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The Employment-to-Population Ratio as an Indicator of Participation and Inclusiveness

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1. Introduction

The concept of inclusive growth has been broadly used in the last decade to indicate a growth strategy or result that involves both sharing the benefits of and participation in the economic process (see Ranieri and Ramos, 2013). Despite the broad reference to this concept in policy analysis and policymaking, attempts to measure how inclusive a growth pattern is have been limited, largely owing to a lack of consensus on its concept, to problems in finding appropriate measures and the unavailability of data. Ramos, Ranieri and Lammens (2013) suggest a methodology for measuring the inclusiveness of economies and of the growth process seen over a time period using an index, the IG Index. This would be based on two dimensions: the sharing of benefits, as indicated by poverty and income inequality; and participation, with the employment-to-population ratio (EPR) as a proxy.

In the literature on inclusive growth two different features of employment have been proposed as proxies for the participation dimension: the EPR and productive or decent employment. The former is a clear indicator of the primary goal of being involved, while the latter goes further into the characteristics of the work. However, there is no consensus on the definition of productive work: is it linked to the conditions of the person employed, the remuneration received or the sector involved? Moreover, data availability is a major issue for most of these definitions.

The focus on productive or decent employment can also be seen as a means to avoid the negative aspects that can be associated with a high EPR— such as employment in bad conditions, working poverty and underemployment— which complicates the use of EPR as a proxy for participation. Despite these issues, the EPR has important advantages. For providing a clear picture of the part of the population who is involved in the economic sphere, it is very much in line with the idea of being part of and being included which are inherent to inclusive growth. It also hints at the ability of an economy to provide work opportunities, which allows the inclusiveness of the economic process in a country to be assessed. Another advantage is that the EPR is measured by a large number of countries with only minor problems of comparability.

As mentioned before, however, the use of the EPR as an indicator of inclusive growth is not straightforward, as it does not provide a simple positive linear proxy for participation: a low EPR should be regarded as negative for inclusive growth due to limited participation, but a very high EPR can also be seen as negative if it is the result of high levels of poverty and working poverty.

This *Policy Research Brief* presents some possible methodologies to overcome this distortion of a high EPR, enabling the use of this indicator as a proxy for participation when measuring inclusive growth. The paper is divided as follows: the second section introduces the EPR and the problems using it as a proxy for participation. The third section presents different methodologies to deal with this distortion to incorporate the EPR as a proxy for participation to measure marginal improvements of a growth process in terms of inclusiveness. The final section presents concluding remarks.

2. The Employment-to-population Ratio

As the name indicates, the EPR points to the part of the working-age population which works— work encompassing "all forms of economic activity, including self-employment, unpaid family work and wage employment in both the informal and formal sectors" (ILO, 2010). The EPR has the advantage of being less dependent on business cycles than unemployment data and is, therefore, a good representation of the structure of an economy. Additionally, since the EPR provides information on the ability of an economy to create employment (ILO, 2011), it seems perfect to be used as a proxy of the population's participation in economic activity, which in turn is exactly what the participation dimension of inclusive growth aims at measuring.

The EPR is calculated by several developing countries and available in the ILO statistical database[1] after being harmonised for country differences.[2]

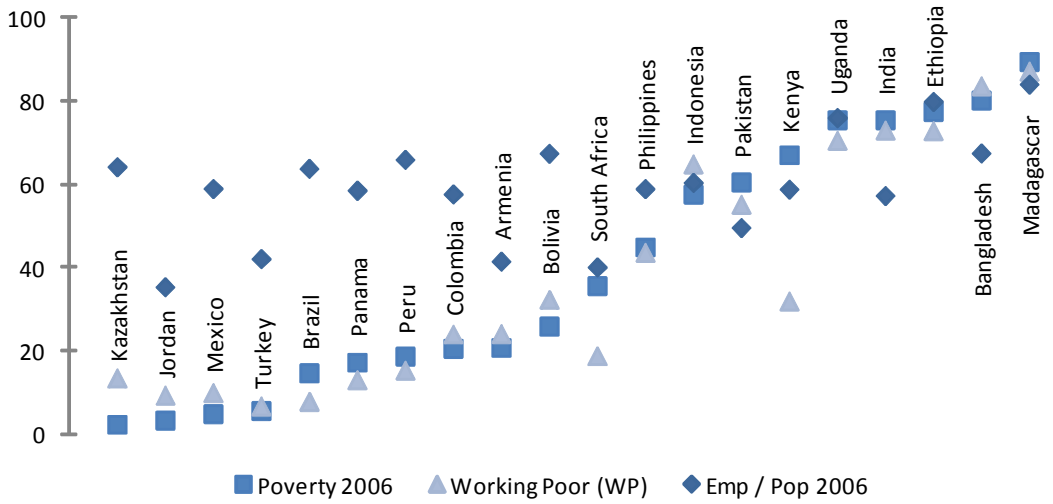
The problem of working poverty for the use of the EPR as proxy

