UNDERSTANDING THE DRIVERS OF MINIMUM WAGE-SETTING: AN ANALYSIS OF 146 COUNTRIES

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Abstract

The current body of knowledge regarding statutory minimum wages ((S)MWs) addresses issues such as employment effects, median - minimum wage ratios (Kaitz index), and wage-setting mechanisms. In contrast, hardly any studies classify the issues with which MW rates are connected. This paper aims to do so by clustering such issues into dimensions, using a new database, the WageIndicator Minimum Wage Database. Currently this database contains 14,362 MW rates from 146 countries: 11 without SMW, 62 single rate-MWs and 73 multiple rate-MWs. Concerning the number of MW rates, India goes on top with 7,783 rates, followed by Ecuador (2,179 rates), Pakistan (1,426), and Sri Lanka (943). Countries' MW setting has been positioned on four dimensions: full versus partial coverage (66% of countries have full coverage); purchasing power policies (13% include the relevant geographical breakdown); mimicking collective bargaining (32% of countries), and differentiating MW rates according to special groups (37%). We found that the purchasing power dimension goes along with both full coverage and mimicking collective bargaining, but full coverage dimension is negatively associated with the mimicking bargaining dimension.

Keywords: minimum wages, 146 countries, collective bargaining, purchasing power, special groups

WageIndicator.org

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1 Introduction

Minimum wage (MW) setting varies largely across countries. A few overview studies have elaborated on this variety, like a study of eight Asian countries and eight European countries or country groupings focusing on wage-setting institutions, collective bargaining and economic development (Van Klaveren *et al.*, 2015). The ICTWSS database on industrial relations provides a coding scheme as to capture the institutional variety in wage-setting processes (Visser, 2016). Based on country-level measurement of legal systems, ICTWSS classifies countries' minimum wage setting, though several authors have argued that the current coding scheme does not sufficiently capture the reality of wage setting processes in the world in full (Besamusca, 2019; Tijdens, 2017). In addition to country-level measurement, characteristics of minimum wage-setting have to be reconstructed that come to grips with the dimensions of minimum wages issued, among other things distinguishing countries issuing one minimum wage rate from countries issuing multiple rates. The authors are convinced that such a reconstruction may well take our understanding of drivers and features of minimum wage-setting around the world a step further. Therefore, a database is needed capturing the development of MWs in a large number of countries going beyond current databases that register just one MW rate per country per year.

This paper aims to explore three research objectives:

1) Is a database available registering the minimum wage rates for many countries that allows researching such a classification?
2) Does the database reveal whether countries apply a full coverage dimension, whether they apply a purchasing power dimension through the regional differentiation of MW rates, whether they are mimicking collective bargaining patterns by differentiating MW rates according to industries or occupations, or whether they contain a dimension of differentiating MWs for specific groups of workers?
3) Do countries apply one dimension only, are dimension mutually exclusive or do they overlap?

Section 2 in this paper scrutinizes existing databases and present the coming into being of the WageIndicator Minimum Wage Database. Section 3 explores whether the MW setting of countries relates to the four dimensions. Section 4 studies the overlaps between dimensions, and Section 5 draws conclusions.

2 The WageIndicator Minimum Wages Database

Overview of MW databases

Databases with information about Minimum Wages fall apart into two categories, notably those databases that classify wage-setting processes and those that present MW rates. The

first category comprises of databases such as the ICTWSS database, the ILO ratification database, EURWORK from EUROFOUND, and the WageIndicator Labour Law database.

The databases presenting MW rates include the Worldbank database, the OECD databases and the WSI-Mindestlohndatenbank International, as well as some databases that contain rates for a given period of time that do not intend to be continuously updated, such as MACHEquity and the ILO Global Wage Database underlying ILO's Global Wage Reports. All these databases present only one MW rate per country per year. Moreover, most cover only a restricted set of countries. However, the reality of MW setting is that many countries have multiple rates, which are specified according to a range of criteria (dimensions). Thus, databases containing one rate per country can only bring about a partial view on the results of minimum wage-setting processes. For understanding minimum wage-setting policies across countries, a fine-grained database is needed. The WageIndicator Minimum Wages Database, here abbreviated as WageIndicator MWDB, meets this need, and herefore, this study will use this database. The next paragraphs explain the database.

