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An Index to Measure Progress Towards Universal Social Protection with Application to India

Aalok Ranjan Chaurasia

MLC Foundation
'Shyam' Institute

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Aalok Ranjan Chaurasia
President
MLC Foundation
Bhopal, Madhya Pradesh, India

Professor
'Shyam' Institute
Bhopal, Madhya Pradesh, India

aalok@mlcfoundation.org.in
aranjan@shyaminstitute.in

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Abstract

This paper develops an index to measure the progress towards universal social protection which is based on the three core dimensions of social protection – household income security; household resilience to external shocks; and social inclusion. The index is based on the concept of social protection space. Application of the index to India suggests that the country will have to go a long way to achieve the goal of universal social protection. The paper also reveals significant diversity in the progress towards universal social protection across states/Union Territories. The analysis suggests that that a decentralised, state/Union Territory–specific approach is needed to achieve universal social protection in the country.

Introduction

Social protection has been identified as one of the key interventions by the United Nations to achieve Sustainable Development Goals as described in the 2030 Agenda for Sustainable Development (United Nations, 2015). Social protection has also been identified as an important policy tool to tackle poverty and reduce vulnerability (European Union, 2017). Social protection is concerned with preventing, managing, and overcoming situations that adversely affect well–being of the people (United Nations, 2010). It is also emphasised that social protection is necessary to ensure that no one is left behind. There is, however, no universal definition of social protection. Many definitions of social protection have been proposed and a range of policy frameworks have been suggested that reflect social, economic and policy context of different countries. The evolution of different social policy frameworks has also been shaped by the views and decisions of political and civil society champions (European Union, 2015). These include, among others, the Social Risk Management framework of the World Bank (Jorgensen and Siegel, 2019; World Bank, 2012), the transformative social protection framework (Devereux and Sabates–Wheeler, 2004) and the life cycle approach of the International Labour Organization (García and Gruat, 2003). The goal of social protection is now increasingly being based on the human rights approach, which aims at mitigating vulnerabilities as they occur across the life cycle and is directed towards human capital formation. The European Commission defines social protection as broad range of public, and, possibly private, instruments to tackle the challenges of poverty, vulnerability, and social exclusion (European Commission, 2015). However, measuring the progress towards universal social protection remains challenging. Like the social protection policy

framework, there is no universally agreed approach to measure the progress towards universal social protection. A recent study conducted by the European Union has reviewed different approaches and indicators used to measure the performance of social protection programmes and activities and has emphasised the need of assessing the coverage of different social protection programmes and activities and analysing the impact of social protection benefits on household poverty and inequality reduction (European Union, 2017).

The progress towards universal social protection can be conceptualised through two perspectives. One perspective focus on expenditure, primarily government expenditure, on social protection programmes and activities. This perspective, essentially, follows an input–based approach in which the vulnerable sections of the population are provided assistance in either cash or kind to minimise their vulnerability to a range of social, economic, and environmental hazards. An example of this perspective is the Social Protection Index (SPI) developed and used by the Asian Development Bank (2013). This index relates total expenditure on social protection programmes and activities with the total number of intended beneficiaries of different social protection programmes and activities. It is argued that the higher the index or the higher the expenditure per population at risk of benefit, the better the performance of social protection programmes and activities (Asian Development Bank, 2013). Chaurasia (2021) has followed this approach to estimate social protection expenditure per population at risk of benefit in education, health, and pension for different states of India and concluded that the level of social protection varies widely across different states of the country. The SPI, however, tells little about the progress towards universal social protection which is argued to be necessary to achieve Sustainable Development Goals related to poverty, inequality, and vulnerability. The SPI does not capture social protection outcomes and impact and ignores the quality dimension of social protection efforts.

Alternatively, the progress towards universal social protection can be conceptualised in terms of coverage of social protection programmes and activities and the impact of these programmes and activities on household poverty and inequality. A recent report by the International Labour Organization informs that just 47 per cent of the world population has effective access to at least one social protection benefit which implies that 53 per cent of the world population has no protection at all. In India, less than 25 per cent of the population is estimated to have access to at least one social protection benefit excluding health (International Labour Organization, 2021). The report is, however, silent about the impact of social protection movement on household poverty and inequality. The rationale for investing in social protection efforts, essentially, is rooted in the understanding that this investment will lead to reducing household poverty, vulnerability, and inequality.

In the context of household poverty, vulnerability and inequality, social protection can be conceptualised in terms of three core dimensions: 1) household income security; 2) household resilience to external economic and other shocks such as epidemic and natural disasters; and 3) household social inclusion. This conceptualisation is akin to the three core dimensions of human capabilities – freedom for servitude and poverty, sustenance, and self-esteem – that constitute the fundamental framework for human capabilities expansion and social development. This conceptualisation implies that the government or state investment in social protection programmes and activities should be directed towards increasing household income security, building household resilience to external economic and environmental shocks, and promoting social inclusion. This conceptualisation is also in line with United Nations 2030 Agenda for Sustainable Development which characterises sustainable development in terms of economic growth, social inclusion, and environmental protection (United Nations, 2015) and recognises that social protection needs of people are essentially multidimensional which cannot be added in a simple manner as the social protection expenditure and the population at risk of benefit are added to construct SPI.

This paper has two objectives. The first objective of the paper is to construct an index to measure and monitor the progress towards universal social protection in terms of the progress in: 1) household income security; 2) household resilience to external economic and environmental shocks; and 3) social inclusion. The universal social protection index is constructed following the performance triangle approach to measure the overall performance of social protection efforts.

The second objective of the paper is to apply the proposed universal social protection index to analyse the progress towards universal social protection in India and in its constituent states and Union Territories. We rank the states and Union Territories of the country on the basis of the universal social protection index highlight significant differences in the progress towards universal social protection across states and Union Territories. The paper also analyses how variation in the progress in the three core dimensions of social protection contributes to the variation in the overall progress towards universal social protection across the states and Union Territories of the country which has implications for social protection policies and programmes.

The paper is organised as follows. The next section of the paper describes the conceptual framework and the construction of the composite social protection index to measure the progress towards universal social protection. The third section of the paper customises the proposed composite social protection index to the Indian context. The fourth section of the paper constructs the universal social protection index for India and its states and Union Territories. The last section of the paper discusses the policy and programme implications of the findings of the analysis in the context of achieving universal social protection.

The Universal Social Protection Index

The universal social protection index proposed in this paper assumes that the progress towards universal social protection should be captured in a three–dimensional space – one related to household income, second to household resilience to external shocks and the third to social inclusion. If U denotes the universal social protection index, I denotes the index of household income security, R the index of household resilience, and S the index of social inclusion, then the index U can be linked to indexes I, R, and S through an aggregation function f. Or

$$U = f(I, R, S) \qquad (1)$$

The aggregation function f can be specified in different ways. The first and the simplest one is the simple arithmetic mean. The weakness of the simple arithmetic mean, however, is that it implies perfect substitutability of the three dimensions of social protection. This means that relatively slow progress in one dimension is totally compensated by relatively faster progress in other dimensions of social protection. This is contrary to the intuition that, the slower the progress in any dimension of social protection, the more efforts needed to accelerate the progress in that dimension to achieve the goal of universal social protection. This approach also amounts to assuming that the three dimensions of social protection act additively and have the same relative value vis–a–vis each other. The simple arithmetic mean was used as the aggregation function in the calculation of the original human development index by the United Nations (United Nations, 1990).

One alternative to address the weakness of the simple arithmetic mean as the aggregation function is to use the power mean or the generalised mean (Bullen, 2003) which assigns different weights to different dimensions of social protection depending upon the progress in the dimension. The use of power or the generalised mean ensures that as the progress in any one dimension of social protection advances, its relative importance in deciding the universal social protection index diminishes. Anand and Sen (1995; 1997) have recommended use of the power or the generalised mean for the construction of gender sensitive development index and the human poverty index. One limitation of the power or the generalised mean, however, is that there is inescapable arbitrariness in the selection of the power of the mean (Anand and Sen, 1997).

