

GOVERNMENT OF KERALA

**EXPLANATORY NOTE
TO
MEMORANDUM**

PRESENTED
TO
THE THIRTEENTH FINANCE COMMISSION

FINANCE DEPARTMENT
JUNE 2009

Explanatory Note to the Memorandum submitted to the Thirteenth Finance Commission

The Government of Kerala presented a Memorandum to the Thirteenth Finance Commission in January 2009. The Commission visited the State during 8-10 February, 2009 and had detailed discussions, among others, with the Chief Minister, Finance Minister, other Ministers and senior officials on the various issues dealt with in the Memorandum and the forecasts of revenue and expenditure submitted by the State Government. It emerged during the dialogue that a few points required further clarification and certain issues needed elaboration. This is what is attempted in this Explanatory Note. Our plea is that the Commission may kindly consider these aspects also along with our suggestions in the Memorandum.

Transition to GST and compensation packages

2.1 The Government of India has already announced the introduction of 'Goods and Services Tax' (GST) with effect from 1st April 2010 and the Empowered Committee of State Finance Ministers is working out the details of implementation of the system. We request that in view of the federal character of our Constitution, while designing an effective GST model, the need for sharing the powers of taxation between Centre and States may be given top priority. Issues dealing with exemptions, preparation of Revenue Neutral Rate, compensation package and e-governance in the system are the major concerns of Kerala as we switch over to GST.

2.2 It may be recalled in this context that while moving towards full implementation of VAT during 2005-06, States were offered the power to levy tax on 77 new services to compensate the loss of revenue on account of phasing out of CST. But later these services were found to be not yielding much revenue. Hence, when designing the framework of GST, some major revenue yielding services which are hitherto taxed by Centre may be assigned to States.

2.3 When VAT was implemented, there was a provision for compensation for any revenue loss to States due to its introduction but this was later found to be inadequate and there was also considerable delay in getting it. While introducing GST also, there should be not only adequate compensation for States on account of revenue loss but also a statutory mechanism for avoiding delay in giving such compensation to eligible States.

2.4 Another important aspect of the introduction of GST is its impact on Centre – State financial relations. When States are given powers to collect taxes hitherto done by Centre alone (in some States this may not lead to significant revenue generation), there may be a fall in the Gross Tax Revenue of the latter which in turn will adversely affect the size of the divisible pool fixed by the Finance Commission. Obviously,

Centre has to meet not only the fall in collection of States' own revenue that may occur due to the introduction of GST, but also draw up a separate compensation package for any short fall in devolution of funds to the adversely affected States through the Finance Commission route.

Income Distance Calculation

3.1 In our Memorandum submitted to the Thirteenth Finance Commission we have suggested that i) maximum possible weight may be given to the factor of population ii) too high a weight may not be given to the factor of income and iii) a band may be applied to moderate vast variation in the per capita Share of Central Taxes to different States.

3.2 We have made these suggestions in order to achieve what we perceive to be a reasonable balance among considerations of need, equity and efficiency. In the recommendations of the last several Commissions the equity aspect has been sought to be ensured by being relatively more generous to economically backward States. Needless to say, this is a perfectly laudable objective. For converting the abstract idea of economic backwardness to a tangible factor to be included in the devolution formula successive Commissions have adopted the method of measuring the relative difference among States in per capita income. We have pointed out in our Memorandum that per capita income as a measure of backwardness is really not a perfect tool to assess economic backwardness. However, over the years this tool has been adopted by various Finance Commissions as it is not easy to evolve a yardstick which is universally acceptable. In applying this yardstick to the third level exercise of determining the specific share entitlement of each State under the factor of income distance, different Commissions have adopted different formulae. This is the stage at which we feel an aberration has cropped up bringing in an element of unfairness in horizontal distribution. The entitlement of each State differs substantially depending on the choice of a specific formula by a particular Finance Commission. The impact of this phenomenon can be properly appreciated only if the results of the application of the different formulae are calculated and compared. We have attempted such an exercise in the Annexures to this Explanatory Note. Annexure-I gives a rather detailed account of the formula adopted by each of the last few Commissions and Annexures-II to VIII show tables illustrating the result of the application of some of the possible formulae on the Twelfth Finance Commission Award. The calculation sheets also give brief explanatory notes.

3.3 A perusal of the Annexures would show that while the concept of equity is undoubtedly commendable and while the method of income distance calculation is acceptable, though not perfect, the choice of formula for application for this factor can result in such variation as to become unfair to some

States and more than reasonably generous to some other States. As we have stated in our Memorandum one difficult task before the Commission is to balance considerations of need, equity and efficiency. It is against this back ground that we have pointed out that a major aberration results from the choice of a particular formula for measuring income distance factor. At the same time we recognise the fact that which ever be the formula adopted such variation in different degrees would remain. In such a situation the only way to handle the problem, in our perception, is by lowering the impact of this factor using the exercise of moderation. This will also help in achieving the objective of reducing the vast variation in the per capita tax share entitlement of different States.

3.4 We take this opportunity to point out that in the income distance method the whole idea is to measure the distance of per capita income of other States from that of the highest State and not from the per capita income of a 'representative' State. The State with the highest per capita GSDP happens to be Goa since the time of the Ninth Finance Commission (and this position is likely to continue). It was not considered a 'representative' State by the Ninth Commission because of its small area and population. We plead that the Thirteenth Commission may have a re-look at this issue. If the intention is to measure distance of income of States from the State with the highest income, the concept of a representative State is not at all relevant in the context of this criterion. It brings in a lot of subjectivity to the question of what is a representative State. It is a fact that the States in India vary so vastly in area, population, income, language etc. that no single State can be considered as representative of all the remaining States. In a scheme of devolution of funds on the criterion of income distance, only the per capita income factor need be taken into account, especially when population and area are considered separately as other criteria.