The history of the WageIndicator Minimum Wages Database

The history of WageIndicator dates back to 2000, when its first website with free job-related content started in the Netherlands. From 2004 onwards, national WageIndicator websites in many other countries were launched. Concerning the publication of minimum wages, developments in India were decisive. In 2005, the website www.Paycheck.in started in that country. From the start onwards, the Indian team received minimum wage-related questions from web visitors. Every state in India has room to review and revise MW rates based on factors such as costs of living, regional industries' capacity to pay MW rates, et cetera. Hence, the Indian MW rates are complex and not easily accessible whereas some Indian states publish their Minimum Wage Notification in regional languages only. Against this backdrop, from 2006 onwards the Indian WageIndicator team started collecting MW rates. The team took up contact with the Labor Ministry in each state with a request to hand over these rates. Soon the MW pages became one of the most frequently visited sections on the Paycheck website, thereby substantially increasing its web traffic. By 2015 www.Paycheck.in had become the leading website in India covering all legal MWs, broken down per state and per occupation, and updated regularly (Varkkey and Korde, 2012; Varkkey and Mehta, 2015).

In view of the Indian success story, the WageIndicator Foundation decided to collect MW information for other countries and post these on the national websites as well as on the overall WageIndicator website wageindicator.org. It was also observed that not just for India, but for many other WageIndicator countries, MW data was scarce and its accessibility often close to nil. This was in particular the case for countries with multiple MW rates. Complex structures, lack of accessibility, vast diversity, inaccurate or outdated data, all gave an impetus to roll out the MW inventory from India to all WageIndicator countries (Varkkey and Mehta, 2015; Varkkey et al. 2016). For example, from 2010 on MW rates were posted on the South African WageIndicator website, giving rise to the most popular webpages in the

national WageIndicator website. Similarly, the MW pages in Indonesia made the WageIndicator website in that country an instant success. In January 2012, the MW pages in South Africa registered 13,000 visits, in Indonesia 17,000, and in Belarus even 39,000. Increasingly, Facebook and other social media were used for communication with web visitors. National WageIndicator web managers uploaded the MW webpages through Plone, the open source Content Management System (CMS) used in the WageIndicator system. To keep track of MW rates, the data was also archived in Excel sheets. Already at an early stage, the MW data was used in publications, like those on minimum wages and women's work (Van Klaveren and Tijdens, 2011; 2012: Ch. 8).

Over the years, as the number of countries with a national WageIndicator website increased, the need became urgent to harmonize the MW webpages, to keep track of updating and to manage data of more than 80 countries. A database management system was required which could ease the process of storing, modifying and extracting information. In 2013 this web-based system, called COBRA, was built, facilitating the data-entry and the publication of webpages for the national websites in the national languages and for the WageIndicator home page in English (cf. Tijdens and Mehta, 2016).

In 2018, COBRA needed a technical update. Additionally, the minimum wage rates of India and the USA that had not been entered before into COBRA because of their complexity, had to be included. Also, no historical database was available. The first author of this paper drafted a systems design for the software developers to develop new WageIndicator MWDB. This MWDB is in Excel format and contains minimum wage rates, their units[1], their start dates and – when available – end dates, and their descriptions. The software generates webpages in the national WageIndicator websites. Each month, the websites of all MW issuers are checked as to whether the rates have been updated. If so, old rates in the WageIndicator MWDB are replaced with new ones. The software also generates a monthly database dump in CSV format of the minimum wages valid in that month. These monthly dumps are merged into annual datasets, through which the development of the rates can be traced. In May 2019, the WageIndicator MWDB contained information for 14,362 MW's in 146 countries. By the end of 2019, this database will include MW data of almost all countries in the world.

Selection of countries

The WageIndicator MWDB currently holds information for 146 countries, including so-called territories.[2] The database contains rates for all but seven of the 50 most populated countries[3]; for the 51th to 100th most populated countries another four are missing[4], and for the 101th to

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[1] This refers to the pay period: per hour, per day, per week, per month, or whatever pay period the issuer has defined.
[2] These are Hong Kong (China), New Caledonia (France), Puerto Rico (U.S.), Taiwan.
[3] These are Iran, Thailand, Sudan, Iraq, Saudi Arabia, Afghanistan, Yemen.
[4] These are North Korea, Syria, Somalia, United Arab Emirates.

150th most populated countries another thirteen are missing.[5] The countries not included in the database are predominantly countries in war zones or with unaccessible information. The 2017 population of the 146 countries included reached 7.08 billion, or 93% of total world population of 7.55 billion.[6]

The database also includes five territories for which MW rates are set by the USA, notably Guam, Mariana Islands, Puerto Rico, Samoa US, and Virgin Islands. The same applies to New Caledonia, which is a territory of France, and for HongKong, ruled by China.