Although the EPR represents a notion of participation which is closely linked to the concept of inclusiveness, the relationship between the EPR and inclusiveness is not linear: low rates represent low inclusiveness due to low participation, but high rates cannot always be associated with inclusiveness, as they can be a result of a very high level of working poverty (ILO, 2011). In countries with very high poverty rates, working poverty would also be very high, increasing employment numbers. In this case, the high EPR would be a consequence of high working poverty, which cannot be assessed as positive, or as better participation.

Figure 1 presents data for poverty, working poverty and EPR for 20 selected countries.[3] As can be seen, some countries show a high EPR, high poverty and high working poverty. The negative aspects of a high EPR come from this correlation. It is also important to mention, though, that this is not always the case: other countries show a high EPR but low poverty and low working poverty. Therefore, it cannot be said that a high EPR is always caused by high working poverty. Thus the relationship between the EPR and inclusiveness through participation is not always linear. It can be linear if the high EPR is not caused by high working poverty, but if this is the case, a high EPR should be assessed negatively.

Figure 1

Poverty, Working Poverty and EPR for Selected Countries



3. Using the EPR as an Indicator of Participation

This section presents two methodologies for using the EPR as a measure of participation and inclusive growth: analysing countries according to their poverty level, and assuming an inverted u-shaped function between EPR and participation. This second option is divided into two different types of functions, centred on a specific value or on a range of values.[4]

Different Analyses of EPR According to Different Poverty Levels

One possibility would be to analyse countries according to their poverty levels. From the hypothesis that a high EPR is associated with high working poverty only in countries with very high poverty rates, the EPR could be positively associated with participation in countries with lower poverty levels. Based on this assumption and on an analysis of the data on poverty, working poverty and EPRs, Ramos, Ranieri and Lammens (2013) suggest the use of the EPR as a proxy for participation only for countries with less than 65 per cent of poverty, which would exclude the cases of high EPR due to high poverty. Among this group of countries, the EPR was used as a linear indicator of participation: a higher EPR means better participation, and the opposite also holds.

Although this methodology allows for a simple analysis, it has some drawbacks. One flaw derives from the fact that the relationship between poverty and working poverty is not linear, which results in the exclusion of countries with too high poverty that do not necessarily have too high working poverty—the opposite is also true: some countries will not have such a high poverty rate and, therefore, have their EPR assessed as positive, but they show high working poverty. Since there is a lack of data on working poverty for most countries, this problem might be under- or overestimated by using this method of setting a threshold based on poverty data.

The major problem is, however, the absence of an analysis of participation among countries with too high poverty. In addition to being a problem in itself, as it makes the analysis of these countries harder, it hinders a joint analysis of participation in the two groups of countries. Moreover, it does not allow for measurements of changes in participation of countries which moved from one group to the other—with low or high poverty.[5]

Inverted u-shaped function

Considering that the EPR can be judged as negative if very low and also if very high, a possible methodology to use it as a proxy for participation would be to create an inverted u-shaped function from the EPR series.

In this case, a medium-sized EPR would be valued better than a low or high EPR, and changes towards middle levels would be assessed as positive, whereas changes towards the extremes would be assessed as negative.

Such a methodology has the advantage of providing a simple way to classify the participation of countries according to their EPR and also to measure and to qualify the changes seen, which is very much in line with the purpose of the IG Index. Nevertheless, it assumes that the problem of working poverty is higher, the higher the EPR, which is a crude approximation only, as the relationship between EPR and working poverty is not linear. This problem might, however, be overcome if the countries studied present similar characteristics, allowing the definition of an ideal EPR.

This methodology also involves a few challenges related to defining the resulting function itself and the optimal EPR or the optimal range for the EPR. These definitions are difficult in an international comparison due to the cultural and economic diversity of the countries involved which result in no objective definition of thresholds such as too low or too high an EPR. The next section offers options on how to deal with these problems.