The second alternative is to use the geometric mean as the aggregation function. The advantage of the geometric mean is that it reduces the degree of substitutability of the three indexes that is inherent in the arithmetic mean. The geometric mean also ensures that one per cent increase in the performance index of one dimension of social protection has the same impact on the universal social protection index as one per cent decrease in the index of other dimension of social

protection. The geometric mean is now used to construct the human development index by the United Nations (United Nations, 2010). However, concerns about the appropriateness of the geometric mean as the aggregation function to construct the human development index have been raised in a recent paper (Anand, 2018).

There are other aggregation approaches that may also be used to combine the three core dimensions of social protection. Following Sagar and Najam (1998), the multiplicative aggregation function may be used to construct the universal social protection index by simply multiplying the three indexes *I*, *R*, and *S*. On the other hand, Mishra and Nathan (2013) have proposed additive inverse of normalised Euclidean distance from the ideal to construct the human development index. It may, however, be noted that the choice of the aggregation function has an impact on the value of the composite universal social protection index, although, the upper and lower limits of the index remain invariant to the aggregation function used. Using the same values of the indexes *I*, *R* and *S*, the universal social protection index *U* will be the highest when the simple arithmetic mean is used as the aggregation function and the lowest when the multiplicative aggregation function is used. When the geometric mean is used as the aggregation function, the index *U* will be lower than the index *U* based on simple arithmetic mean as the aggregation function. When the power or the generalised mean is used as the aggregation function, the index *U* will be sensitive to the power of the mean.

Alternatively, the three indexes reflecting the three core dimensions of social protection can be combined on a two-dimensional plane that constitutes the social protection triangle (Figure 1). In this conceptualisation, the area of the social protection triangle or a transformation of the area of the social protection triangle may be used to measure the progress towards universal social protection. Using the three indexes *I*, *R* and *S* reflecting the progress in the three core dimensions of social protection, the area of the social protection triangle may be calculated as

$$A = \frac{I*R*\sin(2\pi/3)}{2} + \frac{I*S*\sin(2\pi/3)}{2} + \frac{R*S*\sin(2\pi/3)}{2} \quad (2)$$

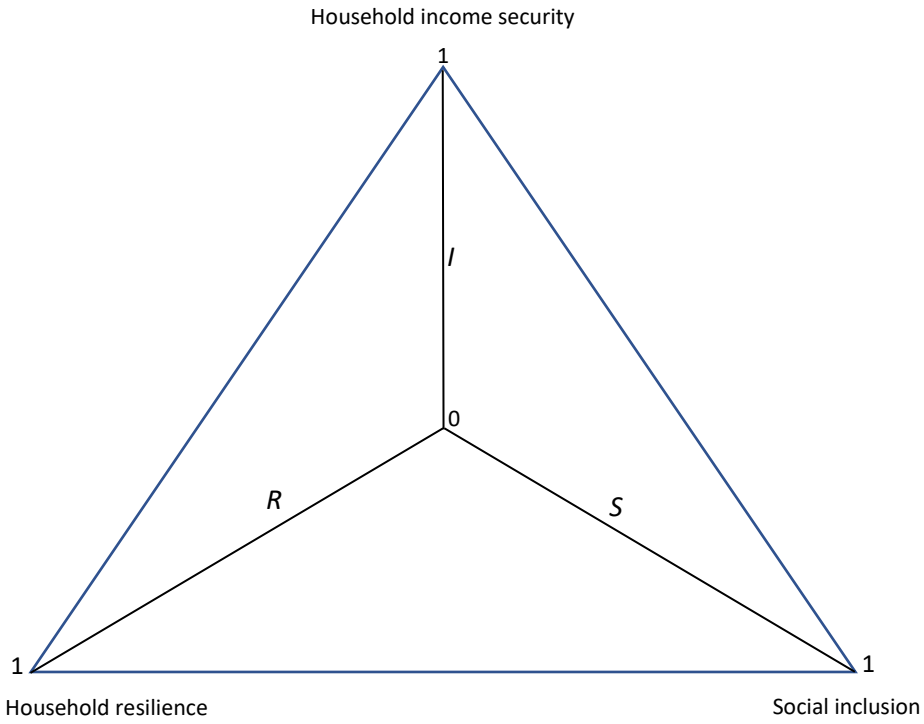
It may be noted that when $I = R = S = 0$, $A = 0$. On the other hand, when $I = R = S = 1$, the area of the social protection triangle, A_U equal to

$$A_U = \frac{3*\sin(2\pi/3)}{2} \quad (3)$$

Combining equations (2) and (3), the universal social protection index, *U*, based on the area of the social protection triangle may be defined as

$$U = \frac{A}{A_U} = \frac{(I*R)+(I*S)+(R*S)}{3} \quad (4)$$

Figure 1: Social protection triangle



It is obvious that if the indexes *I*, *R*, and *S* vary between 0 and 1, the index *U* also varies between 0 to 1 and the higher the index *U*, the more advanced the progress towards universal social protection.

The index *U* may also be written as

$$U = \frac{I*\left(\frac{R+S}{2}\right)+R*\left(\frac{I+S}{2}\right)+S*\left(\frac{I+R}{2}\right)}{3} \quad (5)$$

or

$$U = \frac{I*w_I+R*w_R+S*w_S}{3} \quad (6)$$

where

$$w_I = \frac{R+S}{2}, \text{ etc.} \quad (7)$$

Equation (6) suggests that the index *U* is actually the generalised mean of the indexes *I*, *R* and *S* with weight of a dimension equal to the average of the indexes of

the remaining two dimensions of social protection. Equation (6) also shows that the relative contribution of the progress in any one dimension of social protection to overall progress in social protection in contingent upon the progress in the other two dimensions of social protection also. This means that different dimensions of social protection are not treated in isolation to the remaining dimensions in the construction of universal social protection index *U*.

An advantage of the index *U* is that the progress in universal social protection or the diversity in the progress towards universal social protection can be decomposed into the progress or the diversity in the three dimensions of social protection. To this end, it can be shown that

$$\nabla U = U_2 - U_1 = \frac{I_2*R_2+I_2*S_2+R_2*S_2}{3} - \frac{I_1*R_1+I_1*S_1+R_1*S_1}{3} \quad (8)$$

or

$$\nabla U = \frac{1}{3}[(I_2 * R_2 - I_1 * R_1) + (I_2 * S_2 - I_1 * S_1) + (R_2 * S_2 - R_1 * S_1)] \quad (9)$$

Now

$$(I_2 * R_2 - I_1 * R_1) = LM_{IR} * \ln\left(\frac{I_2}{I_1}\right) + LM_{IR} * \ln\left(\frac{R_2}{R_1}\right) \quad (10)$$

Where LM_{IR} is the logarithmic mean of I_2*R_2 and I_1*R_1 and is defined as

$$LM_{IR} = \frac{(I_2*R_2-I_1*R_1)}{ln\left(\frac{I_2*R_2}{I_1*R_1}\right)} \quad (11)$$

Similarly,

$$(I_2 * S_2 - I_1 * S_1) = LM_{IS} * \ln\left(\frac{I_2}{I_1}\right) + LM_{IS} * \ln\left(\frac{S_2}{S_1}\right) \quad (12)$$

And

$$(R_2 * S_2 - R_1 * S_1) = LM_{RS} * \ln\left(\frac{R_2}{R_1}\right) + LM_{RS} * \ln\left(\frac{S_2}{S_1}\right) \quad (13)$$