Defining a Minimum Wage category

The WageIndicator MWDB shows minimum wages for each category as specified by the issuing authorities, be it the government, the Ministry of Labour or a Wage Board. In some countries many categories may be specified, some of which very detailed. For example, the MW rates in India are specified by state whereas within states they can be specified by industry, and further by area and next by skill level. Table 1 provides an example of three MW categories.

Table 1   Example of Minimum Wage categories in one state in India

Description	Unit	Rate
Arunachal Pradesh	Cement Industry	Area I	Skilled	Total per Day	220 Rupees
Arunachal Pradesh	Cement Industry	Area I	Semi-skilled	Total per Day	210 Rupees
Arunachal Pradesh	Cement Industry	Area I	Unskilled	Total per Day	200 Rupees

Source: WageIndicator Minimum Wage Database, 2019

Other countries may set one rate for a group of occupations. In Ecuador, for example, in the agricultural workers in the industry "Agriculture and plantations / Coffee plantations destined for export" the following occupations are subject to one MW rate: "seed processor, sower, harvester, picker, transplanting tool, pruning tool; and other cultural tasks". In contrast, in other countries one MW rate may be specified for one occupation only.

Minimum Wage categories by country

As said, the WageIndicator MWDB currently contains information about 146 countries. This includes 11 countries (8% of all) without a MW, in alphabetical order: Cuba, Denmark, Finland, Italy, La Reunion, Norway, Singapore, South Sudan, Sweden, Uruguay, and Zimbabwe. Another 62 countries have one SMW (43%). Four countries have one MW but that MW targets only a specific group, for example Namibia with just one MW for domestic workers. The remaining 73 countries (50%) have multiple MW categories. Of these, 62 countries have between 2 and 99 different categories while the remaining 11 countries have more than 100 categories: see Table 2.

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[5]   These are Armenia, Bosnia and Herzegovina, Eritrea, Georgia, Kuwait, Laos, Lebanon, Libya, Mauritania, Moldova, Palestine, Oman, Qatar.

[6]   Based on the UN population statistics 2017, see 2017 https://en.wikipedia.org/wiki/List_of_countries_by_population_(United_Nations) , accessed 20190521

Table 2   Countries by number of MW categories

Classification	No. of countries
No MW	11
One national SMW	62
1-10 MW categories	45
11-100 MW categories	17
> 100 MW categories	11
Total	146

Source: WageIndicator Minimum Wages Database 2019_May, Country level aggregate data N=146

Table 3 shows the 11 countries with over 100 different MW rates. With 7,783 rates, India alone takes more than half of all MW categories. In 2019, the number of Indian MW categories has been reduced, because by January 1, 2019, the state of Arunachal Pradesh reduced the number of categories from 168 defined by industry and skill level per industry to 10 defined by skill level and years of service only.

It may be added that three countries have MW rates for piece work, notably Ecuador, India, and Sri Lanka. In Ecuador 304 of the 2179 MW categories refer to piece work (14%). In India, this holds for 217 out of 7,783 categories (2%); in Sri Lanka only two of 943 categories refer to piece work.

Table 3   Eleven countries with more than 100 MW categories

Country	MW category	Column %	Country	MW category	Column %
India	7783	54.2	Panama	184	1.3
Ecuador	2179	15.2	Fiji	183	1.3
Pakistan	1426	9.9	South Africa	130	0.9
Sri Lanka	943	6.6	Mexico	120	0.8
Indonesia	287	2.0	China	102	0.7
USA	189	1.3	**Total**	**14362**	**100.0**

Source: WageIndicator Minimum Wages Database 2019_May, N=14362

3   The four Minimum Wage dimensions

Research Objective 2 took as a starting point that countries could follow four dimensions with regard to their MW setting: full versus partial coverage; purchasing power policies; mimicking collective bargaining; and addressing specific groups of workers. This section explores these four dimensions, using data from the WageIndicator MWDB. For these analysis, we exclude the 11 countries without a Statutory Minimum Wage, and limit our analysis to 135 countries.

