they do not have or disclose minimally sufficient information for the analysis and; second, because of their low population representativeness, such as the case of San Marino and Santa Lucia, which have less than 200 thousand inhabitants. Thus, in total, 152 countries were taken into account in the process to build and analyze the indicator. The collection of data selected to compose the protection indicator was carried out between January and May 2016.

3.2 Featuring the selected variables

Eight variables were chosen to form the multidimensional labor market protection index (MLPI): unemployment insurance, Christmas bonus or similar, paid vacation, working hours, maximum working-hours limit, maternity leave, paternity leave and guarantee fund for length of service (FGTS), or a similar insurance. These variables were chosen based on three criteria: i) to be likely measurable, as it is seen, for example, in maternity leave, which is oftentimes counted in weeks, worldwide; therefore, it is measurable; ii) likely access to data collection; iii) recommendation by the International Labor Organization (ILO). It is important highlighting the accessibility to existing protection indicators; however, some data are hard to be measured or compared, such as the case of exposure to insalubrity and job stability rules. Therefore, given the hard time measuring these variables, they were excluded from the herein developed database.

Institutional protection aspects or variables protecting labor are different among countries; they change depending on culture, religion and regional aspects. However, there are some variables broadly known and recommended by ILO, and by other international institutions. The last column in Chart 1 provides the explanation for this choice.

Chart 1 – Variables collected to form the labor regulation index

Indicator	Source	Source	Group	Scale	Inclusion justification
Maternity leave	ILO	Report by the *International Labor organization* Maternity and paternity at world (ADATTI et al, 2014).	Labor legislation	Weeks	This right aims at ensuring that the reproductive role of worker women is followed in a safe and easy environment, without risk to the health of the mother and the offspring, without compromising the family's economic condition. This protection brings along the principle of treatment equality and of opportunities between men and women; it is one of the basis of social justice. It also seeks to limit the traditional division of labor between men and women. Besides, it aims at reducing maternal and child mortality in the first year of the child's life (ILO, 2004).
Paternity leave	ILO	Report by the *International Labor Organization* Maternity and paternity at world (ADATTI et al, 2014).	Labor Legislation	Days	It aims at ensuring the working father the possibility of helping the mother to recover from labor (childbirth) at starting breast-feeding, at taking care of the newborn, at registering the birth of his child and at allowing him to carry out other activities during the first hours after labor (childbirth). Although it covers a short period-of-time, it is a little observed protection around the world, so that, back in 1994, only 44 countries had this right protected by law.
Paid vacation	DOING BUSINESS	(WORLD BANK, 2016).	Labor legislation	Days	Paid vacations are a quite observed and practiced benefit in almost the whole world, but paid vacations are not always mandatory. There are countries where they can be set in individual contracts; they can be optional to both parties; consequently, they have impact on labor remuneration.
Maximum working-hours limit	ILO	Working time around the world: trends in working hours, legislation and policies from a comparative global perspective (LEE et al, 2009)	Labor Legislation	Hour/Week	This information is essential, because, in practical terms, the worker can be constantly summoned to work extra hours under the allegation of additional remuneration for it. However, this maximum working-hours limit can vary between countries and become a relevant protection variable. It belongs to group 1, and was collected in an exact way and expressed in hours. The limit of hours to be worked is provided by law and is an intervention in the market, since it stops workers from selling more workforce than the acceptable; therefore, it limits manpower offer, even if the employee wants to work longer. Differently from the work shift, which can be exceeded in case of additional payment, the limit of hours cannot; if it happens, the company can be penalized, depending on the legislation in the country in question. However, it is observed as protection, since it stops exhausting labor shifts.
Weekly working hours	ILO	Working time around the world: trends in working hours, legislation and policies from a comparative global perspective (LEE et al, 2009)	Labor Legislation	Hours	The inclusion of this variable was justified by its relevance for workers' protection, because exhausting work shifts observed during the Industrial Revolution compromised their physical and mental health (LEE, MCCANN & MESSENGER, 2009). The ILO defined that countries should target the 40-hour/week standard. The organization also states that the eight-hour shift/day and the 48-hour shift/week were key demand of working classes at late 19th century.
Christmas Bonus	Social security USA	IOL (SOCIAL SECURITY, 2016)	Labor Legislation	Yes/No	Christmas Bonus regards additional remuneration to workers. This instrument is featured as protection by the legislation and, once it is adopted, it becomes mandatory to all workers, regardless of their worthiness. It does not concern an intervention focused on income from labor, since it is only provided to workers in activity and the employer takes into consideration this protection when it elaborates manpower costs and the consequent definition of salaries to be offered. However, it becomes an interventionist instrument since it is not bond to efficiency and to worker productivity – its payment to all workers, equally, is mandatory.
Unemployment insurance	OECD	Indicators of employment protection (OECD, 2016).	Labor Legislation	Yes/No	This protection is one of the most often found worldwide, based on information from ILO. This benefit was firstly implemented in 1911, in Great Britain; it was never canceled in any of the countries where it was implemented.
Guarantee fund for length of service (FGTS)	DOING BUSINESS	(WORLD BANK, 2016).	Labor legislation	Yes/No	This protection is quite known by Brazilians, but its name and shape is unusual in other countries. It presented different profiles, but, in most countries, whenever a labor contract is canceled by the employer, without fair justification, the worker gets some sort of compensation that is often linked to length of service and to the current wage.