So that

$$\nabla U = \frac{1}{3}\left[\ln\left(\frac{I_2}{I_1}\right) * (LM_{IR} + LM_{IS})\right] + \frac{1}{3}\left[\ln\left(\frac{R_2}{R_1}\right) * (LM_{IR} + LM_{RS})\right] + \frac{1}{3}\left[\ln\left(\frac{S_2}{S_1}\right) * (LM_{IS} + LM_{RS})\right]$$

or

$$\nabla U = \partial I + \partial R + \partial S \quad (14)$$

Estimation of the index U requires estimation of the index of household income security, I, the index of household resilience to external shocks, R and the index of social inclusion, S. Household income security has traditionally been measured in terms of the adequacy of the household income. However, recent studies have pointed out that the stability of the household income also matters to a significant extent in deciding the household income security (Morrissey et al, 2020). This means that the household income security index (I) should take into consideration both the adequacy and the stability of the household income. If I_a denotes an index of the adequacy of the household income and I_s denotes an index of the stability of the household income, then the index I of household income security may be constructed as the power mean of order 3 of I_a and I_s. Or

$$I = \left(\frac{I_a^{1/3} + I_s^{1/3}}{2}\right)^3 \tag{15}$$

On the other hand, the index of household resilience to external shocks (R) may be constructed following the conceptual framework recommended by the Food and Agriculture Organization of the United Nations (2016). This conceptual framework measures household resilience to external shocks in terms of 1) access to basic services; 2) household assets; 3) social safety nets; 4) household exposure to risk; and 5) household adaptive capacity. Denoting by R_b the index of household access to basic services; R_a the index of household assets; R_n the index of social safety nets; R_e the index of household exposure to risk; and R_c the household adaptive capacity, such that all the five indexes vary between 0 and 1, the index of household resilience to external shocks may be constructed as

$$R = \left(\frac{R_b^{1/3} + R_a^{1/3} + R_n^{1/3} + R_e^{1/3} + R_c^{1/3}}{5}\right)^3 \tag{16}$$

Lastly, constructing the index of social inclusion (S) requires more intuition as there is no consensus how to measure social inclusion. United Nations (2010) has highlighted the challenges in measuring social inclusion. An index developed by the United Nations Development Programme to measure social exclusion combines exclusion from economic life; exclusion from social life; and exclusion from social life (United Nations, 2011). We argue that different dimensions of social inclusion or exclusion are reflected in terms of the inequality in the indicators of well-being or the standard of living across mutually exclusive, yet exhaustive population sub-groups so that the equality in indicators of well-being reflects the degree of social inclusion. If there are k mutually exclusive, yet exhaustive, population sub-groups and L is an indicator of well-being, then the index S of social inclusion may be constructed in terms of the inequality in the indicator L across mutually exclusive population sub-groups.

The household level inequality in indicator L can be captured in terms of the skewness in the distribution of the well-being indicator L per household across mutually exclusive, yet exhaustive, population sub-groups. If Q denotes the skewness in the distribution of the indicator L across mutually exclusive, yet exhaustive, population sub-groups, then Q may be estimated as (Chaurasia, 2021b)

$$Q = \sqrt{\frac{\sum_{i=1}^{k}\left(p_i^2 - (1/k)\right)}{(1-(1/k))}} \tag{17}$$

where p_i is the proportion of welfare indicator per household in the population sub-group i. The index of social inclusion may now be constructed as

$$S = 1 - Q \tag{18}$$

The index S varies from 0 to 1. When there is total equality in the well-being indicator across different mutually exclusive, yet exhaustive, population sub-groups, the index $S = 1$ which means that the higher the index S, the higher the social inclusion.

The universal social protection index U, along with the social protection indexes I, R, and S constitute a comprehensive, multidimensional system of measuring and monitoring the progress towards universal social protection. The progress towards universal social protection may be termed as very poor if $U < 0.300$; poor if $0.300 \leq U < 0.550$; average if $0.550 \leq U < 0.750$; good if $0.750 \leq U < 0.900$; and very good if $U \geq 0.900$. The same scale may be used to classify the progress in the three core dimensions of social protection – household income security, household resilience to external economic and other shocks, and social inclusion.

Universal Social Protection in India

We use the index U to measure the progress towards universal social protection in India and in its constituent states/Union Territories. The first requirement for estimating the index U is the customisation of indexes I, R, and S depending upon the availability of necessary data. We have measured the adequacy of the household income in terms of the proportion of households which are not in the bottom 30 per cent of the monthly per capita consumption expenditure (MPCE) range. This information is available from the 68th round of the National Sample Survey and refers to the period 2011-12 (Government of India, 2015). This proportion is equal to 0 if all households are in the bottom 30 per cent but 1 if no household is in the bottom 30 per cent of the MPCE range. The higher this proportion the higher the index of household income adequacy. On the other hand, the stability of household income is measured in terms of the work status of the members of the household. We assume that the income of the household may be termed as stable if there is at least one member in the household

who has worked for at least 6 months during the year. The number of households where at least one member of the household worked for at least 6 months in the year is available through the 2011 population census. The index of the stability of household income is then measured as the proportion of households where at least one member has worked for at least 6 months during the year.

The index of household resilience to external shocks has been constructed using three indexes – a) the index of household access to basic services, b) the index of household assets, and c) the index of household adaptive capacity. Data required to calculate the index of safety nets and household exposure to risk are not available from any existing source so that these two dimensions of household resilience to external shocks have not been taken into consideration. The index of household access to basic serves is measured in terms of the essential health care services coverage index developed by the World Health Organization and the World Bank. This index is based on a set of core or tracer indicators that provide a good picture of the coverage of health services (Boerma et al, 2014; WHO, 2015). These indicators may be summarised in a systematic manner into a single index that summarises health care services coverage with a single numerical value (Wagstaff et al, 2015). Chaurasia and Kumar (2021) have constructed the essential health care services coverage index for India and for its constituent states/Union Territories using the data from the National Family Health Survey 2015–16. This index has been used as the index of access to basic services in the present analysis. The index ranges between 0 and 1 and the higher the index the higher the coverage and hence access to basic services. On the other hand, the index of household assets has been measured in terms of the proportion of households having at least one of the 7 household assets – radio/transistor, television, telephone, mobile or landline, computer with or without internet, bicycle, motorcycle/scooter/moped, etc. and car/jeep/van, etc. The higher this proportion the higher the index. This information is available from the 2011 population census and refers to the year 2010. Finally, the index of household adaptive capacity is measured in terms of the proportion of households having at least one person with education at least up to matriculation. This information is also available from 2011 population census and refers to the year 2011.

Lastly, the index of social inclusion is measured in terms of the inequality in the number of under–five deaths per household in the following six mutually exclusive yet exhaustive population sub–groups:

1. Rural Scheduled Castes
2. Rural Scheduled Tribes
3. Rural Other Castes
4. Urban Scheduled Castes
5. Urban Scheduled Tribes
6. Urban Other Castes

Estimates of under–five mortality rate in these 6 population sub–groups have been prepared for India and its constituent states based on the summary birth history data available through the 2011 population census and using the indirect technique of child mortality estimation (Maultrie et al, 2013). Using these estimates, the number of under–five deaths in each of the 6 mutually exclusive, yet exhaustive population sub–groups was calculated and then the number of under–five deaths per household was estimated for each mutually exclusive population sub–groups by dividing the number of under–five deaths by the number of households in each population sub–group.

The indicators selected for the construction of the universal social protection index (*U*) are, at best, illustrative. Availability of appropriate household level data is a major constraint in the selection of the indicators required for the construction of the index *U* to measure and monitor the progress towards universal social protection. Using the six indicators described above, the universal social protection index (*U*) for India has been estimated to be 0.536 (Table 1) which means that low social protection coverage and implies that the goal of universal social protection in India remains a distant dream. Across the states and Union Territories of the country, the index *U* varies from 0.709 in the National Capital Territory of Delhi to 0.415 in Meghalaya (Figure 2). There is no state/Union Territory where social protection coverage may be termed as good or very good. Similarly, there is no state/Union Territory where social protection coverage may be termed as very low. There are only 10 states/Union Territories – National Capital Territory of Delhi, Goa, Puducherry, Daman and Diu, Kerala, Tamil Nadu, Karnataka, Maharashtra, Punjab, and Chandigarh – where social protection coverage may be rated as average. By contrast, social protection coverage is low in 15 states/Union Territories.

