
THE COMMITMENT TO REDUCING INEQUALITY INDEX

Methodology

Oxfam and Development Finance International have designed a Commitment to Reducing Inequality (CRI) Index, ranking 152 countries for their policy performance on social spending, progressive taxation and labour rights. This document describes in detail the principles behind the Index, the methodology used to construct it, and the many data sources which have been used.

This methodology note should be read in conjunction with the main report and the web-based datasheet. Further details and clarifications are available from Matthew Martin at Development Finance International or Max Lawson at Oxfam International.

1 INDEX CONSTRUCTION

The Commitment to Reducing Inequality (CRI) Index was constructed following a comprehensive data gathering exercise between May 2016 and April 2017. The Index is calculated for 152 countries, using approximately 21 different data points for each country, which are used to calculate eight different indicators, organized into three pillars. Other countries have not been included in the index because they lacked sufficient data for at least one indicator for each pillar. This methodology note describes in detail the data sources used for each pillar. This section describes the basic principles behind the Index and its overall construction.

Core to developing this index was a lengthy and detailed data collection exercise using a wide range of data sources. Each individual data point has been referenced in an accompanying detailed data file and was triple checked by DFI staff. A systematic random checking process was carried out by the Oxfam Research Team. Oxfam country offices also reviewed the data used for their country, in some cases providing more up-to-date data where appropriate, with these additional data sources also referenced.

The challenges faced during the data gathering and checking processes have led us to make strong policy recommendations in the report for better, more accessible data on inequality and government policies, so that the public, academics and civil society can interrogate outcomes and policies.

Despite this data validation process, we expect that in a database of more than 3,000 data points there may be a few errors. We encourage scrutiny of the details of the database and feedback on any individual data points where there may be a mistake.

The Index was reviewed by the Joint Research Centre of the European Commission. Following this initial review, several adjustments were made to the methodology in line with best practice in constructing composite indicators. This was followed by a statistical audit of the final Index which is available as a separate appendix [LINK] to the Commitment to Reducing Inequality report. The JRC concluded that the CRI is robust statistically, and is ‘paving the way towards a monitoring framework that can help identify weaknesses and best practices in governments’ efforts to reduce the gap between rich and poor’.

Rescaling

Each of the 21 data points is measured on a different scale; therefore in order to construct the Index we converted all of the data to a 0–1 scale using the MIN/MAX standardization formula, either before or after combining data points within an indicator, depending on the structure of each indicator. After standardization, 0 is the lowest score for progressivity and 1 is the highest. The maximum and minimum values were the highest and lowest scores achieved by the sample of countries in the Index, and therefore a score of 0 and 1 are awarded to the worst and best performers in the sample respectively.

Weighting

Figure 1 presents the constituent data points for each of the pillars of the Index. Each pillar is derived from a different number of data points and as such, the contribution (or weight) that each data point makes to the overall score for the pillar varies, as discussed in the following sections which look at the pillars in more detail.

Figure 1: The constituent data points used to construct the CRI and their implicit weights

Progressivity of Spending [S]	Progressivity of Tax [T]	Progressivity of Labour policies [L]
S.1A Health as % spending S.1B Education as % spending S.1C Social protection as % spending S.2A Spending on each sector as % GDP S.2B Incidence of spending on the Gini	T.1A PIT rate + thresholds T.1B CIT rate T.1C VAT rate + exemptions T.2A Revenue from each tax as % GDP T.2B Incidence of tax on the Gini T.3A Tax productivity T.3B Tax effort compared with potential	L.1A Workers and labour union rights deflated by: (L.X) informality (L.Y) unemployment L.2A Legal protection for women – pay L.2B Legal protection for women – discrimination L.2C Maternity leave L.3A Minimum wage L.3B GDP per capita
[S.1] 50% [S.2] 50%	[T.1] 33% [T.2] 33% [T.3] 33%	[L.1] 33% Deflated [L.2] 33% Deflated [L.3] 33%

$$\frac{\sqrt{\text{Progressivity of spending} \times \text{progressivity of tax} \times 2 + \text{Progressivity of labour}}}{3}$$

Commitment to Reducing Inequality (CRI) Index

Aggregation

After each data point is standardized, Figure 1 illustrates how the data points are combined and averaged so that each country is given a score on a scale of 0–1 for each of the three pillars. The scores for each pillar were then standardized to the 0-1 scale so that each pillar carried approximately the same weight in the overall Index. This was following the recommendation from the COIN review of the Index and in line with the methodology used by other composite indices such as the Human Development Index.¹

We have also allowed for the fact that while both tax and spending can be individually progressive, a greater commitment to reducing inequality is demonstrated when both tax and spending act together. To reflect this in the Index, we have multiplied the spending score by the tax score, to capture this interaction.

The CRI assumes that spending, tax and labour market policies are of equal importance to a country's commitment to reducing inequality. So that each of the tax, spending and labour market pillars counts for approximately one-third of the overall CRI score, we take the square root of this interaction term, in order to restore it to the order of magnitude of the scores given by each individual pillar. The final CRI score is therefore made up of two-thirds the square root value of the interaction term (counting once for the spending pillar and once for the tax pillar) and one-third the score for the labour pillar, as shown in the formula in Figure 1.

2 THE SPENDING PILLAR [S]

There is a wide body of work which shows – including via various benefit incidence analyses – that social spending by governments on public education and health services and on social protection has a strong impact on reducing inequality.² The spending pillar seeks to measure a government's commitment to investing in these key progressive sectors and the effectiveness with which they are using this spending to reduce inequality. It is comprised of two indicators: government spending on progressive sectors as a percentage of total government spending, and the incidence of spending on the Gini coefficient. Each indicator contributes 50% of the score for this pillar.

2.1 Government spending on progressive sectors as a % total spending [S.1]

This indicator analyses the share of total government spending allocated to education, health and social protection respectively. This is a measure of the scale of spending in each country. There are various ways that the amount spent on each sector could be represented, such as percentage of GDP, spending per capita, or as a share of the budget. The authors chose to measure this using the share of the budget. This is because using either percentage of GDP or per capita would have sharply favoured wealthier countries, as this also depends on country capacity to mobilize revenue (which is closely related to national income). This is considered the most useful indicator of governments' own *commitment* to spending. The percentage of total government spending allocated to the sectors is therefore a better indicator, because regardless of the level of revenue mobilized, it shows how much of the tax and aid funds which pass through government budgets is allocated to sectors which reduce inequality.

