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Sebastian Morris, Ajay Pandey, Sobhesh Agarwalla, and Astha Agarwalla

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A New Estimate of the Tax Base Under GST of Select States[1]

Sebastian Morris
Ajay Pandey
Sobhesh Agarwalla
Astha Agarwalla[2]

Abstract

GST as introduced in India being a destination based tax, does not encourage regions to vigorously promote manufacturing and tradable services industries. Being in the midst of its economic transformation, and given the subnational character of most states (regions), it is important that the states engage in locational tournaments to attract investments, not through tax concessions, but through the provision of infrastructure services, governance, and other intangible services. A new consumption based approach that adjusts the detailed consumer expenditure figures of the National Sample Surveys at the state level is developed. This is shown to be robust and is used to estimate the RNR (Revenue Neutral Rate of Taxes) at the State level. This reveals that there are stark differences between the rates for the producing states and the consumption oriented states amounting to as much as 10% of GDP. These differences cannot be bridged by the proposed compensation scheme. As the impact of GST goes on to the next stage of determining the locational choices of new investments, the lack of fiscal incentives for states to attract and nurture investments, unless corrected would have deleterious effects on the investment process.

As much as 50% of the Centre's collection of GST may have to be distributed based on economic activity centered around manufacturing and tradable services production, if the country is not to lose the steam of high and growing investments to take it through its economic transformation. The contrast with China is remarkable, China's GST is only partial covering only manufacturing and associated labour services, allowing states to tax and retain many services irrespective of the location of the consumer of the service. More importantly as much as 25% of the central collections on account of GST(in manufacturing) go to the provinces based on their public goods production.

INTRODUCTION

Goods and Services Tax (GST) had been many years in the offing, before becoming a reality on July 1, 2017[3]. It was much delayed not so much due the inherent nature of the opposition parties to oppose measures by the government, as much as by a politics that reflected the underlying reality that the gains (and losses) would be very different across states. The merger of service and manufacturing taxes that the GST entailed was never the problem. However the apprehension that GST would shift net revenues away from producing states was not misplaced. This was notably the case with Gujarat and Tamil Nadu. And both

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[1] This study is based on a report submitted to the Government of Gujarat titled "Estimating the Consumption Based Tax-base of Gujarat – a Comparative Study of Select States", May 1, 2018, Indian Institute of Management, Ahmedabad by the same authors. The authors thank the government of Gujarat for their support. The errors in this report are the authors' alone.

[2] Morris (morris@iima.ac.in), Pandey (apandey@iima.ac.in) and Sobhesh Agarwalla (sobhesh@iima.ac.in) are professors at the Indian Institute of Management, Ahmedabad, and Astha Agarwalla (astha.agarwalla@aiim.ac.in)is Professor at the Adani Institute of Management, Ahmedabad.

[3] https://en.wikipedia.org/wiki/Goods_and_Services_Tax_(India)

states had stood against implementation of GST, without substantial safeguards. Gujarat's opposition was neutralized in 2014 when its chief minister Mr. Modi went on to become the prime minister of the country, who now saw the issue from the perspective of the nation. Once the agreement of the states was obtained under the present Government, the producing states argued for higher GST rates to protect their revenue even after the five year period of compensation. Various estimates were presented in the GST Council, including a rate of 23% as the Revenue Neutral Rate (RNR) for Gujarat, which raised the prospect of significant inflationary impact. The RNR for a state with little production, but with larger consumption shares especially of goods under excise, was however, estimated to be as low as 16% for the sum of central and state GST. The enthusiastic support of states like Delhi, Kerala, Bihar and West Bengal, with little to lose and much to gain under GST was understandable.

However the GST Council chose rates that closely mimicked the existing service tax and excise rates, rather than these high RNR rates emanating from the finance departments of the producing states, to the delight of the consumption oriented regions. This was done since there was ex-ante much fear that the introduction of GST would contribute to inflation. The expectation that it would was misplaced as the inflation measure of CPI has a 45% weight in basic unprocessed food nearly all of which were in the exempt category. A study commissioned by the Gujarat Government showed that he inflationary impact would be negligible since the GST rates closely mimicked the old VAT+CENVAT[4] rates, and the service taxes the basic service tax rates. Some items not in either of the earlier groupings such as real estate were covered at high rates, and "luxuries" were raised to high rates. As the fear of inflation proved to be misplaced, slowly the GST Commission has been reducing the very high rates on "luxuries" one step at a time.