3.5 In this connection, we would like to invite the Commission's attention to the shocking revelation that despite liberal dispensation by successive Finance Commissions to certain States – we have for this purpose taken the Non-special Category States only - for the last 25 years on the ground of backwardness, the percentage share of these States' per capita GSDP has been coming down drastically (Table – 1). The purpose of higher devolution to weaker States is to enable them to catch up with the others in the long run. But here we find that just the opposite is happening. The higher devolution is acting as a kind of incentive for such States to remain weak and weaker. The efficient States would have utilised the money more effectively to improve their position further. That is why we have said in our Memorandum (para 5.13) that the income distance criterion and the distribution based on it is not found effective.

Table 1 - Average per capita GSDP – Ranking of Non-special Category States

Sl. No.	VIII FC	
1	Punjab	12.67
2	Haryana	10.67
3	Maharashtra	9.41
4	Gujarat	8.96
5	West Bengal	7.02
6	Karnataka	6.77
7	Tamil Nadu	6.56
8	Kerala	6.55
9	Rajasthan	6.35
10	Andhra Pradesh	5.67
11	Orissa	5.17
12	Madhya Pradesh	5.04
13	Uttar Pradesh	4.90
14	Bihar	4.25

Sl. No.	IX FC	
1	Goa	11.91
2	Punjab	10.77
3	Maharashtra	9.08
4	Haryana	8.16
5	Gujarat	7.83
6	Karnataka	6.60
7	West Bengal	5.98
8	Kerala	5.75
9	Tamil Nadu	5.75
10	Andhra Pradesh	5.51
11	Madhya Pradesh	4.99
12	Rajasthan	4.88
13	Orissa	4.64
14	Uttar Pradesh	4.60
15	Bihar	3.55

Sl. No.	X FC	
1	Goa	11.76
2	Punjab	11.18
3	Maharashtra	8.58
4	Haryana	8.44
5	Gujarat	7.35
6	Tamil Nadu	6.54
7	Karnataka	6.09
8	West Bengal	5.99
9	Kerala	5.64
10	Andhra Pradesh	5.52
11	Madhya Pradesh	5.27
12	Rajasthan	4.94
13	Orissa	4.70
14	Uttar Pradesh	4.58
15	Bihar	3.41

Sl. No.	XI FC	
1	Goa	12.66
2	Maharashtra	9.64
3	Punjab	9.38
4	Haryana	8.55
5	Gujarat	8.25
6	Tamil Nadu	7.03
7	Kerala	6.61
8	Karnataka	6.25
9	Andhra Pradesh	5.74
10	Rajasthan	5.24
11	West Bengal	5.14
12	Madhya Pradesh	4.84
13	Orissa	3.99
14	Uttar Pradesh	3.89
15	Bihar	2.79

Sl. No.	XII FC	
1	Goa	15.62
2	Punjab	7.74
3	Maharashtra	7.45
4	Haryana	7.25
5	Kerala	6.30
6	Gujarat	6.27
7	Tamil Nadu	6.23
8	Karnataka	5.71
9	Andhra Pradesh	5.21
10	West Bengal	4.80
11	Uttaranchal	4.69
12	Rajasthan	4.16
13	Chattisgarh	3.78
14	Madhya Pradesh	3.68
15	Jharkhand	3.23
16	Orissa	3.10
17	Uttar Pradesh	2.98
18	Bihar	1.80

Note: This is the ranking of Non-special Category States according to the average per capita GSDP of States given in the concerned Finance Commission Reports. The values are expressed as a percentage of the average per capita GSDP of each State to the total average per capita GSDP of all Non-special Category States. In the case of Tenth Finance Commission, NSDP is taken instead of GSDP.

3.6 To summarise, drawing from the Memorandum we had already submitted and the explanatory note given above, we suggest the following approach for the kind consideration of the Thirteenth Finance Commission.

- i) Give as high a weight as possible to the factor of population (since it is a fact based criterion not susceptible to difference in results depending on any formula selected).
- ii) Without losing the basic objective of equity, give as low a weightage as feasible to the income distance factor.
- iii) Select a formula which would tend towards bringing different States with relatively low levels of per capita income abreast of that State which has the highest level of per capita income (without diluting this basic concept by taking the average of two or three top States).
- iv) The result of the application of which ever formula the Commission uses may be assessed and moderated to ensure that there is only a reasonable variation between the lowest per capita entitlement and the highest per capita entitlement under the factor of income distance. This can be done by applying a minimum and a maximum level, distributing the difference between the two in the same ratio, as in the distribution before the application of the band i.e. without altering the inter-se ratios of different States.

Reckoning GSDP for fiscal targets

4 The State of Kerala has in its Memorandum (para 2.11) states that there are various factors, some beyond the control of the State Government, which affect the size of revenue account deficit. The Memorandum further states (para 2.12) that in the context of fiscal deficit reduction, each State has to manage its fiscal situation depending on various factors like its revenue earning capacity, committed items and pattern of expenditure and overall debt position. It may be submitted, without prejudice to this position, that if fiscal targets are to be fixed relative to GSDP, the GSDP for each fiscal year may be projected from the latest year for which final figures of CSO may subsequently become available, instead of the present practice of computing this from an earlier fixed period/year without considering the subsequent final figures of CSO.

Forecasts of revenue and expenditure – variations

5.1 There was some variation in the figures submitted by the State Government to the Planning Commission (XI Five Year Plan) and to the Thirteenth Finance Commission in respect of certain items of revenue receipt and revenue expenditure. A statement showing these variations is given in Table 2. The reasons for these variations are explained below in detail.