Across the three sectors, data have been chosen which provide information on *public spending via government budgets* (i.e. not counting private spending or large off-budget aid commitments). Specifically, we have used 'general government' or 'non-financial public sector' spending (i.e. aggregating different levels of central and local government and social security funds) and have excluded out of pocket (OOP) expenditure by citizens and off-budget aid, as these do not reflect a government's commitment – and indeed OOP/privatization may increase inequality.³

Each sector is analysed separately. The country with the highest share of spending in each of the sectors will score a maximum of 1 for that sector and the country with the lowest share of spending will score 0. The score for this indicator is a straight average of the standardized scores for each of the three sectors.

DATA POINT S.1A and S.1B: Health and education spending

Data are available for all 152 countries. Health data are for 2014 or 2015 for 141 countries; 2013 for 8; 2012 for Mexico and Nigeria; and 2008 for Trinidad and Tobago. Education data are slightly older: 119 countries have data for 2014–15; 25 for between 2011 and 2013; and 8 for between 2008 and 2010 (Algeria, Antigua and Barbuda, Botswana, Egypt, Morocco, Namibia, St Vincent and the Grenadines, and Trinidad and Tobago). Countries where post-2008 data were not available have been excluded from the Index). All of the sources are updated annually, frequently enough for future indexes.

Data are almost entirely drawn from a range of comparably calculated sources. The Government Spending Watch database (www.governmentspendingwatch.org) which covers 78 countries for 2015 from budget documents for all low-income countries (LICs), almost all low- and middle-income countries (LMICs) and a few upper middle-income countries (UMICs). Data for the other countries is from secondary sources which also cover general government spending sourced from budgets (Asian Development Bank, CEPAL and OECD). For a number of countries, where data were unavailable from these sources, we used WHO Global Health Account data for health and UNESCO Institute of Statistics (UIS) for education; though these also include off-budget aid spending via public facilities.⁴ These global data sources were supplemented by national data from the countries themselves in some instances.

For LMICs, the data point measures planned/budgeted spending, because data on actual spending are delayed (available only for 2012–13). Data for higher income countries from other secondary sources tend to be actual or estimated spending. The difference in these data types is expected to be minimal, as for virtually all higher income countries there is very little difference between budgeted and actual spending. Clearly, the difference between the percentage of budgeted and actual spending could potentially mask shortfalls in spending implementation – but tests of spending shortfalls in LICs/LMICs indicate that (except for a few fragile states and during large economic crises) shortfalls tend to be less than 5%.⁵

DATA POINT S.1C: Social protection

ILO data are available for all 152 countries included in the Index. The latest ILO publication date is 2014, with the database containing pre-2014 data (in almost all cases 2010–12). Although there is a higher proportion of older data than for education and health, ILO is the best source of data for some countries, given that it has already screened data for comparability and quality. However, where more up-to-date data has been published by one of these sources, and it is comparable to the ILO data set, we have updated the country: this is the case for OECD countries, some Latin American countries via the CEPAL database and a handful of Asian countries with new Asian Development Bank data. The ILO World Social Protection report⁶ and corresponding data sets are updated every two years; the next one will be published later in 2017. It also intends to disaggregate contributory and non-contributory spending systematically across countries, which will improve the quality of the analysis that can be undertaken in the next edition of the CRI Index.

The data includes all public social security/social protection schemes or programmes, corresponding to the nine classes of benefits included in the Social Security (Minimum Standards) Convention (medical, sickness, unemployment, old-age, employment injury, family, maternity, invalidity and survivors), plus other income support and assistance programmes available to the poor, including conditional cash transfers.⁷ The data includes contributory social protection systems, because (as advised by the ILO) the weight of evidence suggests that in the vast majority of countries, they have an equalizing impact.⁸ We recognize that higher social protection spending in OECD countries might skew results, because wealthier countries (which have higher proportions

of pensioners in their populations) spend a higher proportion of the budget on social protection. Ideally, in future reports, social protection spending should be broken down into non-contributory and contributory, and an analysis carried out of how equality-enhancing each programme is. For three countries, it is limited to non-contributory (depending on the methodology used by the organizations from which ILO sources data), because they do not publish transfers to the contributory systems.

2.2 Incidence of spending on the Gini coefficient [S.2]

This indicator measures the impact of government spending commitments on inequality, based on the degree of progressivity of spending *within* each sector on inequality. Specifically it identifies the impact that extra spending on education, health and social protection has collectively on reducing/increasing the Gini coefficient produced by the 'market' (i.e. before government spending and tax is taken into account).

For 92 countries this is done by multiplying the total amount of spending as a share of GDP on each sector, by a standard global coefficient for each sector that predicts the impact that spending has on the Gini. The three sector results are then summed, to measure the total predicted impact of spending across all three sectors on the Gini. For 60 countries, individual national studies have been conducted which calculate the actual incidence of spending on the Gini.

The country with the largest decrease in the value of the Gini as a result of this spending scores a maximum of 1 for this indicator, and the country that achieves the smallest decrease scores 0.

DATA POINTS S.2A and S2B: Data on spending and incidence

For the 92 countries using the standard global coefficients, the data on the countries' spending on each sector as a % GDP (S.2A), is taken from the same data source as for data points used to construct S.1.

The standard global coefficients for the predicted impact of spending from each sector on the Gini have been extracted from a well-regarded global panel-based incidence study: Martinez-Vazquez et al. (2011).⁹ All the coefficients are negative, because an increase in spending would achieve a reduction in the Gini. As shown in the table below, the global panel data find that an increase in health spending is more powerful in reducing the Gini than an increase in education or social protection spending.

