



Ease of Doing Business Score and Ease of Doing Business Ranking

The *Doing Business* report presents results for two aggregate measures: the ease of doing business score (formerly called the distance to frontier score) and the ease of doing business ranking, which is based on the ease of doing business score. The ease of doing business ranking compares economies with one another; the ease of doing business score benchmarks economies with respect to regulatory best practice, showing the absolute distance to the best regulatory performance on each *Doing Business* indicator. When compared across years, the ease of doing business score shows how much the regulatory environment for local entrepreneurs in an economy has changed over time in absolute terms, while the ease of doing business ranking can show only how much the regulatory environment has changed relative to that in other economies.

EASE OF DOING BUSINESS SCORE

The ease of doing business score captures the gap between an economy's performance and a measure of best practice across the entire sample of 41 indicators for 10 *Doing Business* topics (the labor market regulation indicators are excluded). For starting a business, for example, New Zealand and Georgia have the lowest number of procedures required (1). New Zealand also holds the shortest time to start a business (0.5 days), while Slovenia has the lowest cost (0.0). Australia, Colombia and 115 other economies have no paid-in minimum capital requirement (table 9.1).

Calculation of the ease of doing business score

Calculating the ease of doing business score for each economy involves two main steps. In the first step individual

component indicators are normalized to a common unit where each of the 41 component indicators y (except for the total tax and contribution rate) is rescaled using the linear transformation $(\text{worst} - y)/(\text{worst} - \text{best})$. In this formulation the highest score represents the best regulatory performance on the indicator across all economies since 2005 or the third year in which data for the indicator were collected. Both the best regulatory performance and the worst regulatory performance are established every five years based on the *Doing Business* data for the year in which they are established and remain at that level for the five years regardless of any changes in data in interim years. Thus an economy may establish the best regulatory performance for an indicator even though it may not have the highest score in a subsequent year. Conversely, an economy may score higher than the best regulatory performance if the

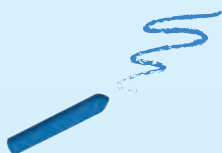


TABLE 9.1 Which economies set the best regulatory performance?

Topic and indicator	Economy establishing best regulatory performance	Best regulatory performance	Worst regulatory performance
Starting a business			
Procedures (number)	Georgia; New Zealand	1	18 ^a
Time (days)	New Zealand	0.5	100 ^b
Cost (% of income per capita)	Slovenia	0.0	200.0 ^b
Minimum capital (% of income per capita)	Australia; Colombia ^c	0.0	400.0 ^b
Dealing with construction permits			
Procedures (number)	No economy was a best performer as of May 1, 2018.	5	30 ^a
Time (days)	No economy was a best performer as of May 1, 2018.	26	373 ^b
Cost (% of warehouse value)	No economy was a best performer as of May 1, 2018.	0.0	20.0 ^b
Building quality control index (0–15)	Luxembourg; New Zealand; United Arab Emirates	15	0 ^d
Getting electricity			
Procedures (number)	Germany; Republic of Korea; United Kingdom ^e	3	9 ^a
Time (days)	Republic of Korea; St. Kitts and Nevis; United Arab Emirates	18	248 ^b
Cost (% of income per capita)	China; Japan; United Arab Emirates	0.0	8,100.0 ^b
Reliability of supply and transparency of tariffs index (0–8)	Belgium; Ireland; Malaysia ^f	8	0 ^d
Registering property			
Procedures (number)	Georgia; Norway; Portugal; Sweden	1	13 ^a
Time (days)	Georgia; New Zealand	1	210 ^b
Cost (% of property value)	Saudi Arabia	0.0	15.0 ^b
Quality of land administration index (0–30)	No economy has reached the best performance yet.	30	0 ^d
Getting credit			
Strength of legal rights index (0–12)	Montenegro; Puerto Rico (U.S.) ^g	12	0 ^d
Depth of credit information index (0–8)	Ecuador; United Kingdom ^h	8	0 ^d
Protecting minority investors			
Extent of disclosure index (0–10)	China; Malaysia ⁱ	10	0 ^d
Extent of director liability index (0–10)	Cambodia; Kenya	10	0 ^d
Ease of shareholder suits index (0–10)	Djibouti	10	0 ^d
Extent of shareholder rights index (0–10)	India; Kazakhstan	10	0 ^d
Extent of ownership and control index (0–10)	No economy has reached the best performance yet.	10	0 ^d
Extent of corporate transparency index (0–10)	Azerbaijan; France; Lithuania; Norway; Saudi Arabia; Taiwan, China	10	0 ^d
Paying taxes			
Payments (number per year)	Hong Kong SAR, China; Saudi Arabia	3	63 ^b
Time (hours per year)	Singapore	49 ^j	696 ^b
Total tax and contribution rate (% of profit)	Canada; Singapore ^k	26.1 ^l	84.0 ^b
Postfiling index (0–100)	No economy with both CIT and VAT has reached the best performance yet.	100	0
Time to comply with VAT refund (hours)	Croatia; Netherlands ^m	0	50 ^b
Time to obtain VAT refund (weeks)	Austria; Estonia	3.2	55 ^b
Time to comply with corporate income tax correction (hours)	Lithuania; Portugal ⁿ	1.5	56 ^b
Time to complete a corporate income tax correction (weeks)	Sweden; United States ^o	No CIT audit	32 ^b