5.2 **Revenue receipts:** Projections in respect of the Eleventh FYP were made based on the Latest Estimates (LE) for 2006-07, whereas for the forecast in respect of Thirteenth Finance Commission, Trend Growth Rate (TGR) for 5 years was applied on 2007-08 actuals. Since the bases for the two estimates are different the projected figures are not comparable. The 2007-08 actual under State's Own Tax Revenue,

Table 2 - Variation between figures projected in the 11th FYP (2007-12) and in the forecast to 13 th F.C.							
Sl. No.	Item	Current prices (Rs. Crore)					
		2007-08	2008-09	2009-10	2010-11	2011-12	2007-12
1	2	3	4	5	6	7	8
I	State's Own Revenue Receipts						
a	Submitted to Planning Commission (XIth Plan)	15333	17377	19693	22319	25296	100018
b	Submitted to Finance Commission	14879	16729	18667	21099	23938	95312
	<i>Variation (b-a)</i>	-454	-648	-1026	-1220	-1358	-4706
A	State's Own Tax Revenue						
a	Submitted to Planning Commission (XIth Plan)	14159	16057	18209	20649	23417	92491
b	Submitted to Finance Commission	13669	15528	17334	19619	22294	88444
	<i>Variation (b-a)</i>	-490	-529	-875	-1030	-1123	-4047
B	State's Non-Tax Revenue						
a	Submitted to Planning Commission (XIth Plan)	1174	1320	1485	1670	1880	7529
b	Submitted to Finance Commission	1210	1201	1333	1480	1644	6868
	<i>Variation (b-a)</i>	36	-119	-152	-190	-236	-661
II	Non-Plan Revenue Expenditure						
a	Submitted to Planning Commission (XIth Plan)	23415	24593	26481	28674	31054	134217
b	Submitted to Finance Commission	22614	25568	27552	36531	39427	151692
	<i>Variation (b-a)</i>	-801	975	1071	7857	8373	17475
III	Pre-devolution NPPE Deficit						
a	Submitted to Planning Commission (XIth Plan)	8082	7216	6788	6355	5758	34199
b	Submitted to Finance Commission	7735	8839	8885	15432	15489	56380
	<i>Variation (b-a)</i>	-347	1623	2097	9077	9731	22181

Note: Corrections noted in the comparative Statement forwarded by the Commission are shown in bold

when compared to the 2007-08 BE taken for Eleventh FYP, is less by Rs.490 crore. Since 2007-08 B.E. was based on 2006-07 L.E., this overestimated 2007-08 BE was also projected for the entire Eleventh FYP period upto 2011-12. As the projections for the Thirteenth FC were on the actuals of 2007-08 it obviously excluded the excess of Rs. 490 crore contained in the projection for the purpose of the Eleventh FYP.

5.3 For the projections from 2008-09 onward in respect of Thirteenth FC forecast, TGR for five years from 2003-04 to 2007-08 is applied on 2007-08 actuals after making necessary adjustments for periodic eventualities that affect the TGR. In respect of the Eleventh FYP the overall growth rate applied on 2007-08 BE to arrive at the estimates for 2008-09 was 13.40%. But in the projection of Thirteenth FC forecast, from 2007-08 to 2008-09, the overall growth rate is 13.60%. This slightly higher growth rate is

meant to offset the impact of reduction in CST by 1%. However the growth rate in 2009-10 over 2008-09 is only 11.63%. This is because a sum of Rs.188 crore under State Sales Tax estimated in 2008-09 as ARM is shown separately without further projection. Besides, there is a further reduction in CST by 1% in 2009-10. The projection applied from 2010-11 is 13.40% and 13.18% for Eleventh FYP and Thirteenth FC respectively. Moreover the growth applied for Thirteenth FC in 2011-12 is at a higher rate of 13.63% than the Eleventh FYP projection of 13.40%. The variations in the rates of projection are reasonable and justifiable, given the circumstances. Naturally, on such fine tuning the absolute figures would undergo changes accordingly.

5.4 In the case of Non-Tax Revenue, the growth rate of estimates for Eleventh FYP was 13% across the board. For the projection of Thirteenth FC forecast, the growth rates are applied based on TGR adjusted for periodic eventualities. In 2007-08 the receipts included an abnormal item of more than Rs.100 crore on account of lease rent remitted by the Smart City Project. The forecast for 2008-09 is excluding this abnormal item of one time payment. We are confident that the forecasts under non-tax items in respect of Thirteenth FC are realistic.

5.5 Overall, the forecasts for Thirteenth FC for State's Own Revenue Receipts are more realistic than Eleventh FYP projections considering the fact that the growth rates are applied on 2007-08 actuals rather than 2006-07 L.E. The economy has since been hit by the slowdown as well. The possible shortfall in revenues anticipated in Thirteenth FC forecasts, when compared to the Eleventh FYP projections, should be viewed as more realistic rather than as an underestimation.

5.6 **Revenue Expenditure:** The Eleventh FYP projection of Non-Plan Revenue Expenditure for 2007-08 is based on 2006-07 L.E.. But for the forecast of Non-Plan Revenue Expenditure in respect of Thirteenth FC for 2008-09, the actuals for 2007-08 are reckoned as the base. From the 2007-08 actuals we have deducted one time arrear components of Rs.124.60 crore and Rs.375.93 crore towards pay revision and DA revision respectively. A further sum of Rs.1003.98 crore has been deducted towards one time arrears on account of pension revision and DR revision to arrive at the projection for 2008-09. For the projection of 2009-10, a sum of Rs.755.19 crore towards DA arrears and Rs.392 crore towards pension revision arrears have been deducted from the 2008-09 estimates. Thus, the forecast is made after exclusion of all arrears of one time nature. The detailed method of forecast is given in the explanatory notes to Forecast of Expenditure on Revenue Account already submitted as Volume - 3.

5.7 The next pay/pension revision in the State will be due from 1st July 2009. During F.Y. 2009-10 the pay revision eligibility will be only for 9 months i.e. from 1-7-2009 to 31-3-2010. But going by past experience the revision is likely to be implemented, with retrospective effect from 1-7-2009, during 2010-11 only. On the assumption that pay revision procedures will be completed only in 2010-11, the projection for 2010-11 takes into account one time arrear component of Rs.543.75 crore due in 2009-10 and the normal annual impact of Rs.883 crore towards pay revision. Similarly for pension revision, the amount reckoned as one time arrears is Rs.442.61 crore and annual commitment of pension revision is Rs.590.15 crore.