Table 1: Global coefficients for each sector

Sector	Education	Health	Social protection
Coefficient	-0.0013	-0.0070	-0.0014

For 60 countries, studies of the actual incidence of spending on Gini are used. The Commitment to Equity Institute (CEQ) at Tulane University, with which Oxfam has a partnership, has calculated the incidence based on spending in all three sectors for 28 developing countries.¹⁰ These studies are based on actual incidence on household income derived from analysis of the latest national household income surveys, for which the dates vary between 2010 and 2015. National analysis for a further 32 countries has been conducted by the OECD. However, the latest OECD study of the incidence of education and health spending dates from 2011 and uses 2007 data – though an updated version using 2014 data is due to be released at the end of 2017. We have therefore used the OECD incidence data only for social protection.¹¹

3 THE TAX PILLAR [T]

Governments have a variety of taxes they can use to raise the revenue needed to pay for public services and keep the government running. Depending on the type of tax and its design, the burden of tax will be felt by people from different income and wealth groups. As a result, the design

and implementation of taxes have an important and direct effect on inequality. This pillar seeks to measure the extent to which governments are committed to ensuring that the burden falls more on those who can afford it most. It is comprised of three indicators: progressivity of the tax structure, incidence of tax on the Gini coefficient and current tax collection. Each indicator contributes 33% of the score for this pillar.

There are many other indicators which could be used to look at tax progressivity. These have not been included due to current data limitations, but for many countries they are also important for fully understanding the progressivity of tax and are explored where possible with a qualitative analysis in the text. Particular issues that warrant further investigation for future versions of the Index include wealth taxes, appropriate taxation of extractive industries, the extent to which governments seek to combat gender inequality using tax, effective tax rates, tax exemptions and tax treaties.

One important measure of a government's commitment to fight inequality is the extent to which it operates as a tax haven, facilitating tax dodging and keeping profits and wealth secret from tax authorities around the world. As the data available to measure this aspect of tax policy is not available in a format which is consistent with the rest of the data in the index, we have not been able to include this as an indicator. However, given its centrality to economic inequality, we will be working to try and include it in future versions of the index. For this version, we have identified those countries on the index which Oxfam has identified in previous research to be the world's worst corporate tax havens and combined this with the scores given to each jurisdiction on the Financial Secrecy Index and tagged them for tax haven status.¹²

3.1 Tax structure [T.1]

This indicator measures the progressivity of the tax structure on paper, based on the rates and levels of different taxes in the country. Specifically, it assesses the progressivity of Personal Income Tax (PIT), Corporate Income Tax (CIT) and Value Added Tax (VAT). The indicator identifies countries with higher and more progressive direct tax rates and lower indirect tax rates (or exemptions for basic foods and high registration thresholds) as being those which are making more effort to set tax rules which are progressive. It also shows that there is a lot for many countries to do in terms of increasing very low or zero corporate and personal income tax rates, and reducing relatively high basic VAT rates,¹³ as well as setting higher minimum tax thresholds to exclude the poorest, and lower top tax rate thresholds for personal income tax to make sure the top 10% are adequately taxed.¹⁴

Ideally it would be desirable to assess additional types of taxes, notably those on wealth, financial assets, capital gains and land/real estate, which can be highly progressive.¹⁵ It would also be desirable to assess the rates of social security contributions, which are generally regressive. However, data for these (especially on their progressivity) are not available for most countries in the Index.

The progressivity of personal income taxes is calculated based on a simplified Kakwani index. The difference between the top and bottom tax rates is divided by the difference between the top and bottom tax thresholds (expressed as a % of per capita GDP), which tells us the rate of increase in the tax rate as income increases, for incomes in between the lowest and highest tax thresholds. It follows a simplified version of Duncan and Sabirianova (2008).¹⁶ However, we also sought to capture the fact that higher maximum rates of PIT and higher lowest rate thresholds which exempt the poor from paying PIT also make PIT more progressive. So the simplified Kakwani formula has been multiplied by the maximum tax rate and the minimum threshold to assess overall progressivity. Countries therefore score better on this indicator if the tax rate increases relatively quickly with income, as well as having high top tax rates and a high minimum threshold before incomes are subject to tax. Given the exponential pattern of scores, the log of this data was then used to calculate the standardized scores. In the cases of France and Ireland, additional 'social contributions' which are treated by their governments as personal taxes rather than social security contributions are included in the PIT calculation.

Corporate income taxes are simply ranked in order of their statutory % rate (as relatively few countries have progressive or differentiated CITs, and the main rate usually applies to the vast bulk of corporations which do not have tax holidays or special regimes).¹⁷ The highest CIT rate in the sample achieves the maximum score of 1.

VAT rates are ranked inversely in order of their levels, with the lowest VAT rate given the maximum score of 1, because VAT is assumed to be regressive. However, in line with actual incidence evidence, the score of each country is adjusted depending on whether each country a) exempts or applies a reduced rate to basic foodstuffs and b) applies a relatively high minimum threshold of ten times per capita GDP for VAT registration for small businesses. Both of these measures have been found to be pro-poor and together they have been found to cancel out the regressive effect of the VAT. We therefore discount the VAT score by 50% for exemption of basic foods (or a proportion of that if reduced rates are applied), and 50% for a high minimum threshold, such that the VAT rate falls to 0% if both are applied.

Each tax is analysed separately. The score for this indicator is a simple average of the standardized scores for each of the three sectors.

DATA POINTS T.1A, T.1B, T.1C: PIT, CIT and VAT rates

To assemble these data, DFI has conducted a major data collection exercise, drawing on national tax code documents, budget speeches, and accounting company tax guides (principally Ernst and Young and Deloitte),¹⁸ which have been found to be more recent than the database of the International Bureau on Fiscal Documentation.

As a result, it has been possible to collect current (2015) data for all countries in the sample (152), where necessary summing central and decentralized rates and identifying the extent of tax exemptions and minimum thresholds for VAT. It should be noted that for Switzerland and the USA, some taxes are a sum of the federal rate with the average of the rates applied across different cantons or states, and municipalities, weighted by the population, as supplied by the OECD.

It should be possible to collect such data every year, as the sources used in the current database update their data on an annual basis. Most of them are making major efforts to broaden the country coverage of their datasets and therefore the number of countries covered could easily expand over time.

3.2 Tax incidence [T.2]

This indicator measures the impact of government commitments to tax in a more or less progressive way based on the revenue collected from different types of taxation. Specifically it identifies the impact that tax revenue from Personal Income Tax, Corporate Income Tax, VAT, social security contributions and customs and excise duties has collectively on reducing/increasing the Gini coefficient produced by the 'market' (i.e. before government spending and tax are taken into account). This has been preferred over a simpler formulation like the split between direct and indirect taxes in each country, because there are large differences in progressivity among different direct and indirect taxes.