The full coverage dimension

This section addresses whether all workers in dependent employment are covered by the respective MWs of their countries. We classified countries accordingly. Of course, countries with one national MW have been rated 'full coverage'. This is, for example, the case for USA, Australia, and Argentina. Complications arose in considering countries with multiple categories yet without one general MW. Chad, for example, has two MW categories, "Agricultural sector and similar" and "Non-agricultural sector". We have classified this

country as having full MW coverage, similar to Malawi with its two categories "Urban" and "Rural". Burundi has also two MW categories, for "Bujumbura, Gitega" and for "Rural areas". In the latter case we were not sure whether these two categories covered the whole country, and therefore we classified Burundi as having 'partial coverage'. Another case in point is that of New Caledonia, specifying a General Minimum Wage (SMG) and a - substantially lower – Minimum Wage for Agricultural workers (SMAG); we have rated this country as having full coverage. We encountered similar problems for other countries. For instance, Guatemala has three MW categories, for "Agriculture", "Non-Agricultural Activities", and "Export activity and maquiladora". We wondered whether these three categories covered the dependent workforce at large, and decided that this was indeed the case. Latvia, by contrast, has two categories, "Minimum Wage of Full-time Employees" and "Minimum hourly rate for teenagers and employees who are subject to particular risks". This suggests that part-time employees have no MW coverage, and thus we classified Latvia under 'partial coverage'. Even the use of the wording 'general Minimum Wage' does not always ensure full coverage. For example, the Republic of Congo calls the national MW a general MW, but that is only applicable to the public sector. Hence, this country is classified as having partial coverage. Table 4 shows the result of the classification: 104 of 135 countries (77%) have full coverage.

Table 4   Country division according to the full coverage dimension

Full coverage dimension	No. of countries	Column %
Full coverage	104	77.0%
Partial coverage	31	23.0%
Total	135	100.0%

Source: WageIndicator Minimum Wages Database 2019_May, country aggregate N=135

The purchasing power dimension

Quite some countries follow the policy that the minimum wage should keep track of the country's inflation, or the increase of the Consumer Price Index (CPI), thus maintaining the purchasing power of the dependent workforce. The level and development of purchasing power may vary in large countries. We define MW-issuers that take this into account as following purchasing power (PP) policies. We distinguish two types of such policies. The first relates to uprating policies: do these include a PP policy? We were not able to measure the incidence of such policies to the full, in particular because they could not be classified adequately for countries with multiple MW rates.

The second type of PP policies addresses whether within-country differences in the level and development of purchasing power have been taken into account. We define any country with differentiated MW categories according to regional areas as having a geographically differentiated PP policy. This can include a simple dichotomy between 'urban' and 'rural', like in the cases of Malawi and Burundi, but it may also include differentiation by province, like in Japan, or differentiation for specific cities. We find 16 countries with such a geographical differentiation, of which nine among the 15 countries with the largest population: Bangladesh; China; India; Indonesia; Japan; Pakistan; Philippines; Vietnam, and

USA. By contrast, six of these 15 countries do not contain a regionally differentiated dimension: Brasil; Egypt; Ethiopia; Mexico; Nigeria, and the Russian Federation. Among the less populous countries, Portugal diffentiates the MW for its islands in the Atlantic Ocean, whereas Switzerland has a regional MW set in two of 26 cantons only.

Table 5   Country division according to the purchasing power dimension

Purchasing power dimension	No. of countries	Column %
Regional breakdown	16	11.9%
No regional breakdown	119	88.1%
Total	135	100.0%

Source: WageIndicator Minimum Wages Database 2019_May, country aggregate N=135

The collective bargaining mimicking dimension

We assume that countries addressing specific industries or occupations in their MW categories are mimicking their own collective bargaining patterns. Quite some MW categories include specifications according to occupation or industry, either very detailed or as a broad category. Yet, if the MW category specified rather an industry than an occupational group, we did not classify this as an occupation. For example, we classify the category "Hospitality and transportation workers" (USA) as an industry. MW categories that referred to a skill category or a grade without an additional occupational specification are not classified by occupation. Yet, categories referring to occupations, like "Clerical - Grade III - 1st year", are classified as an occupational category. Admittedly, the distinction between industry and occupation is often rather subtle. For example, for Panama we classify "Law firms, accounting and auditing" as an industry and "Lawyers (national)" as an occupation. "General workers" are not considered an occupation, but "Agricultural workers" and "Casual workers" are. Trainees are not classified as an occupation. Of course, occupations and industries can strongly overlap; for example, we classify a MW category "Private Security Guard Services" as an industry, but "Private Security Guard" as an occupation.

In the WageIndicator MWDB, 22 countries specify MW categories for occupations and 38 countries specify MW categories by industry, of wich 17 countries do both. Hence, 43 of 135 countries are mimicking collective bargaining (31.9%).