5.8 In addition to this, in 2010-11 we have included a provision of Rs.2697 crore for the maintenance of rural roads as a fresh item. The commitments on account of next pay revision and the provision for rural roads reckoning road length in full were not included in the estimates for Eleventh FYP in 2010-11. Increase in revenue expenditure on these two items alone, over the estimates for the Eleventh FYP, comes to Rs.5427 crore. In 2011-12 the pay/pension revision and maintenance of rural roads together account for a variation of Rs.4537.46 crore (Rs.909.49 crore + Rs.660.97 crore + Rs.2967 crore). Besides, other NPRE items also have been reckoned at higher levels for forecast for Thirteenth F.C. based on the TGR for 5 years. In the accounts for 2007-08 alone other NPRE shows an increase of Rs.669 crore over estimates for Eleventh FYP. This sum has been factored in properly because Thirteenth FC projections are based on 2007-08 actuals.

5.9 Since all the arrears of one time nature have been carefully excluded from 2007-08 actuals and items of expenditures like pay/pension revision, maintenance expenditure on roads and other NPRE have been included properly, the variations in the forecast of expenditure between Thirteenth FC and Eleventh FYP are more realistic and justifiable.

Implementation of Disaster Management Act, 2005

6.1 After the Disaster Management Act was passed by the Government of India in December 2005, Government of Kerala has taken steps for implementation of the Act in the State. Based on the Act, the Disaster Management Rules have been notified. The State Disaster Management Authority (SDMA) under the Chairmanship of the Chief Minister with the Minister for Revenue and Disaster Management as Vice-Chairman has been set up. The State Executive Committee chaired by the Chief Secretary has also been set up and at its first meeting has discussed the Draft Disaster Management Policy. The office of the SDMA has also started functioning with the Additional Secretary, Disaster Management as the Secretary and four other staff members.

6.2 With the coming into force of the Disaster Management Act, the funding pattern and how the funds should be maintained will need to undergo a change. The State proposes that the present Calamity Relief Fund may be converted into the State Disaster Response Fund (SDRF). In addition, a State Disaster Mitigation Fund (SDMF) may also be set up with Government of India providing an initial Corpus Fund into it. Transfer of funds from SDRF to SDMF may be permitted, as that would ensure holistic and long-term management of disasters. On the other hand transfer from SDMF to SDRF may be permitted only when the State faces a major calamity and the fund for relief and rehabilitation is inadequate. The guidelines for managing the Funds and methods by which funds can be obtained for the above purposes may be issued by Government of India in consultation with States.

6.3 Similar Funds by the name of District Disaster Response Fund and District Disaster Mitigation Fund may also be opened in each District with Government of India funding. The source of funding should be clearly laid down in the guidelines.

Management of ecology and environment

7.1 The sustainable development of any State rests on three pillars: economic growth, social progress and protection of the environment and natural resources. Life sustaining systems come under growing pressure from human activity, natural calamities, disasters and challenges from climate change. We are faced with the challenge of sustaining our rapid economic growth while dealing with the global threat of climate change. This threat emanates from accumulated green house gas emission in the atmosphere, anthropogenically generated through long term and intensive industrial growth and high consumption life styles. The global warming is already affecting the forests, water resources, farmland and wildlife. The consequences of climate change may be more serious in the next 25 to 50 years, if preventive/mitigating actions are not initiated immediately.

7.2 The Government of Kerala has given utmost importance to the management of ecology and environment. As stated in our Memorandum the important concerns which need to be taken up at the State level include reducing carbon footprints in development, bringing in energy efficiency and improving ecological resilience of the natural resources by optimising their productivity. We have prepared a plan of action with emphasis on:

- Maintenance of forests and conservation values of the forests to increase the net geographical area under forests.
- Waste minimisation and treatment/recycling by the Local Self Governments.

- Systems for monitoring the impact of climate changes and future projections based on dynamics of various sectors like agriculture and food security, water resources, human health, forestry and biodiversity.
- Setting up and upkeep of suitable database in relation to environment and climate change including measurement of atmospheric concentrations of green house gases, deriving emission factors for green house gases from major natural and anthropogenic sources to model total emissions from the State.
- Updating of sea level rise estimates for the country and the State, impact analysis studies and planning of mitigation measures for the coast.
- Preparing Integrated Coastal Zone Management Plan for the rural and urban coastal areas of Kerala.
- Understanding and mitigating the impact of climate change on the marine resources and the living conditions of fishermen in particular.

7.3 Detailed proposals in this regard have already been submitted to the Commission as 'Volume 4 – special problems of the State of Kerala'. The Commission may kindly consider these proposals for Grants under Article 275.

Various formulae for measuring Income Distance

The Sixth Finance Commission measured the income distance of various States from the three year average per capita GSDP of the top most State and the Seventh Finance Commission also employed a similar formula for the revenue equalisation principle. This left the top most State without any share for this criterion. The Eighth Finance Commission rectified this by giving the top State, the distance of the next highest State. The Ninth Finance Commission observed that the State with the highest average per capita GSDP at that time i.e. Goa was not 'representative' because of its small size and population. Hence it measured the distance from the second highest State giving notional income distance to the first two top States. The Tenth Finance Commission also followed the Ninth's formula. The Eleventh Finance Commission decided, for the first time, to take the weighted average of the top three States, instead of the three year average per capita GSDP of the top or the next highest State as hitherto followed, the weight being 1971 population, though this is not stated in the Report. The Twelfth Finance Commission assumed that the Tenth and Eleventh Finance Commissions had used the same formula and followed the latter's formula. But the Twelfth Finance Commission Report states in para 7.29 that "the average of the top three States with highest per capita income, namely, Goa, Punjab and Maharashtra was taken to compute the income distance of each State." The fact that it is a weighted average is not mentioned in the Report. While some of the earlier Finance Commissions used the NSDP, the recent Commissions had taken the GSDP to measure income distance. Thus, in short, successive Finance Commissions have modified the formulae of previous Commissions in calculating income distance.