(continued)

TABLE 9.1 Which economies set the best regulatory performance? (continued)

Topic and indicator	Economy establishing best regulatory performance	Best regulatory performance	Worst regulatory performance
Trading across borders			
<i>Time to export</i>			
Documentary compliance (hours)	Canada; Poland; Spain ^a	1 ^a	170 ^b
Border compliance (hours)	Austria; Belgium; Hong Kong SAR, China ^c	1 ^a	160 ^b
<i>Cost to export</i>			
Documentary compliance (US\$)	Hungary; Luxembourg; Norway ^d	0	400 ^b
Border compliance (US\$)	France; Netherlands; Portugal ^e	0	1,060 ^b
<i>Time to import</i>			
Documentary compliance (hours)	Republic of Korea; Latvia; Malta ^f	1 ^a	240 ^b
Border compliance (hours)	Bulgaria; France; Germany ^g	1 ^a	280 ^b
<i>Cost to import</i>			
Documentary compliance (US\$)	Iceland; Latvia; United Kingdom ^h	0	700 ^b
Border compliance (US\$)	Armenia; Denmark; Estonia ⁱ	0	1,200 ^b
Enforcing contracts			
Time (days)	No economy was a best performer as of May 1, 2018.	120	1,340 ^b
Cost (% of claim)	No economy was a best performer as of May 1, 2018.	0.1	89.0 ^b
Quality of judicial processes index (0–18)	No economy has reached the best performance yet.	18	0 ^d
Resolving insolvency			
Recovery rate (cents on the dollar)	No economy was a best performer as of May 1, 2018.	92.9	0 ^d
Strength of insolvency framework index (0–16)	No economy has reached the best performance yet.	16	0 ^d

Source: *Doing Business* database.

a. Worst performance is defined as the 99th percentile among all economies in the *Doing Business* sample.

b. Worst performance is defined as the 95th percentile among all economies in the *Doing Business* sample.

c. Another 115 economies also have a paid-in minimum capital requirement of 0.0.

d. Worst performance is the worst value recorded.

e. In 23 other economies it takes no more than 3 procedures to get an electricity connection.

f. Another 24 economies score 8 out of 8 on the reliability of supply and transparency of tariffs index.

g. Three additional economies score 12 out of 12 on the strength of legal rights index.

h. Another 40 economies score 8 out of 8 on the depth of credit information index.

i. Another 11 economies score 10 out of 10 on the extent of disclosure index.

j. Defined as the lowest time recorded among all economies in the *Doing Business* sample that levy the three major taxes: profit tax, labor taxes and mandatory contributions, and VAT or sales tax.

k. Another 30 economies have a total tax and contribution rate equal to or lower than 26.1% of profit.

l. Defined as the highest total tax and contribution rate among the 15% of economies with the lowest total tax and contribution rate in the *Doing Business* sample for all years included in the analysis up to and including *Doing Business 2015*.