The progress in different dimensions of social protection is different in the country and in different states/Union Territories of the country. For India, the index *I*, reflecting the progress in household income security is estimated to be 0.757; the index *R*, reflecting the household resilience to external shocks is estimated to be 0.596 while the index *S*, reflecting social inclusion is estimated to be 0.856. Across different states/Union Territories, the index *I* varies from 0.886 in Daman and Diu to 0.654 in Jharkhand (Figure 3). There are six states/Union Territories – Himachal Pradesh, Bihar, Odisha, Jammu and Kashmir, Lakshadweep, and Jharkhand – where, the index *I* is estimated to be less than 0.700. On the other hand, there are only 8 states/Union Territories – Kerala, Goa, Puducherry, National Capital Territory of Delhi, Lakshadweep, Punjab, Himachal Pradesh, and Chandigarh – where the index *R* is estimated to be more than 0.700 with the index being the highest in Kerala but the lowest in Meghalaya (Figure 4). Finally, the index *S* ranges from 0.916 in Tamil Nadu to 0.628 in Andaman Nicobar Islands. There are only 2 Union Territories – Lakshadweep and Andaman and Nicobar Islands – where the index is estimated to be less than 0.700 (Figure 5).

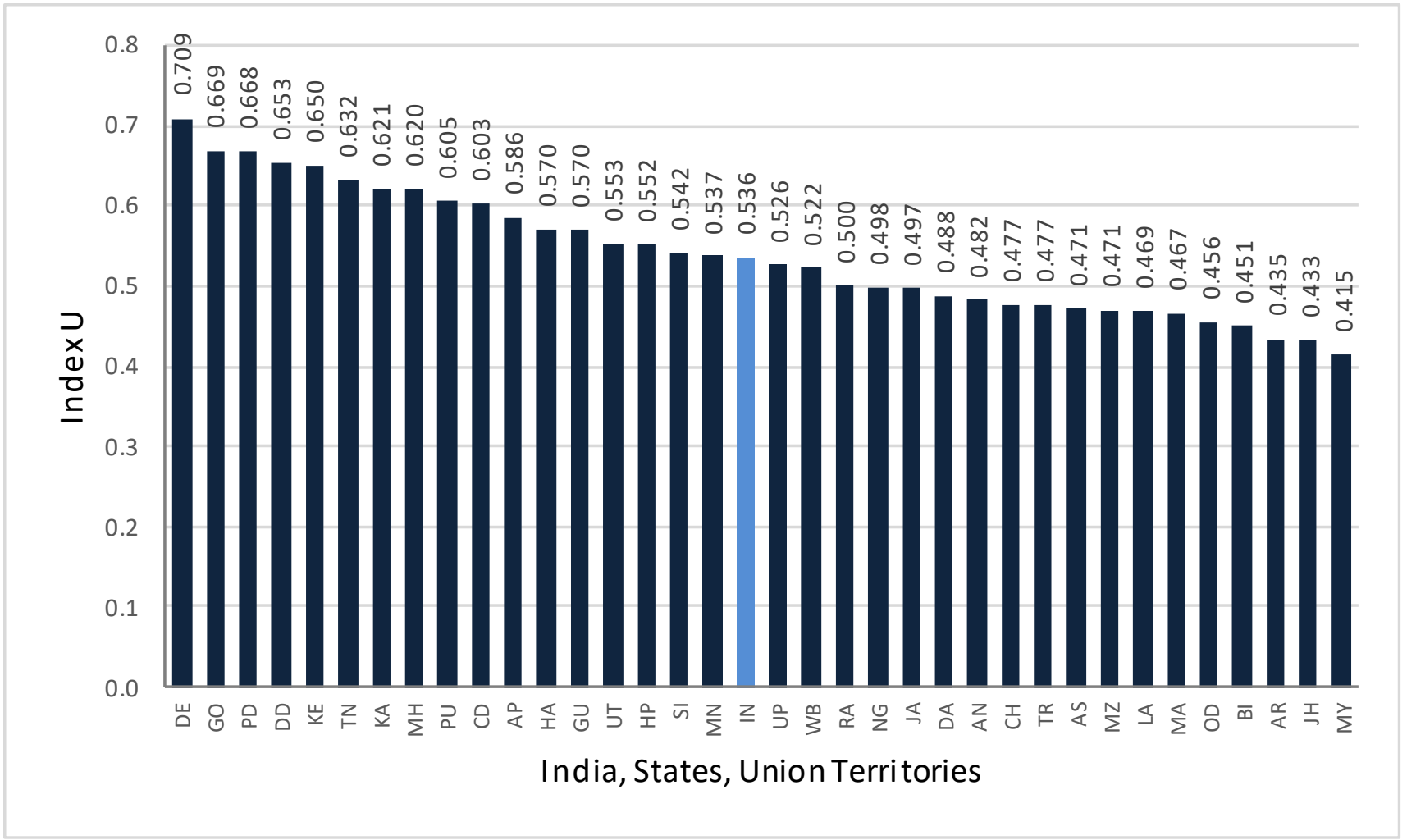


Figure 2: Universal Social Protection Index (USPI) in India and States/Union Territories

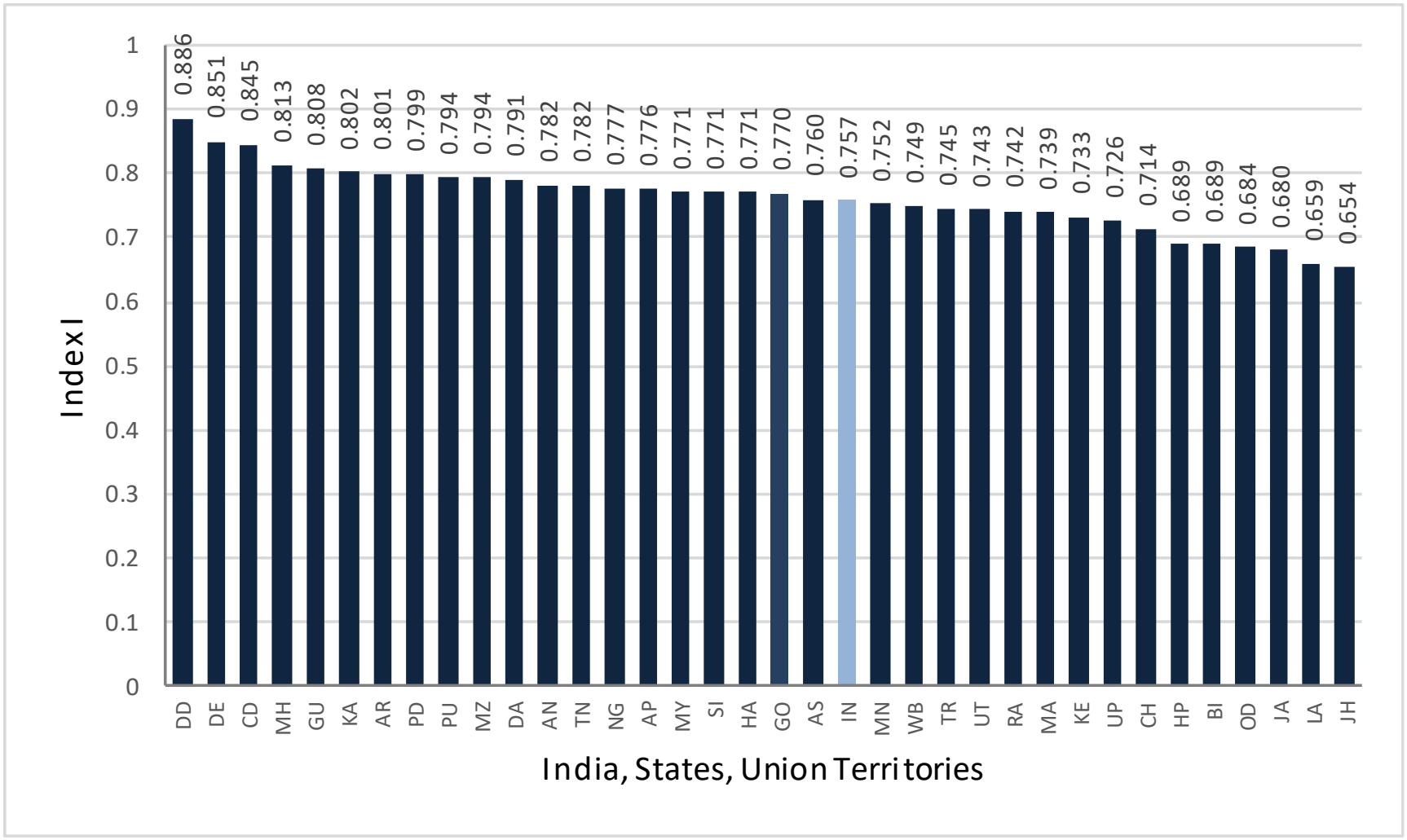


Figure 3: Index of Household Income Security in India and States/Union Territories