The Eleventh Commission had adopted a rather cumbersome procedure to arrive at the income distances of States. It had taken the weighted average, instead of the simple average, of the top three States. In this formula the three year average per capita GSDP of each of the top three States is first multiplied by the 1971 population of the concerned State. The sum of these products is then divided by the sum of the 1971 population of these States to obtain the weighted average. The difference between this weighted average per capita GSDP of the top three States and the three year (unweighted) average per capita GSDP of other States is taken as the income distances of the concerned other States. The income distances of the top three States are worked out as a fraction of the distance of the fourth top State from these States. The fractions are obtained by taking the ratio of the average per capita GSDP of the fourth top State to the average per capita GSDP of each of the top three States. The income distance thus obtained is multiplied by the 1971 population of the concerned State, including the top three States, before the scaled share of each State is calculated. As stated earlier, the Twelfth Commission also followed this formula.

ANNEXURE - II

12th FC - Weighted Share (%) of Income Distance - Various Formulae - Abstract

Sl. No.	STATE	Simple Formula- from the top State	Simple Average Formula- top three States	Weighted Average Formula- top three States	Simple Average Formula- top two States	Weighted Average Formula - top two States	Weighted Average - SQRT Formula - excluding the top
1	ANDHRA PRADESH	3.830	3.649	3.308	3.729	3.444	3.771
2	ARUNACHAL PRADESH	0.044	0.044	0.045	0.044	0.045	0.046
3	ASSAM	1.512	1.667	1.953	1.606	1.867	1.701
4	BIHAR	4.921	5.910	7.740	5.511	7.163	5.775
5	CHATTISGARH	1.165	1.251	1.409	1.217	1.364	1.287
6	GOA	0.053	0.018	0.004	0.022	0.007	0.024
7	GUJARAT	2.111	1.771	1.135	1.914	1.358	1.689
8	HARYANA	0.711	0.503	0.116	0.589	0.248	0.449
9	HIMACHAL PRADESH	0.257	0.197	0.085	0.222	0.124	0.159
10	JAMMU KASHMIR	0.414	0.403	0.381	0.408	0.391	0.418
11	JHARKHAND	1.490	1.659	1.971	1.592	1.877	1.687
12	KARNATAKA	2.454	2.212	1.758	2.315	1.924	2.238
13	KERALA	1.682	1.405	0.886	1.521	1.068	1.333
14	MADHYA PRADESH	3.030	3.277	3.732	3.180	3.600	3.366
15	MAHARASHTRA	3.482	2.457	0.565	2.824	0.973	2.225
16	MANIPUR	0.098	0.098	0.097	0.098	0.098	0.102
17	MEGHALAYA	0.096	0.098	0.102	0.097	0.101	0.102
18	MIZORAM	0.027	0.024	0.018	0.026	0.020	0.024
19	NAGALAND	0.044	0.040	0.032	0.041	0.035	0.040
20	ORISSA	2.322	2.607	3.131	2.493	2.971	2.642
21	PUNJAB	0.903	0.636	0.146	0.745	0.252	0.587
22	RAJASTHAN	2.497	2.610	2.817	2.568	2.763	2.702
23	SIKKIM	0.017	0.016	0.012	0.016	0.013	0.016
24	TAMIL NADU	3.270	2.755	1.795	2.972	2.133	2.642
25	TRIPURA	0.137	0.130	0.117	0.133	0.122	0.134
26	UTTAR PRADESH	8.961	10.129	12.286	9.662	11.626	10.234
27	UTTARANCHAL	0.414	0.415	0.414	0.415	0.417	0.431
28	WEST BENGAL	4.055	4.020	3.947	4.040	3.996	4.175

Note: There are various formulae for calculation of Income Distance. Each formula has its own logic but the results vary. But it is a fact that the relative poverty or prosperity of a State remains the same at any given point of time irrespective of the formula applied. This Annexure gives an abstract of the results of estimation of share for the criterion of Income Distance obtained by applying some of the possible formulae with reference to the 12th Finance Commission Award as an example. Each column shows the weighted share of Income Distance of States according to the formula used, the weight being 50 percent. Detailed calculation sheets in respect of each of the above formulae, with explanatory notes, are given in the remaining Annexures.

ANNEXURE - III

12th FC-Income Distance from the Top State - Simple Formula- from the top most State

Sl. No.	STATE	Population 1971 (Cr.)	Average per capita GSDP(Rs.)	Income Distance	Income Distance x Population	Scaled Share (%)	Weighted Share (%)
1	ANDHRA PRADESH	4.350	18869	37730	164135	7.660	3.830
2	ARUNACHAL PRADESH	0.047	16579	40020	1873	0.087	0.044
3	ASSAM	1.463	12288	44311	64805	3.024	1.512
4	BIHAR	4.213	6539	50060	210901	9.842	4.921
5	CHATTISGARH	1.164	13710	42889	49922	2.330	1.165
6	GOA	0.080	56599	28569	2271	0.106	0.053
7	GUJARAT	2.670	22708	33891	90478	4.222	2.111
8	HARYANA	1.004	26256	30343	30456	1.421	0.711
9	HIMACHAL PRADESH	0.346	24762	31837	11016	0.514	0.257
10	JAMMU KASHMIR	0.462	18132	38467	17760	0.829	0.414
11	JHARKHAND	1.423	11717	44882	63867	2.980	1.490
12	KARNATAKA	2.930	20703	35896	105171	4.908	2.454
13	KERALA	2.135	22824	33775	72099	3.365	1.682
14	MADHYA PRADESH	3.002	13340	43259	129863	6.060	3.030
15	MAHARASHTRA	5.041	26994	29605	149245	6.965	3.482
16	MANIPUR	0.107	17264	39335	4221	0.197	0.098
17	MEGHALAYA	0.101	16035	40564	4105	0.192	0.096
18	MIZORAM	0.033	21245	35354	1174	0.055	0.027
19	NAGALAND	0.052	20469	36130	1864	0.087	0.044
20	ORISSA	2.194	11234	45365	99530	4.645	2.322
21	PUNJAB	1.355	28030	28569	38711	1.807	0.903
22	RAJASTHAN	2.577	15059	41540	107033	4.995	2.497
23	SIKKIM	0.021	20929	35670	749	0.035	0.017
24	TAMIL NADU	4.120	22587	34012	140125	6.539	3.270
25	TRIPURA	0.156	18974	37625	5854	0.273	0.137
26	UTTAR PRADESH	8.385	10798	45801	384044	17.922	8.961
27	UTTARANCHAL	0.449	16998	39601	17761	0.829	0.414
28	WEST BENGAL	4.431	17377	39222	173802	8.111	4.055
	Total	54.308			2142835	100.000	50.000

