

DISTANCE TO FRONTIER AND EASE OF DOING BUSINESS RANKING

This year's report presents results for 2 aggregate measures: the distance to frontier score and the ease of doing business ranking, which for the first time this year is based on the distance to frontier score. The ease of doing business ranking compares economies with one another; the distance to frontier score benchmarks economies with respect to regulatory best practice, showing the absolute distance to the best performance on each *Doing Business* indicator. When compared across years, the distance to frontier 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.

Distance to Frontier

The distance to frontier score captures the gap between an economy's performance and a measure of best practice across the entire sample of 31 indicators for 10 *Doing Business* topics (the labor market regulation indicators are excluded). For starting a business, for example, Canada and New Zealand have the smallest number of procedures required (1), and New Zealand the shortest time to fulfill them (0.5 days). Slovenia has the lowest cost (0.0), and Australia, Colombia and 110 other economies have no paid-in minimum capital requirement (table 15.1 in the *Doing Business 2015* report).

Calculation of the distance to frontier score

Calculating the distance to frontier score for each economy involves 2 main steps. First, individual component indicators are normalized to a common unit where each of the 31 component indicators y (except for the total tax rate) is rescaled using the linear transformation $(\text{worst} - y)/(\text{worst} - \text{frontier})$. In this formulation the frontier represents the best performance on the indicator across all economies since 2005 or the third year after data for the indicator were collected for the first time. For legal indicators such as those on getting credit or protecting minority investors, the frontier is set at the highest possible value. For the total tax rate, consistent with the use of a threshold in calculating the rankings on this indicator, the frontier is

defined as the total tax rate at the 15th percentile of the overall distribution for all years included in the analysis. For the time to pay taxes the frontier is defined as the lowest time recorded among all economies that levy the 3 major taxes: profit tax, labor taxes and mandatory contributions, and value added tax (VAT) or sales tax. In addition, the cost to export and cost to import for each year are divided by the GDP deflator, to take the general price level into account when benchmarking these absolute-cost indicators across economies with different inflation trends. The base year for the deflator is 2013 for all economies.

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, 2 rules were defined: the 95th percentile is used for the indicators with the most dispersed distributions (including time, cost, minimum capital and number of payments to pay taxes), and the 99th percentile is used for number of procedures and number of documents to trade. No outlier was removed for component indicators bound by definition or construction, including legal index scores (such as the depth of credit information index, extent of conflict of interest regulation index and strength of insolvency framework index) and the recovery rate (figure 15.1 in the *Doing Business 2015* report).

Second, for each economy the scores obtained for individual indicators are aggregated through simple averaging into one distance to frontier score, first 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*⁶. Thus *Doing Business* uses the simplest

⁶ See Djankov, Manraj and others (2005). Principal components and unobserved components methods yield a ranking nearly identical to