Source: Elaborated by the author.

4   Building the multidimensional labor market protection index (MLPI)

After selecting and justifying the indicators chosen for MLPI construction, procedures used to build this index for the 152 countries (where data could be collected) were presented. The methodology chosen to build the MLPI was inspired by Sartoris (2003) and Hoffmann (1998), and it will be detailed below. The complete database for index use is available in the Appendices.

Variables used to form the index are listed below. They are followed by their respective acronyms

i.   *Maternity Leave/week (Ml);*
ii.   *Paternity Leave/days (Pl);*
iii.   *Paid Vacations/days (Pv);*
iv.   *Weekly working hours (Ww);*
v.   *Maximum working-hours limit week (Mh);*
vi.   *Christmas Bonus or similar (1=yes 0=no) (Cb);*
vii.   *Unemployment insurance (1=yes 0=no) (Ui);*
viii. *Guarantee fund for length of service (GFLS) or similar (1= yes 0 =no) (Gf);*

It was necessary standardizing the indicators within the zero/one interval to build the index. In order to do so, the collected value for each indicator (Ixi), of each country (xi), was divided by the maximum value of the respective indicator in the sample composed of 152 countries; wherein, Ix = Ml; Pl; Pv; Ww and Mh. Value "i" is the real collection value of each one of the 152 countries.

Maternity leave in Italy[1], for example, is 22 weeks (Ml=22); it was divided by the maximum number of maternity leave weeks in the sample Mlmax=58 – it is the number of maternity leave weeks allowed in Croatia. Thus, maternity leave in Italy corresponds to 0.3793 within the zero/one interval. Croatia is the country accounting for the largest number of leave weeks, since it reaches value 1 in this variable; this number represents the highest relative protection in maternity leave. This same procedure was applied to all variables that need to be standardized.

By analyzing information about the maternity leave variable, one finds that the larger the number of weeks, the higher the protection, as follows:

$$Ml_{0,t} = \frac{Mlm_t}{Ml_0} \qquad (1)$$

$$Ml\ Itália = \frac{22}{58} = 0,3793 \qquad (2)$$

$$Ml\ Croácia = \frac{58}{58} = 1 \qquad (3)$$

Information about weekly working hours and about the monthly extra-hour limit had to have their signs reversed in order to make sure that the "closer to 1, the higher the protection" interpretation would be ensured. The highest workload was recorded in India's database (74 hour-week); therefore, the value recorded for the standardized protection

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[1] Ix=Lm, i=number of leave weeks in Italy

index observed for this variable in India was zero (0) - the other countries ranged from 0 and 1. France, for example, ensures 35 working hours/ week; its standardized protection index is 0.5271. Values are calculated through the following formula:

$$Ww_{0,t} = 1 - \frac{Ww_t}{Ww_0} \qquad (4)$$

$$Ww_{India} = 1 - \frac{74}{74} = 1 - 1 = 0 \qquad (5)$$

$$Ww_{França} = 1 - \frac{35}{74} = 1 - 0,4729 = 0,5271 \qquad (6)$$

After the standardized value of each one of the variables, in each country, was calculated, it was possible starting building the index based on the means recorded for the standardized indicators. MLPI goal lies on identifying countries presenting the most, or lesser, protective legislations, without judging the recorded number. In other words, the aim is not to give a degree of subjective relevance to the variables, but only to identify flexible and protective countries that would allow analyzing and comparing them.