Simple Formula: In the normal course Income Distance of each State is obtained by measuring the distance of income from the top most State irrespective of its size, population etc. This is the most logical and the simplest formula. It is the formula followed by most of the Finance Commissions till the Eighth Commission. First, the simple average of the per capita GSDP, provided by the CSO, of each State for a three year period is worked out. The difference between the average per capita GSDP of each State and that of the State with the highest value is taken as the Income Distance of that State. As the top State is left with no difference, the Income Distance of the second top State is usually given to the top State as its notional Income Distance. Here in this illustration, Goa is the top State and Punjab is the second top State.

ANNEXURE - IV

12th FC - Income Distance - Simple Average Formula - top three States

Sl. No.	STATE	Population 1971 (Cr.)	Average Per capita GSDP (Rs.)	Income Distance	Income Distance x Population	Scaled Share (%)	Weighted Share (%)
1	ANDHRA PRADESH	4.350	18869	18339	79778	7.298	3.649
2	ARUNACHAL PRADESH	0.047	16579	20629	965	0.088	0.044
3	ASSAM	1.463	12288	24920	36445	3.334	1.667
4	BIHAR	4.213	6539	30669	129207	11.820	5.910
5	CHHATTISGARH	1.164	13710	23498	27351	2.502	1.251
6	GOA	0.080	56599	5081	404	0.037	0.018
7	GUJARAT	2.670	22708	14500	38709	3.541	1.771
8	HARYANA	1.004	26256	10952	10993	1.006	0.503
9	HIMACHAL PRADESH	0.346	24762	12446	4306	0.394	0.197
10	JAMMU KASHMIR	0.462	18132	19076	8807	0.806	0.403
11	JHARKHAND	1.423	11717	25491	36274	3.318	1.659
12	KARNATAKA	2.930	20703	16505	48357	4.424	2.212
13	KERALA	2.135	22824	14384	30705	2.809	1.405
14	MADHYA PRADESH	3.002	13340	23868	71650	6.555	3.277
15	MAHARASHTRA	5.041	26994	10653	53704	4.913	2.457
16	MANIPUR	0.107	17264	19944	2140	0.196	0.098
17	MEGHALAYA	0.101	16035	21173	2143	0.196	0.098
18	MIZORAM	0.033	21245	15963	530	0.048	0.024
19	NAGALAND	0.052	20469	16739	864	0.079	0.040
20	ORISSA	2.194	11234	25974	56986	5.213	2.607
21	PUNJAB	1.355	28030	10259	13901	1.272	0.636
22	RAJASTHAN	2.577	15059	22149	57070	5.221	2.610
23	SIKKIM	0.021	20929	16279	342	0.031	0.016
24	TAMIL NADU	4.120	22587	14621	60235	5.511	2.755
25	TRIPURA	0.156	18974	18234	2837	0.260	0.130
26	UTTAR PRADESH	8.385	10798	26410	221450	20.259	10.129
27	UTTARAKHAND	0.449	16998	20210	9064	0.829	0.415
28	WEST BENGAL	4.431	17377	19831	87876	8.039	4.020
	Total	54.308			1093093	100.000	50.000

	Average per capita GSDP	Fraction	Income Distance
GOA	56599	0.464	5081
PUNJAB	28030	0.937	10259
MAHARASHTRA	26994	0.973	10653
Average of top 3	37208		
HARYANA	26256		10952

Simple Average Formula: Apart from the simple formula described in the previous Annexure, wherein the Income Distances of States are measured from the top most State, there is another formula introduced by the Eleventh Finance Commission wherein the distances of States are measured from the average of the top three States. There are two variants of this average formula (i) Simple Average Formula and (ii) Weighted Average Formula.

This is the share estimation of Income Distance by the Simple Average Formula, exactly as described in para 7.29 of the 12th FC Report. (But this is not the formula actually used by it in working out the shares of States. That is given in Annexure-V) In this formula, as usual, first the three year average per capita GSDPs of all States are worked out. Then the simple average of the three year average per capita GSDP of the top three States is found. The difference between the average per capita GSDP of each State and that of the above simple three-State average is taken as the Income Distance of that State. The Income Distances of the top three States are worked out as a fraction of the distance of the fourth top State. These fractions are obtained by taking the ratio of the fourth top State's average per capita GSDP to the average per capita GSDP of these States.