Formulating a u-shape function

The simplest way to build the inverted u-shape function would be to define a function with a positive slope for a low EPR and an inflection point changing to a negative slope for a high EPR. This would punish high and low levels in comparison to middle levels of EPR and also assess negatively any changes which are not towards the inflection point.

To do so, one calculates the absolute difference from a country's EPR to the ideal EPR and uses the absolute distance from this reference point to measure participation—the greater the difference between the country's EPR and the inflection point, the worse the level of participation.[6]

The resulting values of the u-shaped function should be normalised to rank from 0 to 1 to have the same weight of the other indicators in the IG Index. The data are then linearly transformed using a Min–Max normalisation, which is calculated by taking the ratio between the difference between a value and the lowest value in the series, and the range of the series (the difference between the highest and the lowest values). The highest and the lowest values of the series always involve two points in time, to allow for comparisons between periods. This normalisation has the advantage, therefore, of maintaining the structure of the data[7] and of allowing comparisons.

The absolute normalised differences obtained so far give high values to 'bad' EPR and must, therefore, be reversed. This is done by a simple linear transformation.

To apply this methodology, the following sub-section presents two different ways of defining the ideal EPR, thereby the 'inflection point' of the inverted u-shape function: as a single value and as a range of values.

A specific value as the ideal EPR

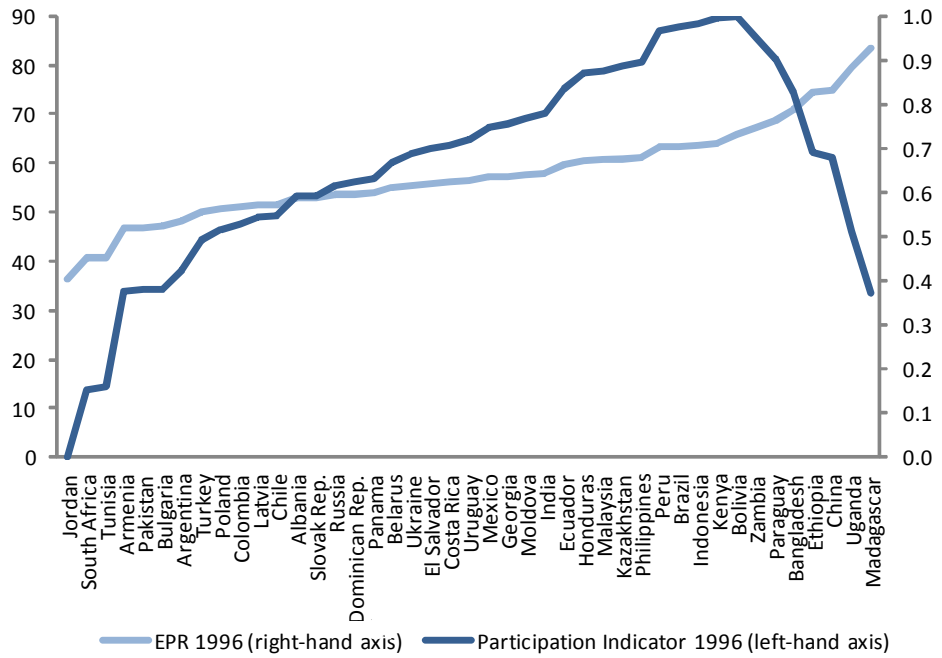
This first approach involves the definition of an ideal EPR value. The value chosen was 65, which is in line with the ILO (2011) statement that an EPR lower than 60 might be an indicator of malfunctioning labour markets—i.e. not providing enough opportunities— and a value which is much higher than that would be negative for being correlated with high working poverty.

Having defined the inflexion point, the abovementioned methodology of normalised and inverted absolute differences is applied. Figures 2 and 3 present the resulting function for 1996 and 2006, respectively.

These include the EPR of 43 countries: Albania, Argentina, Armenia, Bangladesh, Belarus, Bolivia, Brazil, Bulgaria, Chile, China, Colombia, Costa Rica, Dominican Rep., Ecuador, El Salvador, Ethiopia, Georgia, Honduras, India, Indonesia, Jordan, Kazakhstan, Kenya, Latvia, Madagascar, Malaysia, Mexico, Moldova, Pakistan, Panama, Paraguay, Peru, Philippines, Poland, Russia, Slovak Rep., South Africa, Tunisia, Turkey, Uganda, Ukraine, Uruguay and Zambia.