GST was seen as being entirely positive due to its several effects which are listed below:

1. Avoidance of tax on tax, since now the tax credits (offsets) are available on both goods and services when the sale is either of goods or services.
2. Avoidance of any distortion in the degree of vertical integration; or of input use and choice, since with tax credit (offsets), firms 'see' the pre-tax prices of inputs and base their decisions with regard to the use of inputs on the same.

3. Much greater incentive for tax compliance, which is already there in a value added tax system of input credit for both central and state taxes[5], but now with the added benefit of integration across states.
4. Greater transparency and the potential to 'zero vat' any item of exports.
5. With the GST Identification Number (GSTIN), and the Information Technology backbone (Network) for the operation of tax collection, granting of credit, and settlements between states, and way bill generation through a centralized database, GST was expected to bring greater compliance. With the passage of time, the space to avoid taxes was expected to diminish.
6. Perhaps, most important was the potential to truly integrate the entire Indian market into one, with GST neutralizing the boundaries between states. This benefit which would most certainly unfold over a period. It would have the positive effects of greater optimality in locational choice, larger scale of output, besides the realization of public scale economies through agglomeration and cluster effects.

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[4] VAT was a value added tax which are levied by provincial (state) governments in India, covering most manufacturing and other secondary activities. CENVAT (originally Central VAT) is again on the same base (prior to VAT). However petroleum products were kept out of CENVAT and continue to be kept out of GST as well. Tax credit on input was possible out of each of these tills separately as is the case even today under GST. The service taxes were entirely on services, and were introduced only after the landmark economic reform of 1991-93. Earlier they were gross but after a few years they were cast of the principal of value addition –i.e. vat. See Morris, et al (2017) for projections of the inflationary impact of the movement to GST.

[5] In India the central taxes on goods – originally excise duties - and now termed CENVAT having become vattable. The state taxes on goods viz. sales taxes, which were levied at the point of sale, but which fell on the same base as excise duties had been cast as a parallel vattable VAT, but with no settlement when goods move across states. In that case IST was levied by the Centre to be given back to the producing state.

ISSUES IN A DESTINATION BASED TAX

GST raises several aspects that were not anticipated widely by economists and policy makers.

The fiscal (incentive) effects of GST, as net tax realization is driven to the point of consumption, in quasi-federal systems, were not the point of discussion among economists though administrators and politicians were concerned about the 'bias' against producing states. A GST which is origination based would have to be based as a tax directly on impacted value added which while conceivable, is not observed in practice in any significant way. This would also not have had the positive effects on compliance that the offset based GST has (or VAT/CENVAT had). Moreover such an approach would need strong audit and accounting standards, well beyond what is practiced by all but a miniscule of productive entities in India.

Hence the large positive aspects of (6) and (3) above, the latter being vitally important in India, leaves no option other than a destination based GST. However, public finance scholars should have at that time raised the fiscal incentive issues, and suggested that under GST, the very approach of sharing of revenue among states had to change to avoid dramatically, any larger fiscal perversities, especially those that could adversely impact the country's unity.

Under the pre GST regime, while VAT had already moved the system to destination basis, the aspect of Inter-state Central Sales Tax (ICST)[6] was a kind of "compensation" to the producing states. ICST has no place if the domestic market has to be integrated, so that there is no way out but to change the basis for fiscal devolution of central revenues to the states.

Transforming economies, migration and fiscal effects

India at the current stage of its economic transformation, would have major differences between regions in terms of per capita output and per capita consumption. These differences result in geographical specialization of the economy.

A destination based tax has an inherent bias against producing states, especially those which have large concentration of manufacturing. Such a bias can be hurtful, because production requires the states (local or regional governments) to support manufacturing in a variety of ways, including providing public infrastructure, public goods that are inputs to production e.g. environment control, regulation, governance and coordination, besides security. All of these require fiscal resources. Under GST, by attracting industries locally, the only fiscal benefit that local states can look forward to arises out of the GST paid by workers on their local spending out of their incomes. The income taxes paid by workers and employees employed locally accrue to the centre. When migration, especially of workers without their families to producing states is common, then even the local consumption due to incomes accruing to local workers, which could have generated taxes for the local Government supporting the production, is muted since the workers send a significant part of their incomes to their families in other states[7]. This is a loss of the base to the states in which migrant labour finds employment.