m. Another eight economies also have a compliance time for VAT refund of 0 hours.

n. Another 11 economies also have a compliance time for corporate income tax audit of no more than 1.5 hours.

o. Another 94 economies also do not impose a corporate income tax audit.

p. Another 23 economies also have a documentary compliance time to export of no more than 1 hour.

q. Defined as 1 hour even though in many economies the time is less.

r. Another 16 economies also have a border compliance time to export of no more than 1 hour.

s. Another 17 economies also have a documentary compliance cost to export of 0.0.

t. Another 16 economies also have a border compliance cost to export of 0.0.

u. Another 27 economies also have a documentary compliance time to import of no more than 1 hour.

v. Another 22 economies also have a border compliance time to import of no more than 1 hour.

w. Another 27 economies also have a documentary compliance cost to import of 0.0.

x. Another 25 economies also have a border compliance cost to import of 0.0.

economy reforms after the best regulatory performance is set. For example, the best regulatory performance for the time to get electricity is set at 18 days. In the Republic of Korea it now takes 13 days to get electricity while in the United Arab Emirates it takes just 10 days. Although the two economies have different times, both economies score 100 on the time to get electricity because they have exceeded the threshold of 18 days.

For scores such as those on the strength of legal rights index or the quality of land administration index, the best regulatory performance is set at the highest possible value (although no economy has yet reached that value in the case of the latter). For the total tax and contribution rate, consistent with the use of a threshold in calculating the rankings on this indicator, the best regulatory performance is defined as the total tax and contribution rate at the 15th percentile of the overall distribution for all years included in the analysis up to and including *Doing Business 2015*. For the time to pay taxes, the best regulatory performance is defined as the lowest time recorded among all economies that levy the three major taxes: profit tax, labor taxes and mandatory contributions, and value added tax (VAT) or sales tax. For the different times to trade across borders, the best regulatory performance is defined as 1 hour even though in many economies the time is less than that.

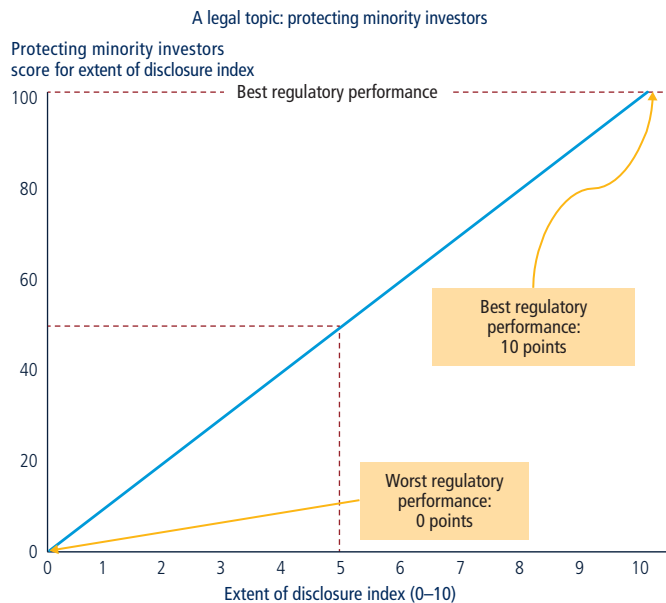
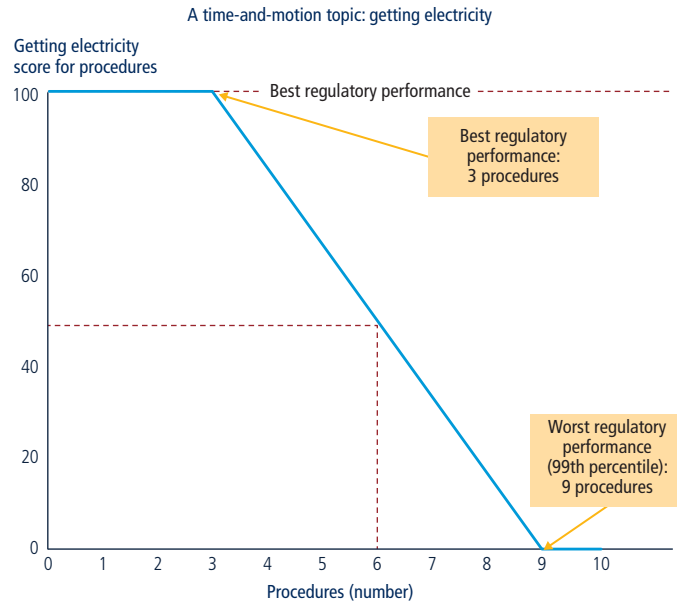
In the same formulation, to mitigate the effects of extreme outliers in the distributions of the rescaled data for most component indicators (very few economies need 700 days to complete the procedures to start a business, but many need 9 days), the worst performance is calculated after the removal of outliers. The definition of outliers is based on the distribution for each component indicator. To simplify the process two rules were defined: the 95th percentile is used for the indicators with the most dispersed distributions (including minimum capital,