The method described above is demonstrated in the equation below, which was developed to calculate each country's :

$$\text{MLPI} = \frac{Ml_{0,t} + Pl_{0,t} + PvFe_{0,t} + Gf_{0,t} + Ww_{0,t} + Mh_{0,t} + Cb_{0,t} + Ui_{0,t}}{n} \qquad (7)$$

After building the multidimensional labor market protection index of each country, it was possible calculating the protection indicator of each region and, finally, the mean world protection. These indicators were calculated based on the sum of MLPIs calculated to each country, divided by the number of countries in a given region. Finally, the mean MLPI of 152 countries was used to calculate the world MLPI.

The aim is to identify region MLPI in order to be able to compare protective to flexible regions, based on world MLPI. Equations adopted to calculate regional and world MLPI are presented below:

$$MLPI_{region} = \frac{MLPI_{country1} + MLPI_{country 2} + \cdots + MLPI_{country n}}{n_{região}} \qquad (8)$$

$$MLPI_{Mundial} = \frac{MLPI_{country} + MLPI_{country 2} + \cdots + MLIT_{country n}}{152} \qquad (9)$$

However, regional and world MLPIs were weighed by population density in each country, given the high heterogeneity of population density. This procedure aimed at identifying likely comparative changes in MLPIs, by taking into account population density. The weighed MLPI also allowed identifying whether most of the world population lives in flexible or protective regions, in terms of labor legislation.

The $MLPIp_{region}$ was calculated by multiplying the multidimensional labor protection indicator (MLPI) of each country by the population of the respective country (P), by the total number of region's inhabitants (n). Equation 10 shows the calculated weighed regional MLPI

$$MLPIp_{region} = \frac{MLPI_{country1}P_{country1} + MLPI_{country2}P_{country2} + \cdots + MLPI_{countryn}P_{countyn}}{n_{region}} \qquad (10)$$

Finally, the world weighed MLPI was calculated based on population. The MLPIp_world is similarly calculated to MLPI_region, based on multiplying the protection indicator (MLPI) of each country by the population of the respective country (P), by the total number of inhabitants in the country (n). The number of contemplated countries is what differs MLPI_world from MLPI_region, since the MLPI_region is limited to countries in each region, and the MLPIp_world encompasses all MLPIs from all countries whose data were herein collected. Equation 11 was adopted to calculate world MLPI weighed by population.

$$MLPIp_{mundial} = \frac{MlPI_{country1}P_{country1} + MLPI_{country2}P_{country2} + \cdots + MLPI_{countryn}P_{countryn}}{n_{world}} \qquad (11)$$

The next section introduces the general outcomes and results per region. It is important having in mind that the indicator ranges from zero (0) to one (1), wherein, (1) is the highest protection and (0) means a market totally free from governmental intervention – it is only regulated by market forces.

5   Results

It was possible calculating the MLPI of each country after their variables were standardized. Results and position in the ranking of the highest MLPI countries are shown in Chart 2. The position of countries accounting for the lowest MLPI are described in Chart 3.

According to the herein presented results, Slovenia is the country showing the most protective labor legislation in the world, given its MLPI (0.729), if one takes into consideration the sample with 152 countries. Swaziland, in its turn, is the country with the most flexible legislation; therefore, it holds the last position in the ranking, given its MLPI (0.182).

Chart 2 – Countries presenting the highest protection indicator and their respective positions in the ranking