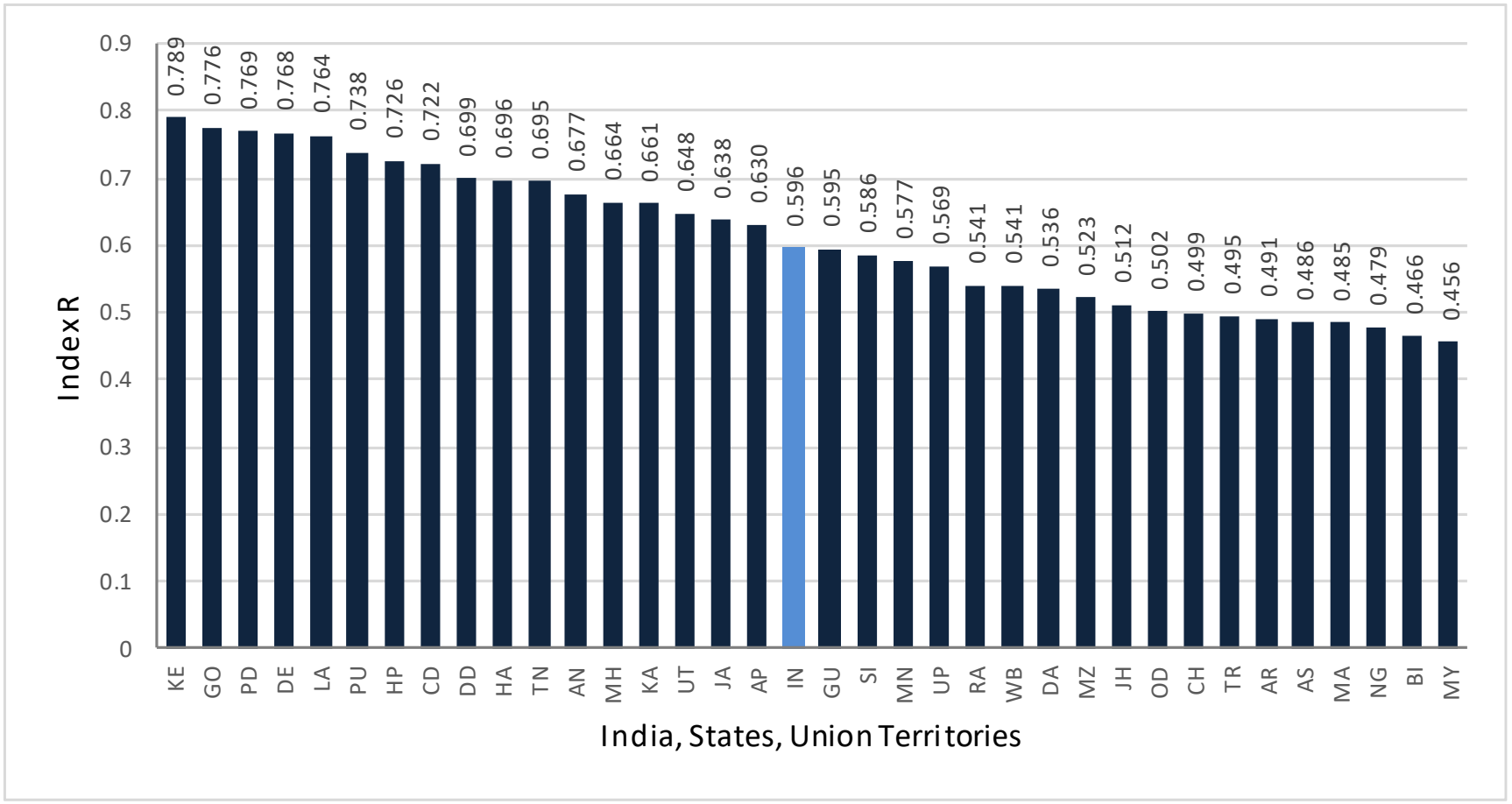


Figure 4: Index of Household Resilience to External Shocks in India and States/Union Territories

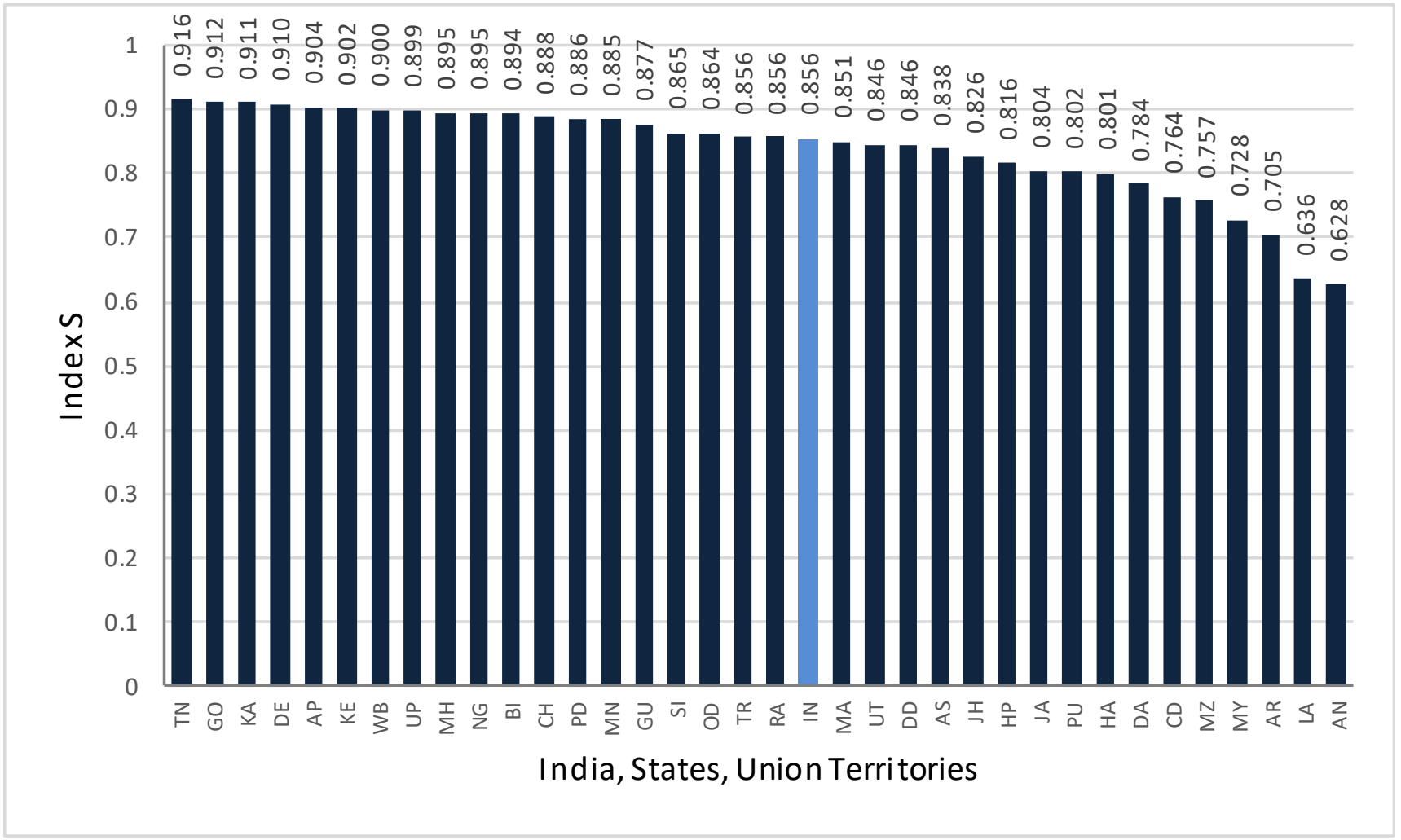
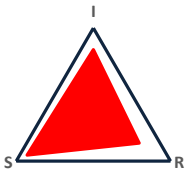
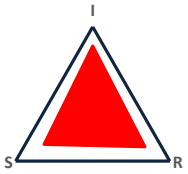