number of payments to pay taxes, and the time and cost indicators), and the 99th percentile is used for number of procedures. No outlier is removed for component indicators bound by definition or construction, including legal index scores (such as the depth of credit information index, extent of disclosure index

and strength of insolvency framework index) and the recovery rate (figure 9.1).

In the second step for calculating the ease of doing business score, the scores obtained for individual indicators for each economy are aggregated through simple averaging into one score, first

FIGURE 9.1 How are scores calculated for indicators?



Source: *Doing Business* database.

for each topic and then across all 10 topics: starting a business, dealing with construction permits, getting electricity, registering property, getting credit, protecting minority investors, paying taxes, trading across borders, enforcing contracts and resolving insolvency. More complex aggregation methods—such as principal components and unobserved components—yield a ranking nearly identical to the simple average used by *Doing Business*.¹ Thus *Doing Business* uses the simplest method: weighting all topics equally and, within each topic, giving equal weight to each of the topic components.²

An economy's score is indicated on a scale from 0 to 100, where 0 represents the worst regulatory performance and 100 the best regulatory performance. All score calculations are based on a maximum of five decimals. However, topic ranking calculations and the ease of doing business ranking calculations are based on two decimals.

The difference between an economy's score in any previous year and its score in *Doing Business 2019* illustrates the extent to which the economy has closed the gap between its score and the best regulatory performance over time. In any given year the score measures how far an economy is from the best regulatory performance at that time.

Treatment of the total tax and contribution rate

The total tax and contribution rate component of the paying taxes topic enters the score calculation in a different way than any other indicator. The score obtained for the total tax and contribution rate is transformed in a nonlinear fashion before it enters the score for paying taxes. As a result of the nonlinear transformation, an increase in the total tax and contribution rate has a smaller impact on the score for the total tax and contribution rate—and therefore on the score for paying taxes—for economies with a below-average total

tax and contribution rate than it would have had before this approach was adopted in *Doing Business 2015* (line B is smaller than line A in figure 9.2). And for economies with an extreme total tax and contribution rate (a rate that is very high relative to the average), an increase has a greater impact on both these scores than it would have had before (line D is bigger than line C in figure 9.2).

The nonlinear transformation is not based on any economic theory of an “optimal tax rate” that minimizes distortions or maximizes efficiency in an economy's overall tax system. Instead, it is mainly empirical in nature. The nonlinear transformation along with the threshold reduces the bias in the indicator toward economies that do not need to levy significant taxes on companies like the *Doing Business* standardized case study company because they raise public revenue in other ways—for example, through taxes on foreign companies, through taxes on sectors other than manufacturing or from natural resources (all of which are outside the scope of the methodology). In addition, it

acknowledges the need of economies to collect taxes from firms.