ANNEXURE - V

12th FC - Income Distance- Weighted Average Formula - top three States

Sl. No.	STATE	Population 1971 (Cr.)	Average per capita GSDP(Rs.)	Income Distance	Income Distance x Population	Scaled Share (%)	Weighted Share (%)
1	ANDHRA PRADESH	4.350	18869	8705	37870	6.615	3.308
2	ARUNACHAL PRADESH	0.047	16579	10995	515	0.090	0.045
3	ASSAM	1.463	12288	15286	22356	3.905	1.953
4	BIHAR	4.213	6539	21035	88621	15.480	7.740
5	CHATTISGARH	1.164	13710	13864	16138	2.819	1.409
6	GOA	0.080	56599	612	49	0.008	0.004
7	GUJARAT	2.670	22708	4866	12991	2.269	1.135
8	HARYANA	1.004	26256	1319	1324	0.231	0.116
9	HIMACHAL PRADESH	0.346	24762	2812	973	0.170	0.085
10	JAMMU KASHMIR	0.462	18132	9442	4359	0.761	0.381
11	JHARKHAND	1.423	11717	15857	22565	3.942	1.971
12	KARNATAKA	2.930	20703	6871	20132	3.517	1.758
13	KERALA	2.135	22824	4750	10141	1.771	0.886
14	MADHYA PRADESH	3.002	13340	14234	42731	7.464	3.732
15	MAHARASHTRA	5.041	26994	1283	6468	1.130	0.565
16	MANIPUR	0.107	17264	10311	1106	0.193	0.097
17	MEGHALAYA	0.101	16035	11539	1168	0.204	0.102
18	MIZORAM	0.033	21245	6330	210	0.037	0.018
19	NAGALAND	0.052	20469	7105	367	0.064	0.032
20	ORISSA	2.194	11234	16340	35850	6.262	3.131
21	PUNJAB	1.355	28030	1235	1673	0.292	0.146
22	RAJASTHAN	2.577	15059	12516	32248	5.633	2.817
23	SIKKIM	0.021	20929	6646	140	0.024	0.012
24	TAMIL NADU	4.120	22587	4987	20547	3.589	1.795
25	TRIPURA	0.156	18974	8600	1338	0.234	0.117
26	UTTAR PRADESH	8.385	10798	16777	140674	24.572	12.286
27	UTTARANCHAL	0.449	16998	10576	4743	0.829	0.414
28	WEST BENGAL	4.431	17377	10198	45189	7.893	3.947
	Total	54.308			572486	100.000	50.000

	Population 1971	Average per capita GSDP	Average per capita GSDP x Population	Fraction	Income Distance
GOA	0.080	56599	4500	0.464	612
PUNJAB	1.355	28030	37981	0.937	1235
MAHARASHTRA	5.041	26994	136084	0.973	1283
Total	6.476		178565		
Weighted Average		27574			
HARYANA		26256			1319

Weighted Average Formula: This is the share estimation in respect of Income Distance followed by the 11th and 12th Finance Commissions. In this formula first, as usual, the average per capita GSDP of the States for three years is worked out. Then, instead of measuring the distance of other States from the average of the top three States, the distance is measured from the **weighted** average of the top three States. In order to arrive at the weighted average, the three-year average per capita GSDP of each of the top three States is multiplied by the 1971 Population of that State. Next the sum of the products of this is divided by the total population (1971) of these three States together. This is the weighted average. Now the Income Distances of other States are arrived at by measuring the distance from the above weighted average. The Income Distances of the top three States are worked out as a fraction of the distance of the fourth top State. These fractions are obtained by taking the ratio of the fourth top State's average per capita GSDP to the average per capita GSDP of these States.

The flaw in the above formula is that incomparable GSDPs are used because income distance is measured from the weighted average per capita GSDP of the top three States to the unweighted average GSDP of other States.

ANNEXURE – VI

12th FC Income Distance -Simple Average Formula - top two States

Sl. No.	STATE	Population 1971 (Cr.)	Average Per capita GSDP(Rs.)	Income Distance	Income Distance x Population	Scaled share (%)	Weighted share (%)
1	ANDHRA PRADESH	4.350	18869	23445	101994	7.458	3.729
2	ARUNACHAL PRADESH	0.047	16579	25736	1204	0.088	0.044
3	ASSAM	1.463	12288	30027	43914	3.211	1.606
4	BIHAR	4.213	6539	35775	150721	11.021	5.511
5	CHHATTISGARH	1.164	13710	28604	33295	2.435	1.217
6	GOA	0.080	56599	7450	592	0.043	0.022
7	GUJARAT	2.670	22708	19606	52343	3.827	1.914
8	HARYANA	1.004	26256	16059	16118	1.179	0.589
9	HIMACHAL PRADESH	0.346	24762	17553	6073	0.444	0.222
10	JAMMU KASHMIR	0.462	18132	24182	11165	0.816	0.408
11	JHARKHAND	1.423	11717	30598	43540	3.184	1.592
12	KARNATAKA	2.930	20703	21611	63319	4.630	2.315
13	KERALA	2.135	22824	19491	41607	3.042	1.521
14	MADHYA PRADESH	3.002	13340	28974	86981	6.360	3.180
15	MAHARASHTRA	5.041	26994	15320	77233	5.647	2.824
16	MANIPUR	0.107	17264	25051	2688	0.197	0.098
17	MEGHALAYA	0.101	16035	26280	2660	0.194	0.097
18	MIZORAM	0.033	21245	21070	700	0.051	0.026
19	NAGALAND	0.052	20469	21845	1127	0.082	0.041
20	ORISSA	2.194	11234	31080	68190	4.986	2.493
21	PUNJAB	1.355	28030	15042	20382	1.490	0.745
22	RAJASTHAN	2.577	15059	27256	70228	5.135	2.568
23	SIKKIM	0.021	20929	21386	449	0.033	0.016
24	TAMIL NADU	4.120	22587	19727	81275	5.943	2.972
25	TRIPURA	0.156	18974	23341	3632	0.266	0.133
26	UTTAR PRADESH	8.385	10798	31517	264270	19.324	9.662
27	UTTARAKHAND	0.449	16998	25316	11354	0.830	0.415
28	WEST BENGAL	4.431	17377	24938	110505	8.080	4.040
	Total	54.308			1367561	100.000	50.000

	Average per capita GSDP	Fraction	Income Distance
GOA	56599	0.464	7450
PUNJAB	28030	0.937	15042
Average of top 2	42315		
HARYANA	26256		16059

Simple Average Formula - top two States: In the 12th FC report it is not explained why the average of the top 3 States is taken. Why not two or five ? In this illustration the calculation is done as described in the simple average formula but by using the top two States instead of the top three States. This gives different values when compared to the average of top three States.