Figure 5: Index of Social Inclusion in India and States/Union Territories

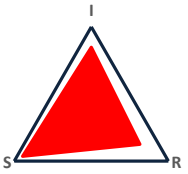
India



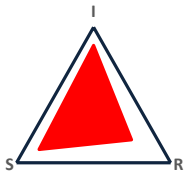
Andaman and Nicobar Islands



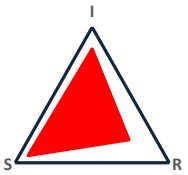
Andhra Pradesh



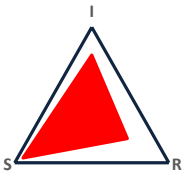
Arunachal Pradesh



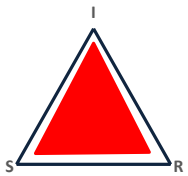
Assam



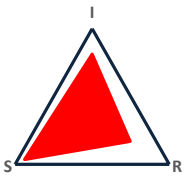
Bihar



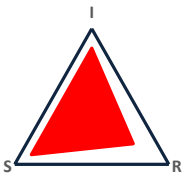
Chandigarh



Chhattisgarh



Dadra and Nagar Haveli



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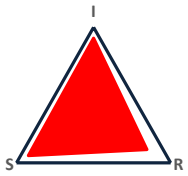
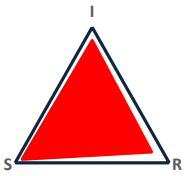
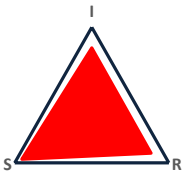


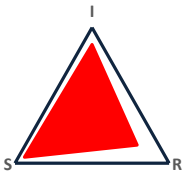
National Capital Territory of Delhi



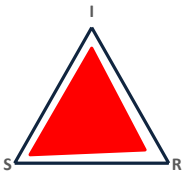
Goa



Gujarat



Haryana



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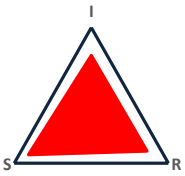
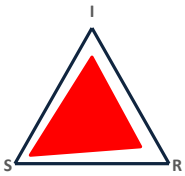
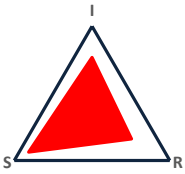


Jammu and Kashmir



Jharkhand



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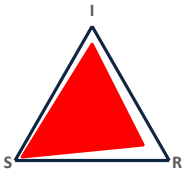
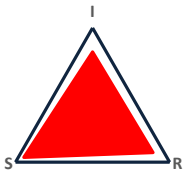
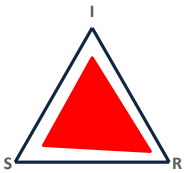


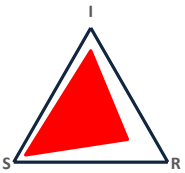
Kerala



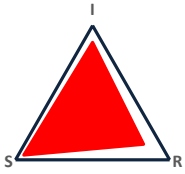
Lakshadweep



Madhya Pradesh



Maharashtra



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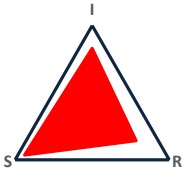
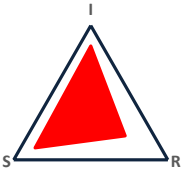


Meghalaya



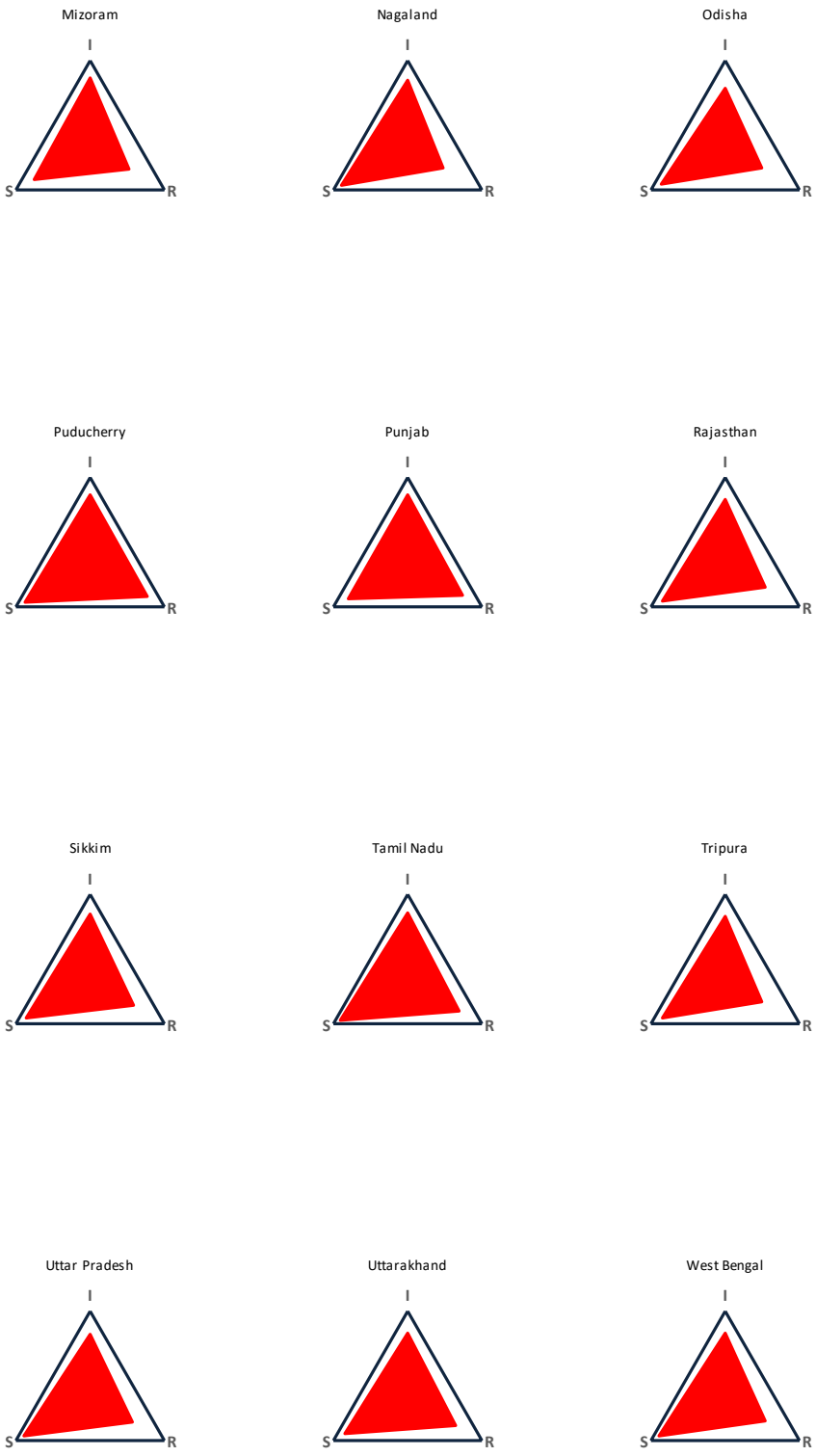


Figure 6: The social protection triangle for India and states/Union Territories reflecting the progress in the three dimensions of social protection.