Position	Country	MLPI	Position	Country	MLPI	Position	Country	MLPI
1st	Slovenia	0.729	33rd	Russia Federation	0.493	65 th	Vietnam	0.432
2nd	Estonia	0.628	34th	Denmark	0.49	66 th	Guatemala	0.432
3rd	Mauritius	0.594	35 th	Moldavia	0.488	67 th	Cambodia	0.431
4th	United Kingdom	0.584	36 th	Guyana	0.488	68 th	Mozambique	0.431
5 th	Brazil	0.583	37 th	Malta	0.486	69 th	Qatar	0.43
6 th	Iceland	0.582	38 th	Chad	0.485	70 th	Bosnia and Herzegovina	0.429
7 th	Paraguay	0.574	39 th	Armenia	0.484	71st	Peru	0.428
8 th	Angola	0.57	40 th	Sweden	0.482	72nd	Bahrain	0.425
9 th	Croatia	0.564	41st	Austria	0.481	73rd	Turkey	0.424
10 th	Ecuador	0.562	42nd	Venezuela	0.475	74th	Tanzania	0.422
11 th	Argentina	0.557	43rd	Cyprus	0.471	75 th	China	0.42
12 th	Chile	0.553	44th	Serbia	0.471	76 th	Fiji	0.42
13 th	Mauritania	0.548	45 th	Luxembourg	0.469	77 th	Bahamas	0.419
14 th	Uruguay	0.547	46 th	Latvia	0.469	78 th	Albania	0.419
15 th	Dominican Republic	0.545	47 th	Benin	0.466	79 th	Egypt	0.417
16 th	Indonesia	0.542	48 th	Belgium	0.464	80 th	Mongolia	0.416
17 th	France	0.538	49 th	Algeria	0.464	81st	Yemen	0.416
18 th	Norway	0.527	50 th	Botswana	0.464	82nd	Bolivia	0.414
19 th	Mexico	0.525	51st	Morocco	0.463	83rd	New Zealand	0.412
20 th	Ireland	0.523	52nd	Bangladesh	0.463	84th	Saudi Arabia	0.412
21st	Lithuania	0.521	53rd	Switzerland	0.462	85 th	Brunei	0.411
22nd	Finland	0.519	54th	Romania	0.457	86 th	Kuwait	0.407
23rd	Nicaragua	0.516	55 th	Burundi	0.456	87 th	Afghanistan	0.407
24th	Bulgaria	0.515	56 th	Libya Jamahiriya	0.449	88 th	Malawi	0.407
25 th	Czech Republic	0.514	57 th	Montenegro	0.447	89 th	Laos	0.402
26th	El Salvador	/0.513	58th	Iran	0.447	90 th	Nepal	0.401
27 th	Spain	0.51	59 th	Germany	0.445	91st	Lesotho	0.401
28 th	Australia	0.499	60 th	Cameroon	0.444	92nd	Barbados	0.399
29 th	Slovakia	0.499	61st	South Africa	0.443	93rd	Jamaica	0.399
30 th	Hungary	0.499	62nd	Guinea	0.44	94th	Mali	0.399
31st	Portugal	0.497	63rd	Cape Green	0.438	95 th	Congo	0.397
32nd	Italy	0.495	64th	Canada	0.437	96 th	Cuba	0.395

Source: Elaborated by the authors

Graphic 1 shows that the highest concentration of countries lies on the protection line - ranging from 0.30 to 0.512; in other words, intermediate protection level. Slovenia is the exception, since it gets away from maximum protection countries, giving its value (0.644).

Chart 3 – Countries presenting the lowest protection indicators and their respective position in the ranking

Position	Country	MLPI	Position	Country	MLPI	Position	Country	MLPI
97th	Jordan	0.391	116th	Tajikistan	0.347	135 th	Haiti	0.276
98 th	Tunisia	0.391	117 th	Senegal	0.343	136 th	Singapore	0.274
99 th	Iraq	0.391	118 th	Ukraine	0.34	137 th	Honduras	0.266
100 th	Macedonia	0.391	119 th	Thailand	0.339	138 th	Zambia	0.263
101st	Costa Rica	0.388	120 th	Uzbekistan	0.331	139 th	Seychelles	0.259
102nd	Japan	0.384	121st	Gabon	0.33	140 th	Uganda	0.256
103rd	Poland	0.382	122nd	South Korea	0.321	141st	Ivory Coast	0.246
104th	Greece	0.375	123rd	Pakistan	0.316	142nd	Malaysia	0.244
105 th	Kazakhstan	0.374	124th	Togo	0.312	143rd	United States	0.243
106 th	Philippines	0.372	125 th	Namibia	0.311	144th	Papua New Guinea	0.243
107 th	Lebanon	0.369	126 th	Oman	0.308	145 th	Trinidad and Tobago	0.239
108 th	Azerbaijan	0.368	127°	Kenya	0.308	146 th	Nigeria	0.226
109 th	India	0.368	128°	United Arab Emirates	0.303	147 th	Rwanda	0.225
110 th	Central African Republic	0.36	129°	Panama	0.302	148 th	Gambia	0.219
111 th	Georgia	0.357	130°	Syria Republic	0.295	149 th	Zimbabwe	0.218
112 th	Kyrgyzstan	0.357	131°	Madagascar	0.295	150 th	Sierra Leone	0.205
113 th	Antigua and Barbuda	0.356	132°	Ethiopia	0.294	151st	Sri Lanka	0.191
114 th	Myanmar	0.352	133°	Ghana	0.291	152nd	Swaziland	0.182
115 th	Israel	0.348	134°	Sudan	0.279			