Table 6   Country division according to the collective bargaining mimicking dimension

Collective bargaining mimicking dimension	No. of countries	No. of countries	Column %
Breakdown by occupation only		22	
Breakdown by industry only		38	
Breakdown by industry and occupation		17	
Breakdown by industry or occupation	43		32%
No breakdown by industry or occupation	92		68%
Total	135		100%

Source: WageIndicator Minimum Wages Database 2019_May, country aggregate N=135

The special interest groups dimension

When coding the database, quite a number of MWs related to special interest groups showed up. Five countries have MW categories specifically for (workers in) Economic Processing Zones (EPZs), 13 have categories for domestic workers, 10 for youth Minimum Wages, two

for disabled workers, 12 for skill level, and 10 have categories referring to firm size. Overall, the MWs of 98 countries do not address any special group, 25 address one special group, 10 address two special groups, and the MW of one country (Lesotho) addresses even three groups. In the Appendix we have detailed the outcomes for the special interest groups dimension.

Table 7   Division of countries according to minimum wages addressing the five special interest groups

Topic	Nr	Countries
EPZ	5	Guatemala, India, Mauritius, Mexico, Panama
Domestic workers	13	Argentina, Botswana, Haiti, India, Kenya, Lesotho, Namibia, Nepal, South Africa, Spain, Eswatini, Tanzania, Zambia
Age groups	10	Australia, Sri Lanka, Greece, Ireland, Luxembourg, Malta, Netherlands, New Zealand, United Kingdom, USA
Disabled workers	2	Austria, Czech Republic
Skill level	12	Bangladesh, Sri Lanka, Costa Rica, Fiji, India, Kenya, Lesotho, Liberia, Luxembourg, Mauritius, Pakistan, Eswatini
Firm size	10	Honduras, India, Lesotho, Mozambique, Panama, South Africa, Suriname, Tanzania, USA, Virgin Islands

Source: WageIndicator Minimum Wages Database 2019_May, N=14362

4 Relationships between dimensions

The third research objective raised the issue whether the dimensions, detailed in the previous section, are mutually exclusive or overlapping. This section discusses the relationships between the four dimensions. Of the 135 countries under scrutiny, 82 address one dimension, 35 two dimensions, 13 three dimensions and three address all four dimensions, while one country does not address any dimension. With 104 countries, the full coverage dimension shows up as by far most frequent, but one-fifth of these 104 countries also address a second or third dimension. With 43 countries the incidence of countries mimicking collective bargaining ranks second. Approximately half of these countries also have a full coverage dimension. The special interest groups dimension ranks third with 37 countries, of which slightly over half also has a full coverage dimension. The purchasing power dimension is only found in 16 countries, of which more than two-thirds also has a full coverage dimension. For one country, Togo, no rating in any of the four classifications applies. Togo has 14 MW categories for manual workers in six grades, for supervisors in four grades and for managers also in four grades, but these categories remain outside the classification of the four dimensions.

Table 8 depicts the correlations between the four dimensions. Clearly, full coverage relates very negatively to policies of mimicking collective bargaining, and – though to a much lesser extent - to the special interest groups dimension. Purchasing power policies do not significantly relate to any of the other three dimensions while mimicking bargaining relates positively and significantly to the special groups dimension.

Table 8   Correlations between variables in the four dimensions

Dimensions	Full coverage		Purchasing power		Mimicking bargaining	
Purchasing power	-0.07	ns				
Mimicking bargaining	-0.50	***	0.12	ns		
Special groups	-0.30	***	0.08	ns	0.40	***

Source: WageIndicator Minimum Wages Database 2019_May, country aggregate N=135 (excluding countries without MW)
*Note: Pearson Correlation and 2-tailed significance, *** p<0.01, ** p<0.05; * p<0.10*

When exploring the four dimensions in greater detail and tracing their incidence as regards continents, Table 9 indicates that the full coverage dimension shows up most frequently in Europe (88%), closely followed by Asia and South America, and least so in North America. The purchasing power dimension is most often found in Asia (31%), and not at all in South America and Oceania. The mimicking bargaining dimension occurs most frequently in North America (48%) and least so in Europe. The special groups dimension can most frequently be found again in North America (53%), with Oceania ranking second and Europe, South America and Africa closing the ranks.