For 93 countries this is done by multiplying by the total revenue collected from each form of taxation as a % GDP, by a standard global coefficient for each tax that predicts the impact that tax has in the Gini. The results for all taxes are then summed, to measure the total predicted impact of tax on the Gini. For 59 countries, individual national studies have been conducted which calculate the actual incidence of tax on the Gini.

The country with the largest decrease in the value of the Gini as a result of this tax revenue scores a maximum of 1 for this indicator and the country that achieves the largest increase from regressive tax policy scores a zero.

DATA POINT T.2A and T.2B: Share of revenue from each tax type and tax coefficients

For the 93 countries using the standard global coefficients, the data on the countries' tax revenue by tax form was collected by DFI. This was a major data collection exercise, drawing on national budget, revenue authority and statistical documents; IMF Board documents; the CERDI/IMF database of African tax composition; the IMF MENA tax database; and the IMF WORLD and ICTD tax composition databases.¹⁹

However, there is one major exception to this positive picture: social security contributions (SSC). Whereas data collected by the OECD and for some countries on FERDI and ICTD specifically include SSCs, most IMF Board documents and the WORLD database do not. DFI has conducted an exhaustive search but has been able to identify data for only around 26 LIC/LMIC countries using budget documents and IMF country documents. As a result, SSC data, which is generally regressive (see coefficient in Table 2) are available for only 83 countries. Though this includes 85% of the countries with significant contributory systems, it means that a few countries (mainly Asian and African lower income countries and smaller states) which do not publish SSC data are presented as having slightly more progressive tax systems than they actually do. This is much less distortionary than excluding SSCs for all countries, as this would give a false picture of UMIC/HIC/larger country systems as being much more progressive than they really are.

The timeliness of the data varies slightly, but in 71 of 93 countries the data are for 2015 or 2014. Its replicability is in principle high: country budget and revenue documents, and IMF country-specific documents, are updated annually and the various worldwide databases quoted above are updated either annually or biennially.

The standard global coefficients for the predicted impact of tax revenue from each type of taxation on the Gini have been extracted from a well-regarded global panel-based incidence study: Martinez-Vazquez et al.²⁰ PIT is found to be progressive, reducing the Gini by 0.001; CIT should be progressive, but is broadly neutral once the effects of tax dodging and exemptions for larger corporations are included; customs and excise duties are somewhat regressive; and VAT and social security contributions very regressive. However, in line with the evidence that VAT can be made less regressive or neutral (see indicator T.1), where we find evidence of both exemptions and low thresholds the predicted impact on the Gini is neutralized to 0.

Table 2: Global coefficients for each tax

Tax	PIT	CIT	VAT	Customs	Excise	SSCs
Coefficient	-0.001	0.000	0.005	0.002	0.003	0.007

For those countries (currently 60) with recent tax incidence studies conducted by the OECD (32) or the CEQ (28),²¹ the actual findings of those studies on the impact of taxes on 'market' Ginis are used. The OECD provides country-specific data on how direct taxes (PIT) reduce income inequality, as measured by a change in the Gini from market (pre taxes and transfers) to disposable (post direct taxes and transfers) income inequality. The impact of indirect and CIT taxes is added on top using the global coefficients as described above. The CEQ data provides country-specific breakdown for the impact of different taxes, including indirect taxes. The impact of CIT is added on top using the global coefficients above. As with spending incidence, they are based on the latest national household income surveys, for which the dates vary between 2010 and 2015.²²

3.3 Tax collection [T.3]

This indicator measures whether countries are collecting as much tax as they should, to recognize that despite having progressive tax structures on paper, countries may fail to collect these taxes in practice. This indicator is also intrinsically important, because countries have committed in the Addis Ababa Agenda for Action for financing the SDGs, to making tax collection the main financing source for the anti-inequality spending in pillar 1.

Many methods have been suggested for assessing whether the tax revenue collected by countries is 'enough'. The simplest have proposed targets for revenue as a share of GDP for countries grouped by income, as in the drafts of the Addis Ababa Agenda for Action. However, these are generally regarded as inadequate, because they take no account of the widely different economic structures and revenue-raising potentials of countries within the same income group, and would therefore set some countries overambitious goals, while allowing others to make virtually no additional 'effort'.

We have used two complementary methods to assess tax collection effort more accurately.

- The first is a calculation of **tax 'productivity'** in each country. The amount of revenue collected from VAT, CIT and PIT respectively is compared against the amount that is predicted to be collected, based on the actual tax rates for each individual tax, and the size of the economy (or total value of private consumption in the case of VAT). The amount actually collected is then expressed as a percentage of the amount predicted to be collected. This shows how effective a country is at collecting tax, and therefore at overcoming tax avoidance and evasion. This method is very commonly used to compare tax collection effectiveness of countries.²³
- The second is a calculation of tax effort compared with the 'economic potential' for each country to collect taxes. This is based on robust indexes produced by the Centre d'Etudes et de Recherches sur le Développement International (CERDI) and the IMF and used in individual IMF country document analysis and regional economic outlooks (for example the Regional Economic Outlook for Africa in 2015). A country has a higher tax potential if it has a higher GDP per capita, but the potential is further adjusted by other variables which have been found to have a significant impact on countries' potential to collect tax, including: trade/GDP (which increases customs revenues); share of the agriculture sector in GDP (which reduces revenue because much of it is small-scale or informal, and even larger scale formal agriculture is often largely tax-exempt); education spending (which has been proven to increase taxpaying); the Gini coefficient (more equality increases taxpaying); inflation (lower inflation increases taxpaying); and corruption (higher perception of corruption reduces taxpaying). Consider two countries with a similar GDP: one would have a lower tax potential than the other if it had a larger agricultural sector, for example, which is more difficult to tax. This analysis has been found to be much more robust than GDP per capita in explaining tax potential and effort, and their results are used in this study. This analysis is also the basis of the formulations being used by the IMF in its tax advice to countries. It is important to note that these potential scores are therefore factoring in a series of structural constraints – constraints that can and should be overcome, for example, less corruption, more education spending. So these potential scores are not static, and a country can increase its tax potential and its tax take by addressing these structural constraints. Using these nationally specific tax potential benchmarks, we calculate the ratio of actual tax revenue collected compared with this figure for tax revenue potential.