Source: Elaborated by the authors

The graphic also allows noticing that most countries have adopted protection lower than 0.51 – 126 of the 152 countries lay within this range. However, it is important highlighting that the indicator shows the relative position of countries in comparison to what is assessed in the sample formed by the assessed countries. However, there was no intention to judge the value and/or to propose the ideal and/or adequate protection level.

Graphic 1: Distribution of countries based on MLPI
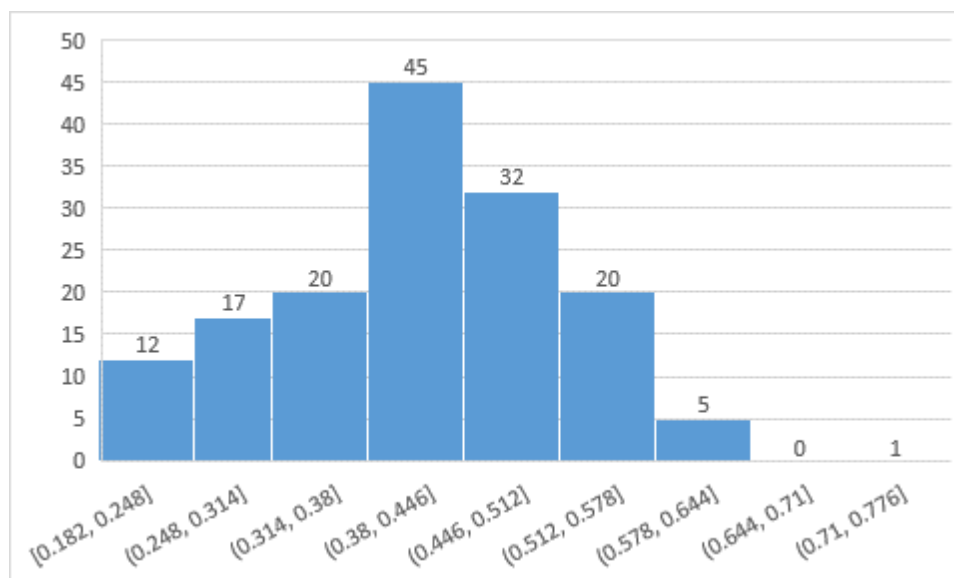
Source: Elaborated by the authors

MLPI results recorded for world regions aimed at understanding whether different regions in the world adopt different protection levels. Comparisons were carried out in two ways: first, by using simple averages added with all MLPIs; the result was divided by the number of countries and, later on, it was divided by the means weighed by population density. The aim of using population weighing lied on identifying protection levels recorded for demographic regions that account for the highest world population rate. Another aim was to make comparative analyses based on the ranking between protective and flexible regions, with and without weighing.

Table 1 shows that the three most protective regions are located in South America (0.518); it was followed by Western Europe (0.503) and by Eastern Europe (0.479) – all of them recorded significant deviation, higher than the world average. Western Europe and South America presented deviation higher than 20% in comparison to the world average that, based on the herein applied methodology, reached 0.414.