Government consumption expenditure is another element of the base in a destination based GST, but Government consumption is very small in relation to private final consumption expenditure. Government consumption is likely to be weakly proportional to the SDP of states.

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[6] The Central Sales Tax (as per Central Sales Tax Act, 1956), an origin based tax on inter-state sale and purchase of goods was levied by the Centre, but administered by the state of origination of sale. http://www.dor.gov.in/centralsalestax

[7] Although there are no comprehensive estimates, the little data available does show that inward domestic (inter-state remittances) contribute as significantly to NSDP – Bihar (3.9%), Rajasthan (2.3%) and UP, Odisha and Jharkhand 1.5 to 2.2%). See Tumbe, Chinmay (2011), for interesting tabulations.

Large metros and their consumption

Urbanization is on-going and those states with mega-metros and second order cities would have long term advantage, since these agglomerations are large consumption bases. Concentrated urbanization of a high order, as in metro cities and other cities of high rank generate their own consumption, and also production of services, a large part (but not all) of which is locally consumed, and hence constitute a sound tax base for the state where such cities are housed.[8]

However urbanization can be seen as arising out of 'city formation' and 'city serving' roles of economic activity. Early on, and through much of the economic transformation, the former role is dominant and functional, without it there is no overall sustainability of urbanization. As development proceeds and incomes rise, the workers now value (and can afford) good habitats, so that the role of city forming functions in urbanization rises. Without the contribution of the latter though, production in the region commanded by the city or in its hinterland, the urbanization would not be sustainable, but would at best be of the shanty type. Niches of wealthy urban habitats with little economic value creation (like Chandigarh if one ignores the government value creation) are not ruled out though. Even functional urbanization would be of a type that builds on city forming functions, even as the city serving functions such as transportation and urban infrastructure would have to fall on city and regional governments.

Since India is at the beginning of its transformation, with much of the tasks lying ahead, the role and ability of the state to nurture and support the investment process is vital. And regional governments have the most

important role, so that it becomes necessary to enable fiscally the government of the regions that engender and embed production in their economies.

Under GST, states would be incentivized to attract more consumption, and investments in non-tradable and poorly tradable goods production, besides non-tradable services, rather than investments in tradable goods and services production or industries requiring their negative externalities to be addressed.. This bias has to be counteracted and that would require a larger role of the Centre in reallocation from the totality of centrally collected revenues. It would mean a basis for allocation that gives much greater weight for production, than has been the case with the Finance Commissions. After all the next big expansion has to come from manufactures, if India is at all to make its economic transformation.

The current enthusiasm (irrespective of party affiliations) of consumption oriented states to GST, is because they would be able to greatly enhance their revenues in the future without having the need to spend the same on supporting tradable production, as long as they continue to house consumption for historical reasons. Subsidies, and over production of public goods, would play a much larger role in the policies of state governments than what they should especially in comparison to job creation and investments.

Central till and its distribution

The existing GST is a two till system with roughly half the GST being collected by states and retained by them only if the final good is also consumed within the state. On goods that are exported, all SGST collected would have to be remitted to the state where finally the good is consumed. Since consumption is defined as

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[8] The division of the state of Andhra Pradesh (AP) was on the ground that Telangana was less developed than the rest of the state especially coastal Andhra, and hence state-hood for the region would help it focus on development. However to the vexation of Andhra, Telangana after the division had the same income per capita as Andhra and the tax collections of Telangana proved very large given the location of Hyderabad the capital of erstwhile AP and a near metro city in Telangana. Now AP (after division) rather than Telangana would have to be supported by the central government for its very large loss in revenue more than the need to support the creation of a new capital city. This episode brings to the fore the role of large and relatively rich urban centres in collection and retention of tax under a destination based GST. Metro centres and cities with rich prior city serving functions would retain taxes disproportionately large to their population.

arising where the consumer is, even in the case of services like E-commerce, where large logistics of procurement, dispatch, monitoring and accounting are involved, the tax collected would go to the state where the buyer is located. Since final buyers are largely consumers (besides Governments, but not firms[9]), even such services would not result in taxes for the local government where the e-commerce company carries out its activities

With regard to the Central till (CGST), there is no proposal, as yet for any return of the taxes collected to the states where the production takes place, that could have created a counteraction to the destination bias. The onus to correct the bias now falls solely on financial allocations from the central governments overall revenue, as we mentioned earlier.