To get an overall picture of how well each country is performing compared with the tax it should be collecting given its tax rates and its economic circumstances, each country's tax productivity score is multiplied by its effort/potential score. This has the effect of taking both types of gap equally into account and allows us to calculate the overall indicator for tax collection. This score is then standardized, such that a country that has the highest combined score for collecting the most tax compared with its potential and the estimates for administrative capacity is given a maximum progressive score of 1.

DATA POINT T.3A: Tax productivity

Tax productivity is calculated using tax rates, and tax collection amounts compared to GDP or private consumption. The amount of tax collected from each tax type was collected for data point T2.A (see above). The prevailing tax rates were collected for data point T1 (see above). Data from the IMF World Economic Outlook (WEO) database were used for GDP calculations. The World Bank's World Development Indicators (WDI) database was used for 'Household Final consumption expenditure'. Private consumption data are not available for 9 countries (Kiribati, Lesotho, Maldives, Myanmar, PNG, Samoa, São Tomé, Solomon Islands and Tuvalu), so for these we have

used GDP as a proxy but will make intensive efforts to gather consumption data from national statistical offices for future updates.

Given that some activities included in GDP would not be subject to CIT or PIT, this is only appropriate as a proxy to compare tax administration performance between countries, as opposed to as an absolute measure of performance. In future editions, we would seek to identify more appropriate estimates for the activity that would be subject to CIT and PIT, in order to improve the accuracy of this indicator.

In terms of replicability, all of the tax collection and tax rate data needed are produced annually, as already detailed under data points T1 and T2.A, WEO data are updated semiannually and WDI data annually, so all data will be available for future annual updates.

DATA POINT T.3B: Tax effort compared to potential

Data for this indicator are taken directly from the source studies. The CERDI study is the most recent, covers 92 countries and uses tax data up to 2014, so where possible we have used its findings. The IMF studies cover a further 53 countries, the data is slightly older (using data from 2011 and 2012), but efforts are underway by the IMF to update and respecify the calculations. We could use these new specifications in future reports, or conduct similar analysis independently for the next report. Seven countries have not been analyzed by any study, and no data are available. For these countries, we used the global average score for tax potential of 0.69 and multiplied this by the country-specific score for tax productivity. In terms of the replicability of this indicator, the IMF is intending to update and broaden the country coverage of its studies. Alternatively, the equations used (and other specifications if desired) could be rerun independently for future indexes and reports, if necessary.

3.4 Supplementary data point: Tax haven status

This data is to show whether countries are applying policies which lead them to be classified as tax havens, and are therefore responsible for reducing tax collection at home and abroad. Countries which offer tax haven advantages are generally undermining the collection of progressive corporate and personal income taxes.

In preparing the CRI we explored the possibility of including the extent to which a country is deemed to be a tax haven in our assessment of a country's tax system, and consider the negative spill over effects on other countries. Given its centrality to economic inequality, we are aiming to include tax haven status as an indicator in the next version of the index.

However, as the data for this area of policy is not currently consistent with the data used for the rest of the indicators, it is not possible to incorporate it into the Index itself and is therefore treated as a supplementary data point; we have tagged tax havens with a 'red flag' for tax haven status.

For this supplementary data point we have identified jurisdictions based on the list of corporate tax havens in Oxfam's recent report 'Tax Battles',²⁴ the list of countries that score worst in the *Financial Secrecy Index* produced by the Tax Justice Network and also from other institutions.²⁵ Several of the countries, such as Belgium and the Netherlands, currently do very well in the tax pillar of the CRI. Were their tax haven status included they would do a lot worse. The country that is at the top of the CRI tax pillar, Malta, would be nowhere near the top if we were able to factor in their role as a tax haven. Malta's behaviour as a tax haven has recently been exposed by a group of investigative journalists, in a case known as the *Malta Files* further underlining this.

4 THE LABOUR PILLAR [L]

In most countries, most income inequality can be explained by differences in market inequality; that is, the level of income inequality which is attributed to wages and other earnings before taxes and transfers. Governments can intervene in the labour market to manage labour market inequalities, particularly by protecting the rights and the wages of workers at the bottom of the earnings distribution. The labour rights and wage equality pillar therefore judges the efforts of governments to protect workers in their economy through legislation regarding workers rights, gender equality in the workplace and minimum wages. Each of these indicators is discounted by the proportion of people in the informal sector and the unemployment rate, to better capture the extent to which the labour force have rights and protection. Each indicator then contributes 33% of the overall labour score.

4.1 Labour union rights [L.1]

There is strong evidence²⁶ that the extent of unionization of the workforce has a strong influence on the level of inequality. This is because unionization determines the extent to which workers are able to demand higher wages, and therefore the value in the economy which flows to wages instead of capital. An initial search indicated that no comprehensive dataset exists showing the proportion of the labour force which is unionized for more than 150 economies. The CRI is trying to measure government commitment to reducing inequality and as such, this indicator measures the extent to which governments have legally authorized and then respected labour and union rights.

The indicator is a measure which combines government efforts to protect workers in law and in practice. The 'in law' component is constructed based on deductions for national legislation and regulations that are not in conformity with freedom of association and collective bargaining rights as defined by the ILO. The 'in practice' component measures acts committed in violation of the existing national legislation that is in conformity with rights as defined by the ILO. The combined overall score was used so that countries that scored well in terms of strong legislation were given a more appropriate score based on the extent to which these laws were violated. Countries which scored well in practice because there were fewer laws to violate were scored more appropriately based on their weak standards. A country which has the highest legislative standards combined with the fewest acts which violate labour rights scores the maximum progressivity score of 1.

Labour union rights only protect employed people within the formal labour market. In countries where the proportion of people working in the informal sector is substantial and unemployment rates are high, there are significant groups in the population who are excluded from this protection. In order to reflect this, the data point for labour rights is therefore multiplied by the percentage of the economy that is formal (1-%informal workers) and then by the employment rate (1-%unemployment rate). These discounted scores are then standardized using the MIN/MAX formula to fit them into a scale between 0 and 1 (with 1 highest – i.e. most inequality-reducing).

DATAPPOINT L.1A: Labour rights

The data for this indicator is based on the 'Labour Rights Indicators' designed by the Global Labour University and the Centre for Global Workers' Rights at Penn State University.²⁷ This website 'provides comprehensive numerical and textual information on country-level compliance with freedom of association and collective bargaining rights that is comparable between countries and over time', using 108 evaluation criteria.²⁸ The site also contains country summary documents which have proved useful for interpreting results. This methodology has recently been agreed as the measurement system for SDG indicator 8.8.2 on labour rights.²⁹ The lead authors from the Global Centre of Workers Rights have given written permission to reproduce their data.