Table 1 – Protection per continent

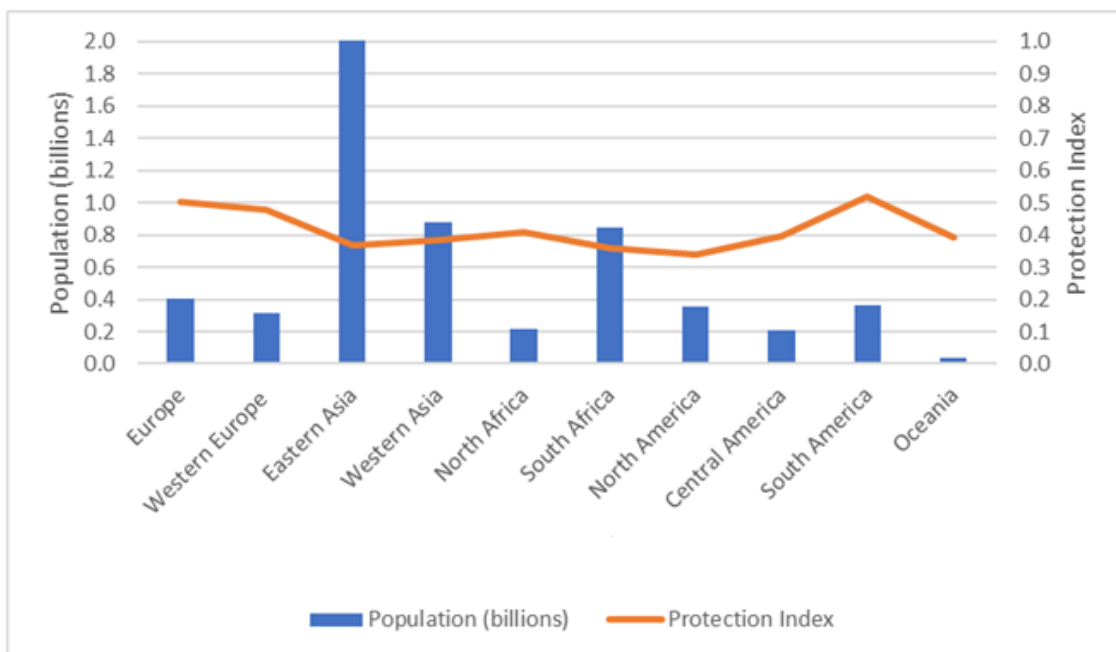| Continents	Population (billions)	Protection Index	Difference compared to the average	Deviation in comparison to the mean (rate)
Europe	0.40131	0.503	0.09	21%
Western Europe	0.31141	0.479	0.07	16%
Eastern Asia	2.01552	0.369	-0.04	-11%
Western Asia	0.8775	0.385	-0.03	-7%
North Africa	0.21342	0.410	0.00	-1%
South Africa	0.84542	0.360	-0.05	-13%
North America	0.35799	0.340	-0.07	-18%
Central America	0.20845	0.398	-0.02	-4%
South America	0.3653	0.518	0.10	25%
Oceania	0.03675	0.393	-0.02	-5%
World average		0.414	0.10	

Source: Elaborated by the authors.

When it comes to flexibility, the most flexible regions are found in North America (0.340); it was followed by South Africa (0.360) and, finally, by Western Asia (0.369). These regions recorded deviations 20% lower than the world average, the highest deviation was recorded for North America, which recorded values 18% lower than the average.

Graphic 2 showed MLPIs per region; it was weighed by population. Western Asia is the most populous region and it recorded the lowest labor protection average in the world. If one takes into account data in Graphic 2, it is possible identifying that half of the world population is found in three of the selected regions (Eastern Asia, Western Asia and South Africa); two of them (Eastern Asia and South Africa) recorded MLPI lower than the world average, whereas Western Asia recorded MLPI of 0.43 – this number is close to that of the world average (0.41).

Therefore, by summing the North American population in the aforementioned regions, it is possible stating that most of the world population lives and works under labor legislation provisions seen as flexible, since they are below the world average.

Graphic 2 – Population per continental regions and their respective protection indicators

Source: Elaborated by the authors

If one takes into account this reality, Table 2 shows the MLPIs recorded for regions with average weighed by the countries' population (calculation descriptions are shown in the methodology introduced in section 3).

Table 2 – Protection per continent based on weighed average

Continents	Population (billions)	Protection Index	Difference in comparison to the mean	Difference in comparison to the mean (rate)
Europe	0.40131	0.504	0.11	26%
Western Europe	0.31141	0.457	0.06	15%
Eastern Asia	2.01552	0.373	-0.03	-7%
Western Asia	0.8775	0.426	0.03	7%
North Africa	0.21342	0.408	0.01	2%
South Africa	0.84542	0.332	-0.07	-17%
North America	0.35799	0.262	-0.14	-34%
Central America	0.20845	0.473	0.07	19%
South America	0.3653	0.549	0.15	38%
Oceania	0.03675	0.434	0.04	9%
World Average		0.399	0.10	

Source: Elaborated by the author

The analysis of indicators shown in Table 2 allows observing lack of changes in the order of flexible and protective regions. Significant changes observed in this table are linked to deviations in comparison to average, mainly in South America, whose rate rose from 25% to 38% - the most protective one in comparison to the world average. Europe increased its deviation to 26% in the ranking of most protective countries, in comparison to the world average. Accordingly, North America changed its deviation from 18% to 34% - most flexible in comparison to the weighed world average.