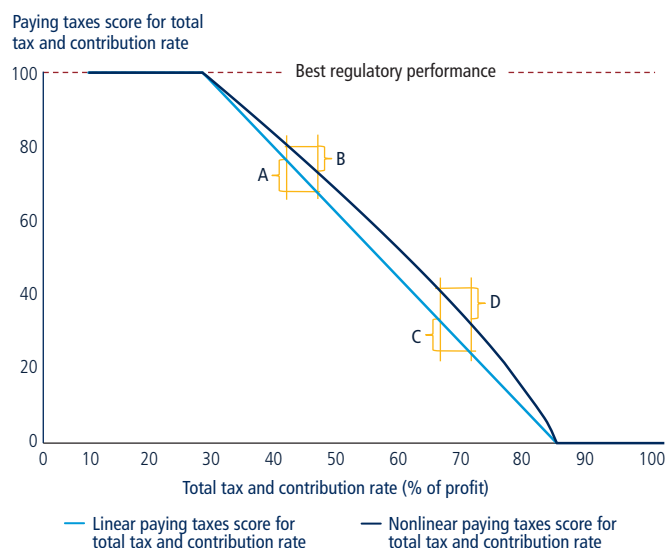
Calculation of scores for economies with two cities covered

For each of the 11 economies in which *Doing Business* collects data for the second largest business city as well as the largest one, the score is calculated as the population-weighted average of the scores for these two cities (table 9.2). This is done for the aggregate ease of doing business score, the scores for each topic and the scores for all the component indicators for each topic.

Variability of economies' scores across topics

Each *Doing Business* topic measures a different aspect of the business regulatory environment. The scores and associated rankings of an economy can vary, sometimes significantly, across topics. The average correlation coefficient between the 10 topics included in the aggregate ease of doing business score is 0.49, and the coefficients

FIGURE 9.2 How the nonlinear transformation affects the paying taxes score for the total tax and contribution rate



Source: *Doing Business* database.

Note: The nonlinear paying taxes score for the total tax and contribution rate is equal to the paying taxes score for the total tax and contribution rate to the power of 0.8.

TABLE 9.2 Weights used in calculating the scores for economies with two cities covered

Economy	City	Weight (%)
Bangladesh	Dhaka	78
	Chittagong	22
Brazil	São Paulo	61
	Rio de Janeiro	39
China	Shanghai	55
	Beijing	45
India	Mumbai	47
	Delhi	53
Indonesia	Jakarta	78
	Surabaya	22
Japan	Tokyo	65
	Osaka	35
Mexico	Mexico City	83
	Monterrey	17
Nigeria	Lagos	77
	Kano	23
Pakistan	Karachi	65
	Lahore	35
Russian Federation	Moscow	70
	St. Petersburg	30
United States	New York City	60
	Los Angeles	40

Source: United Nations, Department of Economic and Social Affairs, Population Division, World Urbanization Prospects, 2014 Revision, "File 12: Population of Urban Agglomerations with 300,000 Inhabitants or More in 2014, by Country, 1950–2030 (thousands)," <http://esa.un.org/unpd/wup/CD-ROM/Default.aspx>.

between 2 topics range from 0.34 (between getting credit and paying taxes) to 0.63 (between getting electricity and trading across borders; and also between dealing with construction permits and getting electricity). These correlations suggest that economies rarely score universally well or universally badly on *Doing Business* topics (table 9.3).

Consider the example of Portugal. Its aggregate ease of doing business score is 76.55. It scores 90.89 for starting a business and 100.00 for trading across borders, but only 60.00 for protecting minority investors and 45.00 for getting credit.

Figure 2.1 in the chapter About *Doing Business* illustrates the degree of variability for each economy's performance across the different areas of business regulation covered by *Doing Business*. The figure draws attention to economies with a particularly uneven performance by showing, for each economy, the distance between the average of its highest three scores and the average of its lowest three across the 10 topics included in this year's aggregate ease of doing business score. While a relatively small distance between these two averages suggests a broadly consistent approach across the areas of business regulation measured by *Doing Business*, a relatively large distance suggests a more uneven approach, with greater room for improvement in some areas than in others.

Variation in performance across topics is not at all unusual. It reflects differences in the degree of priority that government authorities give to particular areas of business regulation reform and in the ability of different government agencies to deliver tangible results in their area of responsibility.