Savings and GST retention

Furthermore, States with large private savings out of the Gross State Domestic Product (GSDP) would attract lower taxes. Savings of areas (and hence states) that are production oriented could be large relative to their State Domestic Product. The point is, SDP is territorial in origination. But consumption spending is driven by income, which is based on dispensable income of a region, that includes net inward transfers and income (factor earnings) flows. Production that is modern, especially in manufacturing involves a low share of wages and salary income (from which there can be outward transfers when there is inward male migration). Similarly, out of non-wage income, there could be transfers and income flows to states (essentially metros) where the owners and lenders reside reducing the local spending. This would tend to raise the savings rate in a pure accounting sense in the state of production while simultaneously resulting in a flow outwards of savings (capital), without the ability of the local Government to tap into these savings in any direct way. The ability to attract or retain these outward savings flows into the economy would be highly

dependent upon the rate of capital formation (taking place within the state), which in turn depends upon both locational factors, besides fiscal ability, and governance factors

Tradable services

We have mentioned that many services tend to be produced at the point of consumption. Many others (besides IT, BPO) are getting to be tradable (banking, retailing, especially e-tailing) so that even services would incrementally be driven by the logic of scale and scope to particular locations needing the governments of these locations to support them through complementary public investments. Many services though are produced and consumed locally. Besides physical retail trade, transports, storage and communication, personal services, hotels, restaurants, real estate, education, medical and public administration. While little of these is tradable, some such as warehousing and trade, and as E-commerce develops, become tradable so that the fiscal biases against production would apply on them as well.

In the secondary sector, other than manufacturing – electricity, gas and water, electricity and water, which are non-tradable however tend to be very low on taxes, or are outside the ambit of GST.

Locational choices

In a transition phase, economic activity gathers together in the areas with locational advantage away from a more ubiquitous distribution, to greatly expand to become efficient through both scale and scope, and advancing technology. This was especially so for large continental economies – US, China, Brazil, Russia etc., and would have to unfold in India as well. The central places around coasts as well as highly connected areas in the interior around dense populations then become the focal point for embedding of such economic activities. The state can only do so much to spread economic activities more evenly without damaging the aspect of efficiency. Migration (besides spillovers on to neighboring areas) then provides the basis for a more even distribution of income across people, even when the economic activity per unit of land tends to increase unequally. In the longer term the income (including transfers and remittances) per person and the

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[9] This is so when input credit on depreciation is taken into account over a longer period of the life of the final good (machinery and capital goods) purchased by productive firms.

generation of value (SDP per person) tend to converge, the former converging faster than the latter. The convergence of the latter is never complete, since the uneven distribution of central places, when rank of central places is also taken into account, would always be there across regions.[10] Such production oriented provinces play an important and vital role for the nation as a whole.

Remittances and consumer spending

However, there is an early stage in this migration, when only workers move without their families, which is more the case in India. Since workers from a state would, for a generation, see themselves as being alien when they migrate to a different state they would tend to send back money rather take their families with them. Thus the vast internal temporary migration of industrial workers (e.g. to Gujarat in labor intensive industries) would mean that the usual spending out of wage income would move out to states receiving remittances so that the addition to the base in adding value on account of labor payments is considerably reduced.

In many industrial clusters outward remittances can amount to as much a 50-70% of wage payments made to workers. This, at the margin, incentivizes states that have poor regional factors (including policy factors) to depend upon the spending effects of their working class families which receive remittances. When the adverse regional factors arise out of poor policy/ governance, there is perversity since correction of these poor policies and governance is necessary for a large country like India constituted by near sub-national regions.