Table 9   Percentage of countries by continent applying the four dimensions

Continent	Full coverage	Purchasing power	Mimicking bargaining	Special groups	No. of countries
Africa	69%	10%	40%	26%	42
Asia	85%	31%	19%	19%	26
Europe	88%	6%	18%	24%	33
North America	60%	13%	73%	53%	15
South America	82%	0%	36%	18%	11
Oceania	75%	0%	38%	38%	8
Total	77%	12%	32%	27%	135

Source: WageIndicator Minimum Wages Database 2019_May, country aggregate N=135 (excluding countries without MW)

Table 10 shows the incidence of the four dimensions classified along the four (per capita gross national) income groups since 2017 used by the World Bank. The full coverage dimension is mostly found in the high income category: 88% of the countries in this group apply this dimension. With 22% and 47% respectively, the purchasing power and the mimicking bargaining dimensions show up most frequently in the lower middle income group; as an example, in this group the purchasing power dimension relates to India, Indonesia and Pakistan, and the mimicking bargaining dimension to India and Pakistan. The purchasing power dimension remains quite rare (3%) in the upper middle income group, and the mimicking bargaining dimension has the lowest incidence (26%) in the high income group. By contrast, the latter group shows the highest score (33%) for the special groups dimension; this dimension was least found in the low income group (20%).

Table 10   Percentage of countries applying the four dimensions by the country's income group (2017 income)

Income group	Full coverage	Purchasing power	Mimicking bargaining	Special groups	No. of countries
Low income	68%	12%	32%	20%	25
Lower middle income	69%	22%	47%	28%	32
Upper middle income	77%	3%	34%	26%	35
High income	88%	12%	26%	33%	43
Total	77%	12%	32%	27%	135

Source: WageIndicator Minimum Wages Database 2019_May, country aggregate N=135 (excluding countries without MW)

Table 11 depicts the incidence of the four dimensions according to a division of the countries' population size. The full coverage dimension is most often found in the group with 50 – 100

million inhabitants (91%). With a 100% score, the purchasing power dimension is most prominent among the largest size category (that is, in China and India), whereas this dimension is absent in the country group with the smallest population (each less than 5 million). The mimicking bargaining dimension is most frequently found in the group of countries with 100 – 500 million inhabitants (55%).

Table 11   Percentage of countries applying the four dimensions by the country's population group (2017 population)

Population group	Full coverage	Purchasing power	Mimicking bargaining	Special groups	No. of countries
> 500 mln	50%	100%	50%	50%	2
100 - 500 mln	82%	55%	55%	36%	11
50 - 100 mln	91%	18%	18%	27%	11
10 - 50 mln	80%	10%	38%	26%	50
5 - 10 mln	68%	5%	27%	5%	22
< 5 mln	74%	0%	31%	38%	39
Total	77%	12%	34%	27%	135

Source: WageIndicator Minimum Wages Database 2019_May, country aggregate N=135 (excluding countries without MW)

Multivariate analysis shows that the incidence of full coverage is negatively associated with the mimicking bargaining dimension. Neither continent nor population is associated with full coverage but income country group is. The lowest income group, compared to the other income groups, has a higher chance of not applying the full coverage dimension.

The incidence of countries applying a purchasing power dimension is neither associated significantly with the other three dimensions nor with continent, income group, or population. The incidence of countries applying the mimicking bargaining dimension reveals a significant, negative association with the full coverage dimension, and a positive one with the special group dimension. Continent, income group and population do not contribute. The incidence of countries applying the special group dimension is associated positively with the mimicking bargaining dimension, but not with the other dimensions. Continent, income group and population do not contribute.

5   Conclusions

The objectives of this paper are to analyse the dimensions of MW setting, derived from MW rates as issued by governments, wage boards or other authorities. The MW rates and their descriptions could be classified according to a list of criteria. In total 14,362 MW categories for 135 countries have been analyzed using the WageIndicator Minimum Wages Database (MWDB). Our classification allowed to reconstruct four MW dimensions: do these countries apply full coverage, purchasing power, mimicking collective bargaining or special interest group policies? We found that MW in 104 of these 135 countries could be classified along the full coverage dimension (77%). While classifying geographical differentiation, it turned out that MW in 16 countries could be classified along the purchasing power dimension, of which nine among the 15 countries with the largest population (12%). Classifying MWs for industries or occupations, it turned out that 43 countries could be classified along the

mimicking collective bargaining dimension (32%). Classifying MWs for specific groups of workers, notably for workers in Economic Processing Zones (EPZs), domestic workers, youth workers, disabled workers, workers with different skill levels, and workers in firms of different sizes, it turned out that 37 countries could be classified along the special interest group dimension (27%). Of the 135 countries under scrutiny, 82 address one dimension, 35 two dimensions, 13 three dimensions and three address all four dimensions, while one country does not address any dimension. Multivariate analysis shows that the incidence of full coverage is negatively associated with the mimicking bargaining dimension.