Figure 2

EPR and an Inverted u-shaped Function, Centred on a Specific Value for 1996



As the figures show, countries with an EPR near to the ideal value have the highest participation value, while countries with a low or high EPR are considered to have small levels of participation. Very low EPRs received smaller values than very high EPRs, as 65 is higher than the median of the sample. Although not obvious when looking at the figures, the slopes before and after the ideal EPR are both equal to 0.35, implying that a change of 1 towards an EPR of 65 would increase participation by 0.35.

The main problem with this approach is the definition of an ideal point and, therefore, the assessment of values which are close to 65. In fact, the only theoretical background justifying the ideal EPR is the fact that this ratio should be higher but not too much higher than 60, which does not necessarily define 65 as the best value. Therefore, the assessment of an EPR of 66 as a better value than an EPR of 62 and the interpretation that a change from an EPR of 65 to 62 is negative are not precise.

An ideal EPR centred in a plateau

An option for a function which accounts for the absence of one ideal point (EPR) is a function with a plateau. In line with the ILO's reference presented above, this function could have values between 60 and 70 as the ideal range. An important difference from this approach to using 65 as the ideal value is the fact that there is no premise that there is a specific ideal value, as it considers a wider area of EPR as good participation and, therefore, does not penalise a change occurring inside the range.

To obtain a plateau, the function was redefined by introducing a categorisation defining two different functions. One function, for EPRs between 60 and 70, would be the plateau, where countries would obtain the highest participation value, 1. A second function would indicate the value corresponding to EPRs which are lower or higher than the thresholds which define the plateau— 60 and 70.

This can be calculated as before: by calculating the absolute distances to the reference points (60 for lower values and 70 for higher) and doing the Min–Max normalisation.

Figures 4 and 5 show the resulting function for 1996 and 2006 data, respectively. The thresholds of 60 and 70 are clear, and EPR in this range represents full participation. As several countries were given a participation value of 1, their figures obviously increased when compared to the first methodology— using the reference point of 65— especially in the EPRs within and near the plateau. The Min–Max normalisation results in steeper slopes than before, 0.40 in absolute terms for both sides.

This might be an additional advantage of this approach to fit with our theoretical idea, as middle values become relatively better and extreme values are punished harder. Another advantage is that changes within the plateau are no longer punished, which eliminates the problem of having to assess 62 differently from 65, for instance.

The negative feature is that a significant change will not be penalised if it is inside the plateau, while a small one will, if it moves the country out of the plateau. Nevertheless, this functional relationship allows for marginal assessment of changes in participation for all countries, at the same time that it accounts for the possible causality between high poverty and a high EPR.

4. Concluding Remarks

The literature on inclusive growth has long been discussing the development of a quantitative analysis. The lack of a consensus on the definition of inclusive growth and on the indicators involved has, however, delayed this development.

A lack of data, especially when dealing with lower-income countries, is another major issue. In the case of analysing employment, the availability of data varies.

Figure 3
EPR and an Inverted u-shaped Function, Centred on a Specific Value for 2006