Since GST collected from a pure exporting producer has to be fully transferred to the state/s to which the exports are destined, there is also little state administrative incentive to collect the taxes. [The willingness to collect then has to be entirely from the Centre].

For mature economies destination oriented GST is alright. In China the state value added weight in central allocations (single central collection) is very high as it should be. We discuss this later (see Appendix). The discretionary power of the Centre to link allocations to national strategy is another factor that makes the Chinese embrace of GST more functional to the task of transformation. India cannot afford to hurt the prospects of its economic transformation by fiscally dis-incentivising producing states.

NEED FOR STATE LEVEL ESTIMATES OF REVENUE NEUTRALITY

India is at a very early stage of development wherein much of the economic transformation lies ahead. At this juncture the role of the states in attracting and encouraging industrial and tradable service activities is very large. A situation where the incentives for locating production are weak is therefore not desirable. This we have argued earlier. It necessitates not only a study of the impact of GST often cast as a revenue neutral rate (RNR at the state level), but also of the fiscal incentives for supporting value added tradable activities assuming no transfers (devolution based on this need) since at this stage when states need to play a large role. The only way a destination based GST can be functional to the economic transformation is, if in the share of states in the Centre's collection of GST revenue there is a significant weight given to states in their (past) creation of incremental value. RNR is relevant for the aspect of compensation in "neutralizing" the effect of the regime shift to a GST, but does not address the question of the fiscal disincentive. Estimating the divergence between consumption and production to work out devolution from the centre, is one way of addressing this issue. Since the divergence can only increase with regional specialization for which there is an incontrovertible need, the divergence between the revenue neutral rates for the state (RNRS) across

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[10] Christaller (1966) developed the idea of hierarchy among central places within a region. Losch (1967) brought out the possibility of certain regions being more activity rich as they have central places of higher order. In the era of national companies and multinationals, Hymer (1982) argues that lower order regions would have lower per capita income production, since higher paid jobs tend to get concentrated in the higher order central places even across nations.

the states, as estimated today serves as a lower bound on the required transfers (devolution) to correct this fiscal disincentive.

Consumption and production

In the following analysis we explore the issue of divergence between consumption and production. Figure 1 graphically presents average per capita private final consumption expenditure (PFCE) in relation to gross state domestic product (GSDP) per capita. Those below the line are more production oriented and those significantly above consumption oriented. Low output states with low consumption are Bihar, Assam, Madhya Pradesh, Uttar Pradesh, Jharkhand and Odisha. States with high per-capita consumption and per-capita output are Haryana, Kerala, Maharashtra, Punjab, Tamil Nadu and Telangana. This preliminary analysis helps to focus attention on the problem. With wide divergence between ranks of per capita consumption and per capita SDP. A revenue neutral rate at the state level (RNRS for each state would help to define the weights that must be given to value added in the state in the disbursal of the part of GST that is shared among states.

NIPFP study

Observe that the rank difference between per capita SDP and per capita consumption is very high for Gujarat, Himachal Pradesh, Maharashtra and Haryana. It is the lowest (and negative) for Uttar Pradesh, Bihar, Assam and Madhya Pradesh. Any RNR estimation which uses the currently effective taxation structure for estimating the tax base, would surely overestimate the producing states' base, resulting in a lower RNR. This leads us to the discussion on the limitations with the presently available estimates of RNR. The only state level RNR estimates available in India are from NIPFP (2013). These estimates are still based on SDP with many heroic adjustments and assumptions for which the authors should be credited. The report admits that for a destination type GST, the most reliable measure of taxable base would be consumption expenditure. However, the study estimates "taxable turnover" as the base, on account of limitations with the available regional consumption expenditure estimates.

Measuring taxable turn-over regionally in Indian case is difficult, as one has to make heroic assumptions regarding inter-state trade[11]. The assumption as regards cross-state trade are too gross for the approach to give a fair estimate. Moreover, some services which are currently carried out close to the residence of the consumer could drastically shift to other more logistically consistent location in the post GST period. At the state level, the effective tax rate is used to measure the base. Since the actual taxes collected in producing states is likely to be far lower than what would be under the net in an era of GST, there is underestimation of the tax, and hence of the RNRS. Further, for the states for which the tax collection data is not available, three standard tax rates are assumed. Additionally, the study excluded important services such as IT and real estate from the list of services. RNR Report of (2015) –Subrahmaniam (2015)- lists out technical and conceptual limitations of the study. IT services while not taxed, does provide a base for immediate consumption and multiplier effects especially in auto and house purchase, which benefits states and cities where such activities are located –Hyderabad, Bangalore, Delhi (Noida and Gurugram) and Pune.