The 'overall' score is the normalized score of the sum of performance in law and in practice. Data are available for all except two (Bhutan and Tonga) of the 152 countries in the CRI.

In terms of replicability, depending on SDG indicator funding being forthcoming, the authors of the Index plan to update rankings and data annually, in line with the proposed annual SDG progress reports.

DATA POINT L.X: Informality

Data is difficult to access on informality (by its very nature this is often hidden and uncounted), and the authors worked with labour rights experts to assess the best data sources.³⁰ The data used for this is taken from the World Bank ‘Shadow Economy’ analysis. We are aware of the limitations of this data, given that it is taken from 2007 and in fact measures the size of the ‘shadow economy’ as a proportion of GDP,³¹ which is not directly correlated to the population employed in the informal sector. However, due to a paucity of data across a large cross country sample, we deemed this to be the best data set with widest country coverage (162 countries) for using in this instance. It was felt important to ensure that a discounting for informality was applied, regardless of data limitations.

DATA POINT L.Y: Unemployment rate

For this we have used the latest ILO unemployment rate (projection for 2015).³²

4.2 Women’s rights in the workplace [L.2]

Greater gender equality in the workplace can reduce overall inequality. This is because all over the world women continue to be discriminated against in employment hiring, they are over-represented in part-time and precarious work, and are often paid less than men for doing the same job. In addition, the burden of maternity absence and the majority of unpaid care work are shouldered by women. Strong labour regulations can help women to achieve equal rights in the workplace. They also need the government to legislate for paid maternity leave and to relieve the unfair burden of unpaid care work in order to achieve equal rights and opportunities in the workplace.

In order to reflect the complexity of this issue in one indicator, we have included three data points for this indicator, which capture the existence of legislation to protect women against discrimination in employment, legal requirements on employers to pay equal rates for work of equal value, and legal provisions for women to receive paid maternity leave and in some countries ‘parental leave’.

Slightly different methodologies are used to score each of these indicators. For indicators 1 and 2, countries are given a simple yes or no score which allows them to receive 0 or 1 points. For indicator 3, their scores in terms of numbers of days of paid maternity leave are normalized between 0 and 1. The three scores are then averaged to give an overall score between 0 and 1.

As this legislation only protects women working in the formal sector, as with the labour rights indicator, the score is discounted for informality and unemployment (see above).

DATA POINTS L.1A, L.2B and L.2C: Legal provisions for women in the workplace

Most data for this indicator are taken from the World Bank data set ‘Women, Business and the Law’.³³ This dataset covers all of the 152 countries included in the CRI. The Bank indicates that data were collected through surveys of local experts and cross-checked against primary legal sources, and that the assessments are valid as of April 2015. The data sets use ILO legislation as a yardstick to measure cross country comparability. This can lead to some results perhaps not reflecting the national-level legislation with as much nuance as they might have – but comparing precise legislation against international conventions allows for comparability.

However, it should be noted that the dataset is currently being updated. To ensure that the data are as accurate as possible, we conducted cross-checks against national legislation (especially the documents available on the ILO website, but also via national websites), assisted in some cases by Oxfam country offices. Scores for 20 (mostly OECD) countries have therefore been reclassified (in all cases more favourably) as a result of additional consultation of these sources.

4.3 Minimum wage as a % GDP [L.3]

There is strong evidence³⁴ that higher minimum wages have a major impact on reducing inequality. The purpose of this indicator is to assess the relative generosity of minimum wages set by governments.

There are multiple ways of measuring the generosity of minimum wages. In line with the report's choice of inequality indicator, the Palma index, it would be highly desirable to compare minimum wages with the average income level of the top 10%, using household surveys in order to capture the full distribution of wages within the economy. A second formulation would be to compare it with median incomes (as is done for a range of countries by the ILO). A third would be to compare it with average per capita GDP. A fourth would be to compare it on a PPP basis with the international poverty line in terms of dollars a day, in order to assess the extent to which wages ensure that working people do not fall into income poverty.

We have chosen to use the third method, a comparison with per capita GDP. This is because the first two methods have highly incomplete and out-of-date data sets, and the fourth is comparing 'downwards' with the poverty line (and would therefore be a good measure of minimum wage potential impact on poverty), whereas the third has both good data availability and compares 'upwards' with an estimate of average income, making it a better indicator of potential impact on inequality. Therefore, the minimum wage as a proportion of GDP per capita measures the value of the minimum wage by comparison to a proxy of average income. GDP per capita is used as this proxy, because of the lack of availability of current median income data for most countries outside the OECD.

In making this choice we have taken the advice of the ILO and other labour experts who feel this is a sound and good measurement and way to judge the minimum wage rates, especially when the adjustment for informality is applied. It is worth noting that, despite this adjustment, because the minimum wage is given as a proportion of GDP, some of the poorest countries receive 'high' scores because GDP is relatively low (and not necessarily because the minimum wage is relatively high).

We are aware that this denominator has potential limitations; notably that in some countries where much GDP is captured by the corporate sector as profits, dividends and earnings on capital, average GDP may not reflect median labour income very accurately. However, it could also be argued that by measuring minimum wages against per capita GDP, this indicator has the advantage of taking into account the share of GDP which is not reflected in labour income, and therefore of including the growing bias towards channelling GDP to enhancing wealth as gains on capital > labour.

As the minimum wage can only benefit employees in the formal sector, as with the labour rights and women's right indicator, the score is discounted for informality and unemployment (see above).

DATA POINT L.3A: Minimum wage rate

To ensure that figures are as up to date as possible and are the figures that are legally applied in 2016 (i.e. they are the most comparable), DFI has compiled the latest minimum wage rates. All rates, apart from a handful of counties, are therefore minimum wage rates applied in 2016 (even if they were last changed a few years ago – i.e. they are the currently applying rates). These have been compiled using primary sources such as government gazette announcements, or www.Wage-indicator.org, or information from press announcements. In some cases, we also used extensively the US State Department data to check and cross-reference timely rates. Initial research was augmented by submissions from Oxfam country offices.