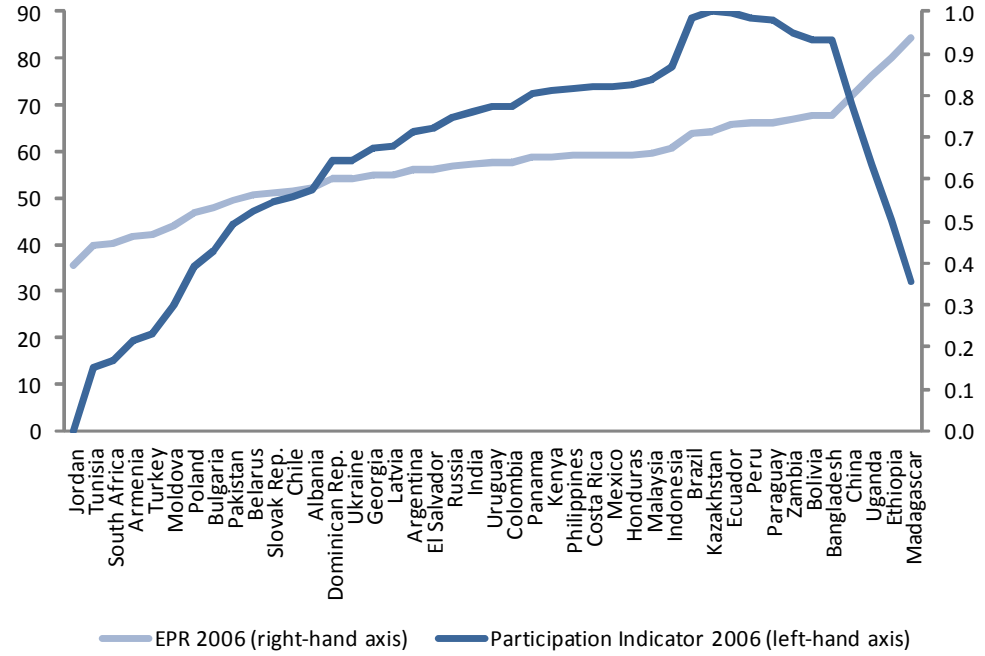


Figure 4

EPR and an Inverted u-shaped Function with a Plateau for 1996

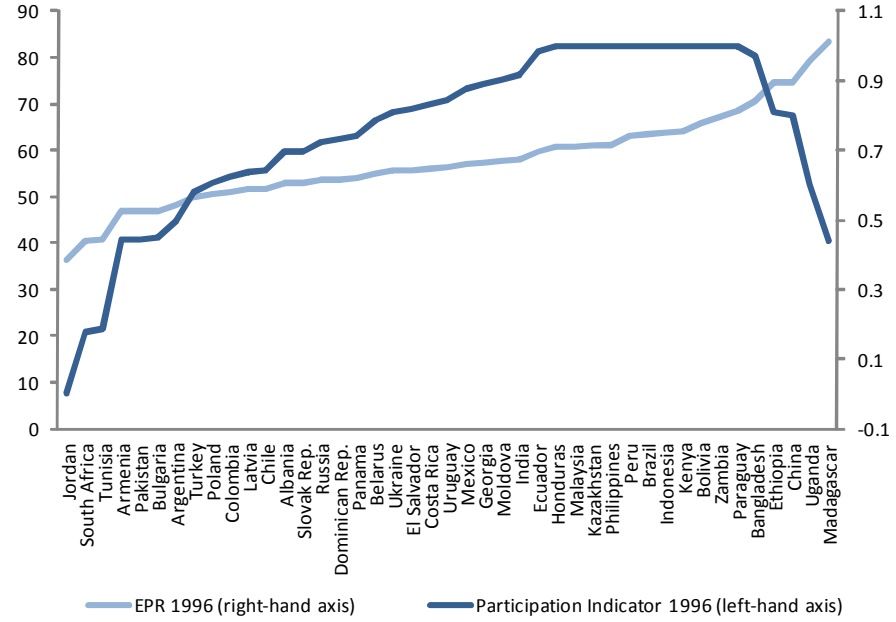
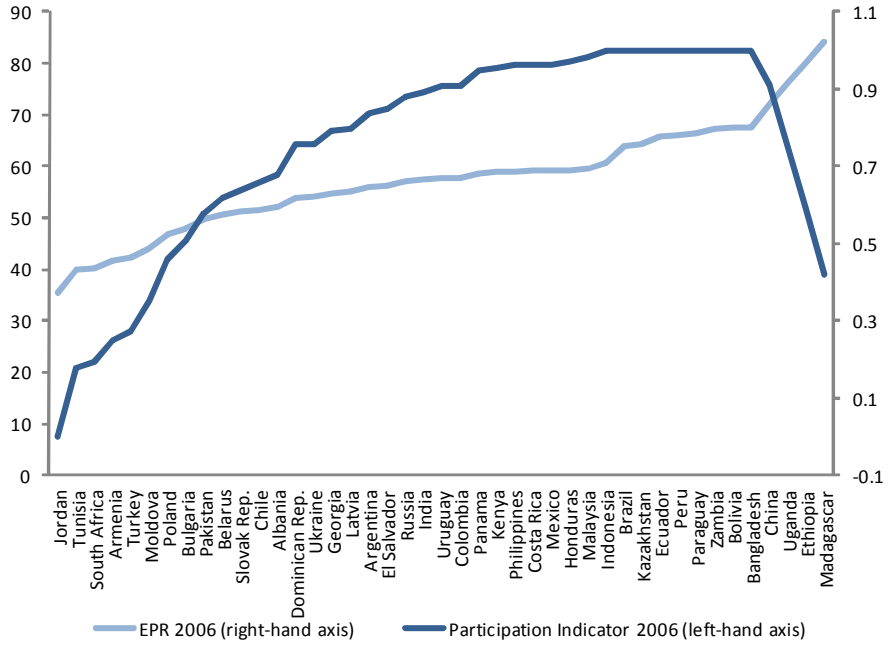


Figure 5

EPR and an Inverted u-shaped Function with a Plateau for 2006



EPRs have not received the attention they deserve in the debate on inclusive growth, although they are a clear indicator of participation in the economic process. Instead, attention has been paid to decent or productive employment, which is seen as an obviously positive element.