The inter-state/Union Territory variability in the three dimensions of social protection is the highest in the dimension of household resilience to external shocks but the lowest in the dimension of household income security. The index R in Kerala is more than 73 per cent higher than that in Meghalaya. Similarly, the index I in the Union Territory of Daman and Diu is more than 35 per cent higher than the corresponding index in Jharkhand whereas the index S in Tamil Nadu is around 46 per cent higher than the corresponding index in Andaman and Nicobar Islands. The three indexes reflecting the three core dimensions of social protection are not related to each other. The simple zero order correlation coefficient between the index I and the index R is estimated to be 0.270 which implies that inter-state/Union Territory variation in the index I explains just around 7 per cent of the inter-state/Union Territory variation in the index R. Similarly, the inter-state/Union Territory variation in the index I explains less than 1 per cent of the inter-state/Union Territory variation in the index S whereas the inter-state/Union Territory variation in the index R is virtually independent of the inter-state/Union Territory variation in the index S. These observations suggest factors that influence the inter-state/Union Territory variability in the three dimensions of social protection are essentially different. This means that a multi-dimensional approach needs to be adopted to realise the goal of universal social protection. For example, just focussing on improving the household income security alone may not lead to the realisation of the goal of universal social protection as increasing household income security will have only a limited impact on enhancing household resilience and promoting social inclusion. In most of the states/Union Territories of the country, efforts directed towards realising the goal of universal social protection must go beyond economic incentives to strengthen household resilience to external shocks.

The social protection triangles for the country and for its 35 states/Union Territories are presented in figure 6 which depict the current coverage of in social protection programmes and activities and the distance to be traversed to achieve the cherished goal of universal social protection. The red triangle reflects the current coverage of social protection in the country and in its constituent states/Union Territories while the blue lines represent the universal social protection or the situation when $I = R = S = 1$. The gap between the two triangles reflects the surface to be covered to realise the goal of universal social protection. The social protection triangle depicts the multidimensional perspective of social protection.

It would be interesting to explore how different states/Union Territories of the country differ from national average in terms of the progress towards universal social protection and in different dimensions of social protection in conjunction with equation (14). The results of the decomposition exercise are presented in table 2. There are 18 states/Union Territories where the index U is estimated to be higher than the national average which implies that the current social protection coverage in these states/Union Territories is comparatively better than the social protection coverage in the country as a whole. This leaves 17 states/Union Territories where the current coverage of social protection is lower than the coverage at the national level. There are, however, only 7 states/Union Territories – Andhra Pradesh, National Capital Territory of Delhi, Goa, Karnataka, Maharashtra, Puducherry, and Tamil Nadu – where the coverage in all the three dimensions of social protection is better than the coverage in the country as a whole. On the other hand, Madhya Pradesh is the only state/Union Territory in the country where the coverage in all the three dimensions of social protection is lower than the coverage at the national.

Conclusions

In this paper, we have constructed a composite index to measure and monitor the progress towards universal social protection in the three–dimensional social protection space characterised by household income security, household resilience to external shocks and household social inclusion. The approach adopted in this paper is different from the conventional approaches in which the progress in different dimensions of social protection is added linearly. The application of the composite index to India suggests that the current social protection coverage in India may be rated as low and the country needs additional efforts to achieve the goal of universal social protection. The primary concern towards universal social protection appears to be enhancing the household resilience to external shocks. The analysis also emphasises the need of adopting a multidimensional approach to provide universal social protection cover to the population in the effort directed towards tackling poverty, addressing vulnerability, and reducing inequality. More importantly, the paper emphasises that focussing on improving the household income security through economic incentives such as direct transfers in cash or kind may not be enough to achieve the goal of universal social protection. It appears imperative that social protection efforts are directed towards enhancing and strengthening household resilience to external shocks such as market volatility, economic vagaries, and environmental hazards such as epidemics. Efforts to promote social protection in India have largely been directed towards individuals. Such efforts have limited relevance in the pursuit of universal social protection if they do not contribute to strengthening the household resilience to a range of external shocks.

The social protection scenario in India depicted in the present paper is, at best, illustrative because of the limitations of the availability the necessary data related to different dimensions of social protection and the available data are dated as they refer to the period around 2010–11. This limitation, however, do not lessen the importance and relevance of the universal social protection index proposed and used in this paper. The success of social protection efforts, ultimately, depends on monitoring the progress towards universal social protection. It is important that population wide approach is adopted to monitor the progress towards universal social protection. The universal social protection index is an attempt in this direction.

Social protection has now been recognised universally as an important intervention to enhance human capital formation and promote social development. Universal social protection is argued to be necessary for poverty eradication, social inclusion, and environmental sustainability and to ensure that no one is left behind. In this context, the composite universal social protection index constructed in this paper may serve as a valuable tool to measure and monitor the progress towards universal social protection in contemporary social, economic, cultural, environmental, and political settings. It is the need of the time that measuring and monitoring universal social protection goes beyond measuring and monitoring government spending on social protection programmes and activities to measuring and monitoring social protection efforts through a multidimensional perspective. The composite universal social protection index developed in this paper may be useful in this context.

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Table 1: Universal social protection index *U* in India and states/Union Territories

Country/State/Union Territory	Universal social protection index *U*	Household income security index *I*	Household resilience index *R*	Household social inclusion index *S*
India	0.536	0.757	0.596	0.856
Andaman & Nicobar Islands	0.482	0.782	0.677	0.628
Andhra Pradesh	0.586	0.776	0.630	0.904
Arunachal Pradesh	0.435	0.801	0.491	0.705
Assam	0.471	0.760	0.486	0.838
Bihar	0.451	0.689	0.466	0.894
Chandigarh	0.603	0.845	0.722	0.764
Chhattisgarh	0.477	0.714	0.499	0.888
Dadra & Nagar Haveli	0.488	0.791	0.536	0.784
Daman & Diu	0.653	0.886	0.699	0.846
National Capital Territory of Delhi	0.709	0.851	0.768	0.910
Goa	0.669	0.770	0.776	0.912
Gujarat	0.570	0.808	0.595	0.877
Haryana	0.570	0.771	0.696	0.801
Himachal Pradesh	0.552	0.689	0.726	0.816
Jammu & Kashmir	0.497	0.680	0.638	0.804
Jharkhand	0.433	0.654	0.512	0.826
Karnataka	0.621	0.802	0.661	0.911
Kerala	0.650	0.733	0.789	0.902
Lakshadweep	0.469	0.659	0.764	0.636
Madhya Pradesh	0.467	0.739	0.485	0.851
Maharashtra	0.620	0.813	0.664	0.895
Manipur	0.537	0.752	0.577	0.885
Meghalaya	0.415	0.771	0.456	0.728
Mizoram	0.471	0.794	0.523	0.757
Nagaland	0.498	0.777	0.479	0.895
Odisha	0.456	0.684	0.502	0.864
Puducherry	0.668	0.799	0.769	0.886
Punjab	0.605	0.794	0.738	0.802
Rajasthan	0.500	0.742	0.541	0.856
Sikkim	0.542	0.771	0.586	0.865
Tamil Nadu	0.632	0.782	0.695	0.916
Tripura	0.477	0.745	0.495	0.856
Uttar Pradesh	0.526	0.726	0.569	0.899
Uttarakhand	0.553	0.743	0.648	0.846
West Bengal	0.522	0.749	0.541	0.900

Source:Author's calculations

Table 2: Difference in the progress towards universal social progression in a state/Union Territory relative to the national average