In some countries, different minimum wages are set for different sectors or regions. In these cases, the authors have taken an average across regions, or tried to determine the sector which is most representative of wages for low-income people in that country. This is because Oxfam is most interested in protections for very poorest; and given the focus on inequality it is interested in measuring low-income minimum wages against the proxy for average wages.

However, where minimum wage systems were complex (with multiple different levels for different sectors, government/private sector, permanent/temporary and age groups of workers, and regions, which is the case for India and China), the ILO methodology was used. This meant, for example, that the minimum wage rate for Beijing was used for China; the national lowest agriculture rate for India; and the average across all provinces in Indonesia.

There is a handful of countries where no updates have been made public recently – suggesting that older minimum wages are being applied – or where no minimum wage applies.

In addition, eight countries set minimum wages by collective bargaining, and to ensure comparable data, on the advice of labour rights specialists, we have relied on using a typical skilled manual minimum wage agreement. Nevertheless, it is important to note that it is becoming increasingly apparent, as some sectors become less unionized, that some workers in these countries are no longer covered through collective bargaining. This spurred the recent setting of one national minimum wage in Germany.³⁵

DATA POINT L.3B: GDP per capita

For GDP per capita in local currency in current prices, IMF data from the April 2016 WEO database were used, for the year corresponding to the year of the minimum wage data, so as to avoid distortions caused by inflation or devaluation/revaluation of currencies in intervening years.³⁶

NOTES

All websites were accessed in April 2017 unless otherwise noted

- 1 UNDP (2016). *Human Development Report 2016*. Technical note (2016) http://dev-hdr.pantheonsite.io/sites/default/files/hdr2016_technical_notes_0.pdf
- 2 For instance, See OECD (2015) *In It Together: Why Less Inequality Benefits All*, OECD Publishing, Paris. DOI: <http://dx.doi.org/10.1787/9789264235120-en> or the global panel study by Martinez-Vazquez and Moreno-Dodson of incidence studies covering 150 countries, over a 30-year period (The Impact of Tax and Expenditure Policies on Income Distribution: Evidence from a Large Panel of Countries). This shows that health spending reduces the Gini coefficient by 0.4–0.7, education by 0.13, and social protection by 0.12. They also show the strong impact of social housing, but given a lack of cross country data on social housing spending, we have been unable to include this in the index. It should be a priority, given the strong results, to collect spending data on social housing for future reports. Country-level analysis by CEQ, the EU and the OECD finds similar results. See full report *The Commitment to Reducing Inequality Index* for further evidence and citations, <http://policy-practice.oxfam.org.uk/publications/the-commitment-to-reducing-inequality-index-a-new-global-ranking-of-governments-620316>
- 3 However, it is worth noting that a few data points in the index series cover only central government spending (where no source has been able to aggregate different levels of government). More information on which countries this applies to is available from DFI, mail@dri.org.uk.
- 4 We have used WHO or UIS as sources only where other more up-to-date data were not available. This is because UIS data tend to be 2–3 years old, and WHO data are estimates for a large number of lower income countries.
- 5 Development Finance International and Oxfam (2013) *Putting Progress at Risk? MDG Spending in Developing Countries*. Research Report, May 2013, Figure 3.27, available at www.governmentspendingwatch.org. The sectoral averages were education 6.9%, health 2.6% and social protection 2.5%, giving an overall average of 4%.
- 6 ILO (2014). *World Social Protection Report 2014–15: Building economic recovery, inclusive development and social justice*. Available at <http://www.ilo.org/global/research/global-reports/world-social-security-report/2014/lang-en/index.htm>
- 7 ILO data are presented as % of GDP so we have converted this to % of total government spending, using IMF WEO figures for GDP and general government spending.
- 8 N. Lustig 2015 finds that they have been 'a large equalizing force' in European countries and the US, Brazil, Colombia, and Indonesia; but unequalizing in Chile, Mexico and Peru (because their contribution systems are more regressive). N.Lustig (2015). *The Redistributive Impact of Government Spending on Education and Health: Evidence from Thirteen Developing Countries in the Commitment To Equity Project*. CEQ Working Paper Series. Tulane University. ILO broader statistical analysis (ILO 2014, op. cit.) finds a strong relationship between contributory spending and lower inequality.
- 9 J. Martinez-Vazquez; B. Moreno-Dodson and V. Vulovic (2011) *The Impact of Tax and Expenditure Policies on Income Distribution*. Georgia State University. Andrew Young School of Public Policy Studies.
- 10 The Incidence coefficients are from the CEQ Institute's Data Center on Fiscal Redistribution based on the following CEQ Master Workbooks of Results: Argentina (Rossignolo, 2016); Armenia (Younger and Khachatryan, 2014); Bolivia (Paz-Arauco and others, 2014); Brazil (Higgins and Pereira, 2016); Chile (Martinez-Aguilar and Ortiz-Juarez, 2016); Colombia (Melendez and Martinez, 2015); Costa Rica (Sauma and Trejos, 2014); Dominican Republic (Aristy-Escuder and others, 2016); Ecuador (Llerena and others, 2014); El Salvador (Beneke, Lustig and Oliva, 2014); Ethiopia (Hill, Tsehaye and Woldehanna, 2014); Georgia (Cancho and Bondarenko, 2015); Ghana (Younger, Osei-Assibey and Oppong, 2016); Guatemala (Cabrera and Moran, 2015); Honduras (Castañeda and Espino, 2015); Indonesia (Jellema, Wai Poi and Afkar, 2015); Iran (Enami, Lustig and Taqdiri, 2016); Jordan (Abdel-Halim and others, 2016); Mexico (Scott, 2013); Nicaragua (Cabrera and Moran, 2015); Peru (Jaramillo, 2015); Russia (Malytsin and Popova, 2016); South Africa (Inchauste and others, 2016); Sri Lanka (Arunatilake and others, 2016); Tanzania (Younger, Myamba and Mdadila, 2016); Tunisia (Shimeles and others, 2015); Uganda (Jellema and others, 2016), Uruguay (Bucheli and others, 2014),