This paper is the first publication that explores the WageIndicator Minimum Wages Database (MWDB). Towards the end of 2019 this database aims to cover almost all countries of the world, growing from the current 146 countries to 180 or 190 countries, depending on the accessibility of the country's minimum wage issuing authorities. By then, the first annual database will be released, with monthly rates of all MW categories included in the database. An additional effort will be undertaken to reconstruct 2017 and 2018 annual releases with monthly MW rates, using the WageIndicator COBRA database with rates until 2018. Another additional effort aims at bringing the occupations in the MW categories in line with the international ISCO08 classification of occupations, similar to what has already been achieved as to fit the industries into the NACE/ISIC industry classification. Further research aims to include analyses of the updating frequencies; the annual increases in MW rates; the ratio of the lowest/highest MW rates for countries with multiple rates; the rates of special groups in relation to a MW reference group in the country (to be defined), as well as an exploration of the relationships between the MW data gathered and external data, such as the WageIndicator Living Wages database or the ICTWSS database and the latter's global classification of the MW fixing machinery.

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7 Appendix: The special interest groups

MW rates for Export Processing Zones (EPZs)

Minimum Wage categories for Export Processing Zones (EPZs) have been classified as such if terms like EPZs, Free Trade Zones (FTZs), Special Economic Zones (SEZs), Maquiladores, or similar were used. Table 12 shows that five countries in the WageIndicator MWDB have specific MW for EPZs. Mexico stands out. Before 2019 this country had 60 occupation-specific MW categories. In 2019 however, MWs were considered to be too different between EPZ on the one hand and the rest of the country on the other, and therefore the Mexican administration added MW categories for EPZs by simply doubling the number of 60 categories.

Table 12   Countries with MWs for EPZs, number of categories, and percentage of all categories

Country	EPZ	TOTAL	%	Country	EPZ	TOTAL	%
Guatemala	1	3	33.3%	Mexico	60	120	50.0%
India	7	7783	0.1%	Panama	7	184	3.8%
Mauritius	2	2	100.0%	**TOTAL**	**77**	**14362**	**0.5%**

Source: WageIndicator Minimum Wages Database 2019_May, N=14362

MW rates for domestic workers

Minimum Wage categories for domestic workers have been defined as categories that explicitly and solely address domestic workers. In case the MW category included domestic workers as part of a bunch of occupations, we did not include this category in the definition. For example one MW category in Pakistan includes the following list: "Unskilled worker", "Chowkidar / Watchman", "Domestic Servant", "Labourer / Peon / Naib Qasid", "Qasid / Sweeper", "Water Carrier". Table 13 shows that 13 countries have MWs for domestic workers.

In total, 53 of the 14,362 MW categories adress domestic workers (0.4%). Argentina stands out, because the country has one general national rate and five different rates for domestic workers, notably for supervisor, house-maid, support and care taker, staff for general tasks and staff for specific tasks. The table shows that India has even 27 different rates for domestic workers, which means that in almost all states the domestic workers are subject to a separate MW rate. South Africa differentiates between domestic workers who work 27 ordinary hours per week or less and those who work more than 27 hours per week, for two different regional categories. Tanzania, in contrast, differentiates for the status of the employer, notably domestic workers employed by entitled officers, by diplomats and potential businessmen, by other categories of employers who are not residing in the household of the employer, and the remaining group of domestic workers. Two countries, Namibia and Nepal, even have only one MW solely addressing domestic workers. A group of predominantly African countries has one or two rates specifically addressing domestic workers.

Table 13   Countries with MWs for domestic workers, number of categories, and percentage of all categories

Country	Dom-w	TOTAL	%	Country	Dom-w	TOTAL	%
Argentina	5	6	83.3%	Nepal	1	1	100.0%
Botswana	1	10	10.0%	South Africa	4	130	3.1%
Haiti	1	7	14.3%	Spain	1	3	33.3%
India	27	7783	0.3%	Eswatini	1	3	33.3%
Kenya	4	55	7.3%	Tanzania	4	31	12.9%
Lesotho	2	41	4.9%	Zambia	1	44	2.3%
Namibia	1	1	100.0%	**TOTAL**	**53**	**14362**	**0.4%**