State/Union Territory	Difference in the index *U* from the national average	Difference in the index *U* attributed to the difference in		
		The index of household income security	The index of household resilience to external shocks	The index of household social inclusion
Andaman & Nicobar Islands	−0.054	0.012	0.041	−0.107
Andhra Pradesh	0.050	0.009	0.019	0.022
Arunachal Pradesh	−0.101	0.020	−0.054	−0.066
Assam	−0.065	0.002	−0.059	−0.008
Bihar	−0.085	−0.032	−0.069	0.016
Chandigarh	0.067	0.043	0.068	−0.044
Chhattisgarh	−0.059	−0.020	−0.052	0.014
Dadra & Nagar Haveli	−0.048	0.016	−0.032	−0.032
Daman & Diu	0.117	0.065	0.058	−0.005
National Capital Territory of Delhi	0.173	0.049	0.097	0.027
Goa	0.133	0.007	0.099	0.027
Gujarat	0.034	0.025	−0.001	0.010
Haryana	0.034	0.007	0.053	−0.026
Himachal Pradesh	0.016	−0.034	0.068	−0.018
Jammu & Kashmir	−0.039	−0.037	0.021	−0.023
Jharkhand	−0.103	−0.048	−0.043	−0.012
Karnataka	0.085	0.023	0.036	0.026
Kerala	0.114	−0.012	0.105	0.022
Lakshadweep	−0.067	−0.046	0.081	−0.101
Madhya Pradesh	−0.069	−0.008	−0.059	−0.002
Maharashtra	0.084	0.028	0.038	0.019
Manipur	0.001	−0.002	−0.010	0.013
Meghalaya	−0.121	0.006	−0.073	−0.055
Mizoram	−0.066	0.017	−0.039	−0.044
Nagaland	−0.038	0.009	−0.064	0.017
Odisha	−0.080	−0.034	−0.050	0.003
Puducherry	0.132	0.022	0.095	0.015
Punjab	0.069	0.019	0.076	−0.026
Rajasthan	−0.036	−0.007	−0.029	0.000
Sikkim	0.005	0.007	−0.006	0.004
Tamil Nadu	0.096	0.013	0.055	0.028
Tripura	−0.059	−0.005	−0.054	0.000
Uttar Pradesh	−0.010	−0.015	−0.015	0.019
Uttarakhand	0.017	−0.007	0.028	−0.004
West Bengal	−0.014	−0.004	−0.030	0.020

Source: Author's calculations

Table 3: Social protection indicators in India and states/Union Territories used for the construction of universal social protection index.

Country/State/ Union Territory	Proportion of households with MPCE above bottom 30 per cent of MPCE range	Proportion of households with at least one main worker	Essential health services coverage index	Proportion of households having at least one asset	Proportion of households with at least one person with matriculate education	Average under-five deaths per 1000 household					
						Rural Scheduled Castes	Rural Scheduled Tribes	Rural Other Castes	Urban Scheduled Castes	Urban Scheduled Tribes	Urban Oher Castes
India	0.760	0.753	0.507	0.822	0.494	8.67	10.45	7.23	5.46	5.79	4.37
Andaman & Nicobar Islands	0.809	0.756	0.557	0.919	0.591	0.00	12.01	3.77	0.00	5.42	3.50
Andhra Pradesh	0.809	0.743	0.593	0.806	0.514	4.93	6.53	3.99	4.29	4.97	3.69
Arunachal Pradesh	0.845	0.759	0.385	0.693	0.429	0.00	12.15	8.56	0.00	6.16	3.09
Assam	0.772	0.749	0.375	0.764	0.378	6.83	6.94	8.32	4.25	3.63	3.58
Bihar	0.634	0.746	0.359	0.744	0.356	12.18	9.30	9.16	9.09	6.93	6.25
Chandigarh	0.927	0.768	0.500	0.977	0.743	8.19	*	5.36	4.99	*	2.87
Chhattisgarh	0.692	0.736	0.455	0.729	0.357	8.23	10.76	8.17	7.08	6.15	5.33
Dadra & Nagar Haveli	0.868	0.719	0.359	0.752	0.544	4.12	8.35	3.03	3.74	3.23	3.04
Daman & Diu	0.952	0.824	0.566	0.924	0.639	1.10	2.82	3.17	2.48	2.24	1.60
National Capital Territory of Delhi	0.927	0.780	0.615	0.971	0.746	7.39	*	6.59	7.11	*	5.09
Goa	0.762	0.778	0.672	0.954	0.722	2.60	4.29	3.79	4.83	4.20	3.54
Gujarat	0.851	0.765	0.497	0.813	0.508	6.11	8.87	6.11	4.87	5.11	4.31
Haryana	0.793	0.749	0.568	0.906	0.643	10.63	*	8.38	7.37	*	4.27
Himachal Pradesh	0.612	0.772	0.581	0.911	0.711	5.61	4.31	4.33	3.10	2.00	1.93
Jammu & Kashmir	0.615	0.749	0.561	0.827	0.548	5.49	13.24	9.23	4.33	6.29	6.13
Jharkhand	0.570	0.746	0.406	0.790	0.397	12.00	11.68	9.39	6.86	5.21	4.58
Karnataka	0.844	0.761	0.555	0.857	0.597	7.00	7.81	5.92	5.28	5.71	4.46
Kerala	0.706	0.761	0.678	0.952	0.754	1.93	3.02	1.81	1.84	1.98	1.99
Lakshadweep	0.548	0.783	0.634	0.981	0.703	*	7.00	3.38	*	7.92	1.31
Madhya Pradesh	0.738	0.741	0.455	0.674	0.360	11.90	15.66	8.73	8.47	9.46	5.98
Maharashtra	0.877	0.752	0.577	0.810	0.619	4.77	7.11	4.64	4.40	4.60	3.78
Manipur	0.779	0.725	0.364	0.800	0.627	6.43	4.17	4.81	2.94	4.30	4.05
Meghalaya	0.800	0.743	0.425	0.642	0.334	11.59	19.63	15.39	4.08	8.76	3.43
Mizoram	0.874	0.719	0.371	0.810	0.449	0.00	10.46	8.64	5.49	4.93	2.59
Nagaland	0.821	0.734	0.357	0.677	0.438	0.00	7.21	7.00	0.00	5.33	5.04
Odisha	0.634	0.736	0.443	0.745	0.366	7.65	10.44	5.53	6.53	6.69	4.31

Country/State/ Union Territory	Proportion of households with MPCE above bottom 30 per cent of MPCE range	Proportion of households with at least one main worker	Essential health services coverage index	Proportion of households having at least one asset	Proportion of households with at least one person with matriculate education	Average under-five deaths per 1000 household					
						Rural Scheduled Castes	Rural Scheduled Tribes	Rural Other Castes	Urban Scheduled Castes	Urban Scheduled Tribes	Urban Oher Castes
Puducherry	0.841	0.759	0.648	0.938	0.739	5.13	*	4.01	6.52	*	5.76
Punjab	0.836	0.753	0.635	0.956	0.650	7.25	*	4.57	4.98	*	3.13
Rajasthan	0.745	0.740	0.482	0.788	0.400	13.24	14.29	10.19	8.48	7.54	6.22
Sikkim	0.788	0.754	0.537	0.818	0.442	5.57	4.38	3.93	3.40	2.61	2.62
Tamil Nadu	0.818	0.746	0.572	0.949	0.603	4.20	4.89	3.58	3.51	4.28	2.80
Tripura	0.755	0.735	0.419	0.722	0.387	5.70	7.21	5.26	4.44	3.41	3.02
Uttar Pradesh	0.704	0.749	0.424	0.886	0.464	13.53	14.39	11.80	10.21	9.16	7.93
Uttarakhand	0.738	0.749	0.516	0.862	0.597	7.99	7.18	5.62	5.15	3.18	3.71
West Bengal	0.754	0.744	0.504	0.772	0.391	4.04	5.30	4.60	3.34	3.51	2.93

Source: Author's calculations from data from various sources.

Remarks: * No population in the population sub-groups