It was also observed, based on data in Tables 1 and 2, that it is not possible determining association between developed and developing regions, and labor protection levels, because there are developed regions presenting protective features and others showing flexible features. On the other hand, there are also protective and flexible developing regions. These results corroborate the findings by Lee (2019).

Figure 1 depicts protection levels in countries; these levels were divided into four proportional parts. Dark blue countries are in the first quartile (the most protective in the world, which present protection higher than 0.48).

Light blue countries are in the second quartile, which recorded mean protection and presented indicators ranging from 0.42 to 0.48 – they are spread in all continents.

Orange countries were in the third quartile; they account for average flexibility, because their values are close to, and lower than, the world average (indicators ranging from 0.35 to 0.42). Great concentration stands out in the Asian Continent.

Red countries are the most flexible in the world; their indicators range from 0 to 0.35. Two highlights are observed in this group: USA (the greatest economic power in the world) and significant concentration of countries in the African Continent.

Finally, green countries are the ones where it was not possible collecting information about their MLPI; therefore, they have non-existing MLPI.

Figure 1 – World map of protection and flexibility
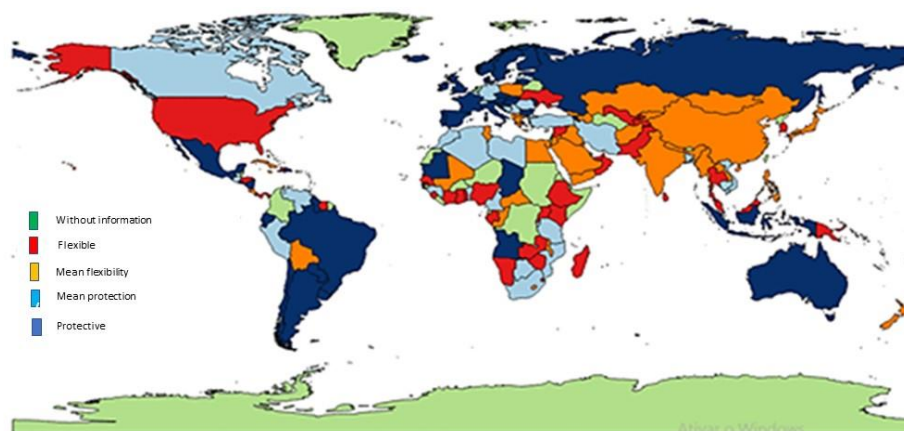
Source: Elaborated by the authors

Figure 1 shows that countries closer to the world average of protection indicator (light blue and orange) are well spread worldwide; however, they have little MLPI variation. On the other hand, countries in the extremes of the map present relative visual concentration, but they show broad MLPI variation. The highest frequency of flexible countries (red) is located in the African continent. However, North America and Europe are in the upper part of the map and they account for the highest protection frequency (dark blue).

Thus, it is possible concluding, based on the geographic dispersion exploration of these regions, that:

a)   Most individuals on the globe live in regions whose labor protection is close to or below the world average;

b)   Eastern Europe is expected to have protection level higher than that of Western Europe, given its socialist tradition; but, such an expectation did not turn true. On the other hand, Eastern Europe is the most flexible region when it comes to the labor legislation in the European continent;

c)   South America is the continent mostly housing developing countries; it is featured as protective continental region;

d)   China is the second world economy and the most populous country on the globe; it is among average protection countries – close to the world average;

e)   USA is the biggest economy in the world; it can be featured as flexible-legislation country;

f)   The African continent is the poorest in the world; it only has three protective countries.

In addition, it is possible comparing MLPI to important socioeconomic indicators that are traditionally used in countries' development analyses. Just to illustrate, Table 3 presents the best and worst MLPI positions concerning HDI, Gini Index, GDP per capita and unemployment.