- and Venezuela (Molina, 2016). The CEQ data were supplied to DFI and Oxfam because of the partnership between CEQ and Oxfam. The public version of the database can be accessed at <http://www.commitmentoequity.org/data/>
- 11 The OECD data can be found at <http://stats.oecd.org/index.aspx?queryid=66670>
 - 12 E. Berkhout (2016). *Tax Battles: The dangerous global race to the bottom on corporate tax*. Oxfam. <http://oxf.am/ZuCG>
 - 13 Two issues which the index formulation does not cover are VAT rates for luxury goods, and the debate around whether 'sin taxes' should be high (to discourage sins) or low (because they are often regressive – though not when their impact on improving health status of the poor and freeing up health spending for other issues are taken into account).
 - 14 The purpose of lowering top thresholds should be seen as bringing the maximum number of people – at least the top 10% – into the maximum tax rate. This is not the same as the often-expressed justification for reducing rates, which has little evidence to support it, that they will increase compliance and revenue.
 - 15 They are by no means always progressive – for example, many countries have 'flat' property or inheritance taxes regardless of the value of the asset being taxed.
 - 16 D. Duncan and K.P. Sabirianova (2008) *Tax Progressivity and Income Inequality*. Georgia State University. Andrew Young School of Policy Studies. Working Paper 2008-6-5
 - 17 Given the growing tendency by large enterprises and wealthy individuals to switch incomes between corporate and individual status in order to benefit from the lower of the two tax rates, this 'arbitrage' issue and the need for similar PIT, CIT and capital gains rates is discussed in the accompanying report *The Commitment to Reducing Inequality Index*.
 - 18 The main key sources have been Ernst and Young Global Tax Guides 2015 and 2015–16, available at http://www.ey.com/gl/en/services/tax/tax-services_access-our-global-tax-guides; and Deloitte International Tax Guides 2015, available at <https://dits.deloitte.com/#TaxGuides>
 - 19 We are aware that there are major gaps in the WORLD database and to a lesser extent in ICTD, and have therefore carefully checked against country-specific sources and the more up-to-date and reliable regional databases of the IMF.
 - 20 J. Martinez-Vazquez,; B. Moreno-Dodson and V. Vulovic (2011) *The Impact of Tax and Expenditure Policies on Income Distribution*, Georgia State University. Andrew Young School of Public Policy Studies.
 - 21 The Incidence coefficients are from the CEQ Institute's Data Center on Fiscal Redistribution based on the following CEQ Master Workbooks of Results: Argentina (Rossignolo, 2016); Armenia (Younger and Khachatryan, 2014); Bolivia (Paz-Arauco and others, 2014); Brazil (Higgins and Pereira, 2016); Chile (Martinez-Aguilar and Ortiz-Juarez, 2016); Colombia (Melendez and Martinez, 2015); Costa Rica (Sauma and Trejos, 2014); Dominican Republic (Aristy-Escuder and others, 2016); Ecuador (Llerena and others, 2014); El Salvador (Beneke, Lustig and Oliva, 2014); Ethiopia (Hill, Tsehaye and Woldehanna, 2014); Georgia (Cancho and Bondarenko, 2015); Ghana (Younger, Osei-Assibey and Oppong, 2016); Guatemala (Cabrera and Moran, 2015); Honduras (Castañeda and Espino, 2015); Indonesia (Jellema, Wai Poi and Afkar, 2015); Iran (Enami, Lustig and Taqdiri, 2016); Jordan (Abdel-Halim and others, 2016); Mexico (Scott, 2013); Nicaragua (Cabrera and Moran, 2015); Peru (Jaramillo, 2015); Russia (Malytsin and Popova, 2016); South Africa (Inchauste and others, 2016); Sri Lanka (Arunatilake and others, 2016); Tanzania (Younger, Myamba and Mdadila, 2016); Tunisia (Shimeles and others, 2015); Uganda (Jellema and others, 2016), Uruguay (Bucheli and others, 2014), and Venezuela (Molina, 2016). The CEQ data were supplied to DFI and Oxfam because of the partnership between CEQ and Oxfam. The public version of the database can be accessed at <http://www.commitmentoequity.org/data/>
 - 22 For details of sources and links see note 9 above.
 - 23 For example, by the IMF – see <http://www.imf.org/en/publications/wp/issues/2017/04/04/tax-administration-reforms-in-the-caribbean-challenges-achievements-and-next-steps-44800>; USAID – see http://pdf.usaid.gov/pdf_docs/PA00JNWF.pdf and CEPAL, see http://repositorio.cepal.org/bitstream/handle/11362/5350/1/S1200023_en.pdf
 - 24 E. Berkhout (2016). *Tax Battles: The dangerous global race to the bottom on corporate tax*. Oxfam. <http://oxf.am/ZuCG>
 - 25 See <http://www.financialsecrecyindex.com/>
 - 26 See for example <https://www.imf.org/external/pubs/ft/fandd/2015/03/pdf/jaumotte.pdf>.
 - 27 See <http://labour-rights-indicators.la.psu.edu>
 - 28 For more details of the methodology, see <http://labour-rights-indicators.la.psu.edu/docs/Method%20Paper.pdf>.
 - 29 Page 16 : <http://unstats.un.org/sdgs/files/metadata-compilation/Metadata-Goal-8.pdf>
 - 30 Ergon Associates supported this work and advised on possible data sources.
 - 31 For this analysis, the World Bank defined the shadow economy to include all market-based legal production of goods and services that are deliberately concealed from public authorities for any of the following reasons: (1) to avoid payment of income, value added or other taxes, (2) to avoid payment of social security contributions, (3) to avoid having to meet certain legal labour market standards, such as minimum wages, maximum working hours, safety standards, etc., and (4) to avoid complying with certain administrative procedures, such as completing statistical questionnaires or other administrative forms. See <http://documents.worldbank.org/curated/en/311991468037132740/pdf/WPS5356.pdf>
 - 32 Available at <http://www.ilo.org/ilostat/faces/ilostat-home/download>
 - 33 These data and the accompanying report are available at <http://wbl.worldbank.org/>
 - 34 See for example <https://www.imf.org/external/pubs/ft/fandd/2015/03/pdf/jaumotte.pdf> .
 - 35 <http://www.dgb.de/themen/++co++4ea17b70-ab01-11e4-b17d-52540023ef1a>

36 Argentina actually set four different minimum wages to keep up with inflation as the year went on, so we used an average minimum wage rate for the calendar year for which the GDP data applied.

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For further information on the issues raised in this paper, or if you have any comments or questions on the methodology or data, please e-mail matthew.martin@dri.org.uk or dhardoon@oxfam.org.uk.

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