ANNEXURE - VII

12th FC-Income Distance- Weighted Average Formula - top two States

Sl. No.	STATE	Population 1971 (Cr.)	Average per capita GSDP(Rs.)	Income Distance	Income Distance x Population	Scaled Share (%)	Weighted share (%)
1	ANDHRA PRADESH	4.350	18869	10744	46740	6.888	3.444
2	ARUNACHAL PRADESH	0.047	16579	13034	610	0.090	0.045
3	ASSAM	1.463	12288	17325	25338	3.734	1.867
4	BIHAR	4.213	6539	23074	97211	14.326	7.163
5	CHATTISGARH	1.164	13710	15903	18511	2.728	1.364
6	GOA	0.080	56599	1249	99	0.015	0.007
7	GUJARAT	2.670	22708	6905	18434	2.717	1.358
8	HARYANA	1.004	26256	3358	3370	0.497	0.248
9	HIMACHAL PRADESH	0.346	24762	4851	1679	0.247	0.124
10	JAMMU KASHMIR	0.462	18132	11481	5301	0.781	0.391
11	JHARKHAND	1.423	11717	17896	25466	3.753	1.877
12	KARNATAKA	2.930	20703	8910	26105	3.847	1.924
13	KERALA	2.135	22824	6789	14493	2.136	1.068
14	MADHYA PRADESH	3.002	13340	16273	48851	7.200	3.600
15	MAHARASHTRA	5.041	26994	2619	13203	1.946	0.973
16	MANIPUR	0.107	17264	12350	1325	0.195	0.098
17	MEGHALAYA	0.101	16035	13578	1374	0.203	0.101
18	MIZORAM	0.033	21245	8369	278	0.041	0.020
19	NAGALAND	0.052	20469	9144	472	0.070	0.035
20	ORISSA	2.194	11234	18379	40323	5.943	2.971
21	PUNJAB	1.355	28030	2523	3419	0.504	0.252
22	RAJASTHAN	2.577	15059	14555	37502	5.527	2.763
23	SIKKIM	0.021	20929	8685	182	0.027	0.013
24	TAMIL NADU	4.120	22587	7026	28946	4.266	2.133
25	TRIPURA	0.156	18974	10639	1655	0.244	0.122
26	UTTAR PRADESH	8.385	10798	18816	157769	23.251	11.626
27	UTTARANCHAL	0.449	16998	12615	5658	0.834	0.417
28	WEST BENGAL	4.431	17377	12237	54223	7.991	3.996
	Total	54.308			678539	100.000	50.000

	Population 1971	Average per capita GSDP	Average per capita GSDP x Population	Fraction	Income Distance
GOA	0.080	56599	4500	0.477	1249
PUNJAB	1.355	28030	37981	0.963	2523
Total	1.435		42481		
Weighted Average			29613		
MAHARASHTRA		26994			2619

Weighted Average Formula - top two States: In this illustration the calculation is done as described in the weighted average formula but using the top two States' average instead of top three. This gives different values when compared to the average of top three States.

ANNEXURE - VIII

12th FC - SQRT Income Distance- Weighted Average Formula - top three States excluding Goa

Sl. No.	STATE	Population 1971 (Cr.)	Average per capita GSDP(Rs.)	Income Distance	SQRT Income Distance	SQRT Income Distance x Population	Scaled Share (%)	Weighted Share (%)
1	ANDHRA PRADESH	4.350	18869	8215	91	394	7.542	3.771
2	ARUNACHAL PRADESH	0.047	16579	10505	102	5	0.092	0.046
3	ASSAM	1.463	12288	14796	122	178	3.403	1.701
4	BIHAR	4.213	6539	20545	143	604	11.550	5.775
5	CHATTISGARH	1.164	13710	13374	116	135	2.575	1.287
6	GOA	0.080	56599	1016	32	3	0.048	0.024
7	GUJARAT	2.670	22708	4376	66	177	3.378	1.689
8	HARYANA	1.004	26256	2190	47	47	0.898	0.449
9	HIMACHAL PRADESH	0.346	24762	2322	48	17	0.319	0.159
10	JAMMU KASHMIR	0.462	18132	8952	95	44	0.836	0.418
11	JHARKHAND	1.423	11717	15367	124	176	3.374	1.687
12	KARNATAKA	2.930	20703	6381	80	234	4.477	2.238
13	KERALA	2.135	22824	4260	65	139	2.665	1.333
14	MADHYA PRADESH	3.002	13340	13744	117	352	6.732	3.366
15	MAHARASHTRA	5.041	26994	2130	46	233	4.450	2.225
16	MANIPUR	0.107	17264	9821	99	11	0.203	0.102
17	MEGHALAYA	0.101	16035	11049	105	11	0.203	0.102
18	MIZORAM	0.033	21245	5840	76	3	0.049	0.024
19	NAGALAND	0.052	20469	6615	81	4	0.080	0.040
20	ORISSA	2.194	11234	15850	126	276	5.283	2.642
21	PUNJAB	1.355	28030	2051	45	61	1.174	0.587
22	RAJASTHAN	2.577	15059	12026	110	283	5.405	2.702
23	SIKKIM	0.021	20929	6156	78	2	0.032	0.016
24	TAMIL NADU	4.120	22587	4497	67	276	5.284	2.642
25	TRIPURA	0.156	18974	8110	90	14	0.268	0.134
26	UTTAR PRADESH	8.385	10798	16287	128	1070	20.468	10.234
27	UTTARANCHAL	0.449	16998	10086	100	45	0.862	0.431
28	WEST BENGAL	4.431	17377	9708	99	437	8.351	4.175
	Total	54.308				5231	100.000	50.000

	Population 1971	Average Per capita GSDP	Per capita GSDP x Population	Fraction	Income Distance
GOA	0.080	56599	4528	0.437	1016
PUNJAB	1.355	28030	37981	0.883	2051
MAHARASHTRA	5.041	26994	136084	0.917	2130
HARYANA	1.004	26256	26256	0.943	2190
Total	7.400		200321		
Weighted Average		27084			
HIMACHAL PRADESH		24762			2322

SQRT Income Distance excluding Goa: The average per capita GSDP of the highest State i.e. Goa is more than twice that of the next highest State. Hence this is excluded. The average per capita GSDP of the next three top States is used to work out the weighted average. The income Distances of other states are measured from this benchmark. The Income Distances of the top four States are worked out as fraction of the distance of the fifth top State. Then, in order to avoid wide variation in the shares, the square root of Income Distance is multiplied by 1971 population before the scaled share is calculated.