However, the definition of productive employment is imprecise, and, depending on how it is defined, a lack of data is a major issue and hinders quantitative assessments. EPRs, on the other hand, are a clear indicator of opportunities for participation, and data are broadly available. The only problem in using the EPR is the negative aspect it might have on very poor countries due to the influence of working poverty on it.

This document has shown different methodologies for incorporating the EPR as an indicator of participation in the analysis of inclusive growth. As it has shown, there are different possibilities, but several challenges must still be overcome. An analysis of countries which do not have problems with working poverty is possible, but this would exclude very interesting and important cases from the analysis. To enable a joint analysis, an inverted u-shaped function that equates very high and very low EPRs with low levels of participation and inclusiveness might be a good option.

The first challenge is to define the function that translates EPRs into participation and to define an ideal EPR or an ideal

range of EPRs. Whether this could be done or not could be assessed by an analysis of the countries studied. Such an analysis should include poverty, working poverty and EPR.

Different country sets would result in different optimal EPRs or ranges, which could be estimated if the countries present similarities with regards to indicators of working poverty, poverty and employment. In this case, the use of the inverted u-shape function is ideal. If problems related to this estimation remain, the use of different analysis according to the different poverty levels can be the proffered methodology.

The development of empirical evaluations of inclusive growth is important for the obvious aim of enabling the assessment of the level of inclusiveness of countries and of the inclusiveness of an economic growth pattern, but also for its contribution to the conceptual debate on inclusive growth, as it points to the indicators to be used and to the feasibility of using them. ■

1. ILO Stats:<http://kilm.ilo.org/kilmnet/>.

2. As the ILO (2010) states: "The [EPR] series (...) is harmonized to account for differences in national data and scope of coverage, collection and tabulation methodologies as well as for other country-specific factors such as military service requirements. It includes both nationally reported and imputed data and includes only estimates that are national, meaning there are no geographic limitations in coverage."

3. Poverty data are from the World Bank's Development Research Group's (WBDRG) global update (released at the end of February 2012). The poverty line this paper considers is the US$2/day (PPP). Working poverty is from the ILO (http://kilm.ilo.org/kilmnet/). The EPR is collected and harmonised by the ILO (http://kilm.ilo.org/kilmnet/). Poverty and EPR data are from 2006. Estimations on working poverty are from different years, according to data availability: Armenia, 2004; Bangladesh, 2000; Bolivia, 2002; Brazil, 2007; Colombia, 2003; Ethiopia, 2004; India, 2005; Indonesia, 2002; Jordan, 2003; Kazakhstan, 2003; Kenya, 2005; Madagascar, 2005; Mexico, 2004; Pakistan, 2005; Panama, 1997; Peru, 2003; Philippines, 2003; South Africa, 2000; Turkey, 2002; Uganda, 2005.

4. Another way to use the EPR as an indicator of participation would be to exclude the influence of working poverty from the EPRs. This would, however, require data on working poverty, which has a major problem of availability.

5. A similar alternative might be to analyse poverty and employment together. If one assumes that an increase in employment might be due to the simultaneous increase in poverty, then this increase should be assessed as negative. The opposite would also hold: an increase in employment simultaneous to a decrease in poverty should be positive. Although interesting for a case-by-case analysis, this is difficult to take into account when building an index.

6. One alternative would be to change the slope from a linear one to one with increasing scales, indicating that with a constantly increasing distance to the reference point, participation will decrease with increasing scales, thereby punishing very extreme EPRs more than medium EPRs. This methodology has, however, the problem of having to define the grade of increasing scales.

7. Although this type of transformation is said to have the drawback of having extreme values distorting the transformed indicator, this is not a problem in our sample because employment data do not vary significantly. The only problem could arise when incorporating the values in the composite IG Index. The minimum and maximum determine the general level of all other values— i.e. a very high maximum leads to relatively small normalised values, and thus would have lower influence in the composite index. This has to be taken into account when interpreting the IG Index.

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