Change in the score gap

Many topics use the magnitude of the change in their score gap to classify changes as reforms. The change in the score gap is defined as $(\text{score}^{\text{prior year}} - \text{score}^{\text{current year}}) / (100 - \text{score}^{\text{prior year}})$, where "score" is the aggregate score for the specific topic. For indicators using macroeconomic variables, such as the cost of starting a business as a percentage of income per capita, the macroeconomic data for the prior year are used to control for exogenous factors such as a change in income per capita. For example, in 2017/18 Algeria reduced the time to trade across borders, resulting in an improvement in Algeria's aggregate score for trading across borders from 27.74 to 38.43. This reduced the score gap for Algeria by $(27.74 - 38.43) / (100 - 27.74)$ or 14.79% on trading across borders in *Doing Business 2019*. For a complete discussion of the methodology

for classifying changes as reforms, see the data notes.

Economies improving the most across three or more *Doing Business* topics in 2017/18

Doing Business 2019 uses a simple method to calculate which economies improved the ease of doing business the most. First, it selects the economies that in 2017/18 implemented regulatory reforms making it easier to do business in three or more of the 10 topics included in this year's aggregate ease of doing business score.³ Forty-six economies meet this criterion: Afghanistan; Armenia; Azerbaijan; Brazil; Brunei Darussalam; Burundi; Chad; China; the Democratic Republic of Congo; Côte d'Ivoire; Djibouti; the Arab Republic of Egypt; Ethiopia; France; Gabon; Georgia; Guinea; India; Indonesia; Jordan; Kazakhstan; Kenya; Kosovo; the Kyrgyz Republic; Lithuania; Madagascar; Malaysia; Mauritania; Mauritius; Morocco; Niger; Nigeria; Pakistan; the Russian Federation; Rwanda; Saudi Arabia; Sri Lanka; Sudan; Thailand; Togo; Tunisia; Turkey; the United Arab Emirates; Uzbekistan; Vietnam; and Zimbabwe. Second, *Doing Business* sorts these economies on the increase in their ease of doing business score over the previous year and the scores for both years are calculated using the same macroeconomic data (such as income per capita and currency conversion rates) to remove the effect of changes in these variables.

Selecting the economies that implemented regulatory reforms in at least three topics and had the biggest improvements in their ease of doing business scores is intended to highlight economies with ongoing, broad-based reform programs. The improvement in the ease of doing business score is used to identify the top improvers because this allows a focus on the absolute improvement—in contrast with the relative improvement shown by a change in rankings—that economies have made in their regulatory environment for business.

TABLE 9.3 Correlations between economy scores for *Doing Business* topics

	Dealing with construction permits	Getting electricity	Registering property	Getting credit	Protecting minority investors	Paying taxes	Trading across borders	Enforcing contracts	Resolving insolvency
Starting a business	0.49	0.51	0.40	0.40	0.58	0.54	0.42	0.38	0.49
Dealing with construction permits		0.63	0.48	0.41	0.46	0.46	0.51	0.39	0.41
Getting electricity			0.50	0.45	0.52	0.57	0.63	0.51	0.56
Registering property				0.47	0.53	0.51	0.51	0.61	0.53
Getting credit					0.56	0.34	0.42	0.38	0.53
Protecting minority investors						0.48	0.42	0.47	0.61
Paying taxes							0.55	0.50	0.44
Trading across borders								0.50	0.55
Enforcing contracts									0.46

Source: *Doing Business* database.

EASE OF DOING BUSINESS RANKING

The ease of doing business ranking ranges from 1 to 190. The ranking of economies is determined by sorting the aggregate ease of doing business scores, rounded to two decimals.

NOTES

1. See Djankov and others 2005. Principal components and unobserved components methods yield a ranking nearly identical to that from the simple average method because both these methods assign roughly equal weights to the topics, since the pairwise correlations among topics do not differ much. An alternative to the simple average method is to give different weights to the topics, depending on which are considered of more or less importance in the context of a specific economy.
2. For getting credit, indicators are weighted proportionally, according to their contribution to the total score, with a weight of 60% assigned to the strength of legal rights index and 40% to the depth of credit information index. Indicators for all other topics are assigned equal weights.
3. Changes making it more difficult to do business are subtracted from the total number of those making it easier to do business.