Source: WageIndicator Minimum Wages Database 2019_May, N=14362

MW rates for young workers

Ten countries have included a reference to the workers' age in one or more MW categories: see Table 14. The Netherlands stands out, because that country's MW setting has MW rates distinguished for workers aged 15, 16, 17, 18, 19, 20, 21 years of age, and 22 years or older, with rates also depending on the standard working week agreed in the applicable collective agreement (36, 38 of 40 hours). No other country has youth MWs laid down in such great detail. Most common in youth MWs is a break at 18 years of age. Sri Lanka, for example, has 30 MW categories in which age is specified, notably in the Printing Trade, where 15 MW categories are specified for "Class D Workers: Unskilled workers not under 18 years of age; Class F Workers: Watchers", ranging from 1st to 15th year of experience, and similarly "Class E Workers: Unskilled workers under 18 year of age", and this group remarkably also ranges from 1st to 15th year of experience. The United Kingdom has five MW categories: 17 year or younger, 18-20 year, 21-24 year, 25 year and older, and a apprentices rate: under 19 years or in the first year of training. Greece distinguishes between workers 24 years or younger and 25 years and older: the oldest age break in this respect.

Table 14   Countries with MWs for age groups, number of categories, and percentage of all categories

Country	Age	TOTAL	%	Country	Age	TOTAL	%
Australia	6	12	50.0%	Netherlands	85	85	100.0%
Sri Lanka	30	943	3.2%	New Zealand	2	3	66.7%
Greece	1	4	25.0%	UK	5	5	100.0%
Ireland	4	4	100.0%	USA	1	189	0.5%
Luxembourg	4	4	100.0%				
Malta	3	3	100.0%	**TOTAL**	**141**	**14362**	**0.9%**

Source: WageIndicator Minimum Wages Database 2019_May, N=14362

MW rates by skill level

In the MW setting of 12 countries skill levels are important: see Table 15. We distinguished four skill levels, from unskilled, semi-skilled, to skilled and highly skilled: wording widely used in legal texts in the 12 countries. A few other countries use narratives, which may also indicate skill level differences, such as Grades or Ranks. Unfortunately, we are unable to translate such wording into the four skill levels. Therefore, Table 15 only refers to countries that explicitly use words refering to the four skill levels. Four countries set MWs for unskilled workers only (Kenya, Lesotho, Liberia, and Mauritius). One country sets MW for the skilled only (Eswatini). Another five countries do so for two skill levels (unskilled and

either semi-skilled or skilled): Bangladesh, Fiji, Kenya, and Luxembourg. One country (Sri Lanka) distinguishes three skill levels, excluding the highly skilled. The remaining three countries (Costa Rica, India and Pakistan) differentiate MW rates for four skill levels. The skill level differentiation is particularly important in India, where 6,018 of 7,783 MW rates (77%) refer to skill levels. In Pakistan this is the case for 808 of 1,426 MW rates (57%), and in Sri Lanka for 370 of 943 MW rates (39%).

Table 15   Countries with MWs for skill groups, number of categories, and percentage of all categories

Country	Skill	TOTAL	%	Country	Skill	TOTAL	%
Bangladesh	6	8	75.0%	Liberia	1	2	50.0%
Sri Lanka	370	943	39.2%	Luxembourg	4	4	100.0%
Costa Rica	6	14	42.9%	Mauritius	2	2	100.0%
Fiji	13	183	7.1%	Eswatini	1	3	33.3%
India	6018	7783	77.3%	Pakistan	808	1426	56.7%
Kenya	10	55	18.2%				
Lesotho	2	41	4.9%	**TOTAL**	**7241**	**14362**	**50.4%**

Source: WageIndicator Minimum Wages Database 2019_May, N=14362

MW rates by firm size

Some MW categories include specifications regarding firm size, either by indicating an exact number of employees, e.g. companies with 11 or more employees, by indicating a size category, e.g. small and large businesses, or by referring to the company's turnover, e.g. employers with gross annual sales less than $110,000. In for example Panama, a category "Hotel with more than 200 rooms" has been specified, which we classified as a large company. Table 16 shows that 10 countries have MWs referring to firm size. In Honduras this is the case for all MW categories in the country, whereas other countries specify only a few categories according to firm size. The most common distinction is that for firms with less then 10 employees, 11-50 employees, and over 50 employees.

Table 16   Countries with MWs regarding firm size, number of categories, and percentage of all categories

Country	firm size	TOTAL	%	Country	firm size	TOTAL	%
Honduras	40	40	100.0%	Suriname	1	4	25.0%
India	4	7783	0.1%	Tanzania	2	31	6.5%
Lesotho	2	41	4.9%	USA	21	189	11.1%
Mozambique	2	16	12.5%	Virgin Islands	2	3	66.7%
Panama	36	184	19.6%				
South Africa	2	130	1.5%	**TOTAL**	**112**	**14362**	**0.8%**

Source: WageIndicator Minimum Wages Database 2019_May, N=14362