Table 3- MLPI comparison to the socioeconomic indicators recorded for the most and least protective countries

Country	MLPI	HDI	Gini	GDP per capita	Unemployment
Ten countries with the highest MLPI					
Slovenia	0.729	0.88	24.9	19.111,00	12.6
Estonia	0.628	0.861	32.7	12.348,00	6.4
Mauritius	0.594	0.777	35.9	7.117,00	7.9
United kingdom	0.584	0.907	38	40.968,00	5.1
Brazil	0.583	0.755	52.7	5.970,00	8.2
Iceland	0.582	0.899	26.3	59.693,00	3.3
Paraguay	0.574	0.679	48	1.979,00	5.8
Angola	0.57	0.532	42.7	2.759,00	26
Croatia	0.564	0.818	33.6	10.561,00	17.2
Ecuador	0.562	0.732	46.6	3.782,00	5.7
Countries with the lowest MLPI					
Unites States	0.243	0.915	41.1	46.405,00	5
Papua New Guinea	0.243	0.505	s/i	1.121,00	2.5
Trinidad and Tobago	0.239	0.772	s/i	14.275,00	3.4
Nigeria	0.226	0.514	43	1.092,00	10.4
Rwanda	0.225	s/i	50.8	418	3.4
Gambia	0.219	s/i	47.3	435	22
Zimbabwe	0.218	0.509	s/i	475	11.3
Sierra Leone	0.205	s/i	35.4	538	3.3
Sri Lanka	0.191	0.757	36.4	2.136,00	4.3
Swaziland	0.182	0.531	51.5	2.522,00	28.5

Source: Elaborated by the authors

As observed, and based on socioeconomic indicators, the most protective countries are also the richest ones, their GDP per capita is the highest and they also account for the best HDIs. However, the protection to job positions/inequality relation does not present clear association when countries - with the highest and lowest MLPIs - are analyzed. Thus, the option for protection or flexibility cannot fulfill the theoretical assumption of classical and Keynesian schools. In other words, neither the highest flexibility nor intervention have been able to lead countries to full employment; and it may explain the adopted intervention type. Assumingly, the protection procedures adopted by countries can be effective to improve the conditions of workers who are absorbed by the market – it does not mean aiming the Keynesian goal to reduce unemployment. On the other hand, countries that choose a more flexible market likely have market structure flawed enough to allow the supply and demand mechanism to promote balance. These associations must be accessed in-depth, in future studies, because the main aims of the current one were to build a new indicator and to find its potential applications.

6 Final Considerations

Providing human needs is mostly achieved through labor. The space for such labor to take place is mostly found in the so-called labor market, where labor relationships are institutionalized. These relationships can happen without State intervention, in a liberal and flexible way, or with laws established based on the understanding that there are flaws and inequality in labor market relationships that need to be mitigated through regulation and intervention. Thus, as there is no convergence between theoretical approaches, studies available in the literature also disclosed the lack of consensus about the protection vs. flexibility debate. Given the arguments against and pro flexibility and, based on the herein proposed multidimensional labor market protection index, it is possible addressing the assumptions below.

According to the MLPI ranking, there are either developed or developing countries among those presenting the most protective legislations. Similarly, the indicator shows that protection is heterogeneously split among different regions in the world. However, it is interesting noticing that the most developed countries are among the most protective ones (above the average). Assumingly, would the outcome supposed to be the opposite, since protection has been theoretically addressed as a need resulting from market flaws? Developed countries, at first, have more efficient markets. Have protective legislations effectively been a governmental measure used to improve the allocation of manpower available in the country and to seek full employment? Or, has it only resulted from workers' organization in unions, associations, among others, to protect those who actually get to be inserted in the labor market?

The answer to such questions demands further studies, since the current one aimed at building the indicator and at proposing its potential applications in both future research and public policies. The comparative analyses, for example, showed that eight of the nine socioeconomic variables - correlated to the protection indicator - recommended the protective legislation; only one variable recommended the flexible legislation. Accordingly, from the human development and economic growth viewpoint, the comparative criteria adopted in the present article pointed out the protective labor legislation as the most adequate one.

Finally, MLPI opens room for broadening the understanding about the labor market relationship with other social and economic indicators. These indicators can be compared to workers' remuneration, work productivity and well-being levels in future studies, for example. Besides, it is worth having analyses related to market structure that are in place in the countries' market, such as economic freedom and factors associated with the prevailing macro-economic policies.

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