The omission of vast amount of consumption where the poor's consumption is concentrated – raw food – is also an issue. In the longer term, food could have positive rates, as the incomes rise, so that a consumption based approach that has the potential to accommodate changes with regard to the items omitted is necessary[12].

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[11] Interstate trade is already very significant and not very well understood. The market for trucks has been growing at over 13% per annum without a break ever since the reforms. Highways only build yesterday have become congested. Gujarat for example produces much of the plastic items (final consumption good) consumed all over the economy, a large part of the petrochemicals which are nearly all intermediates, and drugs and pharmaceuticals which are both final and intermediate goods. Similarly states like Odisha and Chhattisgarh of iron and steel and minerals.

[12] While raw food may be omitted, the share of processed food can only rise with incomes so that the need for looking forward, demands that expenditure on food be included as well.

Now that the GST is in place, and about a year has passed, estimating RNR for state seems superfluous. However, RNRS would help up to map out the expected tax loss, and also estimate therefore the degree of support that a losing state would deserve, during 'transition period'. It would also help in setting a lower bound to the "support" or devolution (change) thereafter. The same point can be brought out through the difference between the earlier base, and the new bases that is covered through consumption. Both are equivalent, since both involve the estimation of the new base. **Broadly in an idealized world of an entirely uniform GST with no zero rates and no sin taxes, and no exceptions for traders/producers with small turnover, net GST ultimately accruing to state Governments would depend upon the sum of private consumption expenditure and Government consumption expenditure within the state boundaries. The latter is the larger and more important component of the base.**

THE CONSUMPTION BASED APPROACH

There are three widely agreed upon approaches to measure the base for any comprehensive indirect tax, namely, GDP adjusted for exports and imports, consumption expenditure, and taxable turnover of goods and services. Since GST, by design, is going to be a destination based, consumption type tax with input credit system, accurately measuring the final consumption expenditure is the most desirable approach.

The consumption expenditure based approach has been rejected thus far (Rao, K., and P. Chakrborty, 2013) on account of the fact that the National Sample Survey Organisation (NSSO) "misses" out a very large part of private consumption expenditure, and since this NSSO estimate is all that is available on the expenditure side at the state level.

Consumption expenditure data is available for all the states from the National Sample Organizations' (NSSO) household consumption expenditure surveys, conducted on regular intervals. However, NSSO surveys are person weighted, the sampling design assigns equal weight to each individual. Therefore, by design the survey misses out on the rich classes' consumption, since they are fewer in number, but account for a large proportion of total consumption.[13]

Rao, K. and P. Chakraborty (2013) lists out four main difficulties in using the consumption expenditure approach, simultaneously agreeing that theoretically it is the most suitable. Our approach is able to address all these concerns to a large extent. One, the report suggests that consumption data for exempted commodities is not available. Further, data for traders with turnover below the threshold, exempted from the tax is not available. Thirdly, the listing of commodities and services in the NSSO and the NAS are quite different. The fourth, and the most grievous limitation cited by the study is underestimation of consumption expenditure by NSSO, as compared to NAS estimates.

Herein we take care of the last objection which is the most serious area, to use the consumption method.

Adjusting NSSO estimates with NAS PFCE

We analyzed the difference between NSSO and National Accounts Statistics (NAS) estimates over a period of 11 years, covering five NSSO surveys. We found that although there is gross underestimation of consumption expenditure by NSSO, as compared to NAS, the difference is systematic. The difference arises naturally given the nature of sampling and the estimation of average in the NSSO, the two can be reconciled.

Table 1 gives the all-India consumption expenditure figures as per various NSSO surveys, with the items aggregated to confirm to the PFCE groups. Table 2 the PFCE as per NAS.

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[13] This understanding has been missed in the literature leading to much spurious discussion and attempts to explain the difference. Indeed our understanding of the difference being 'natural' would sharply question the use of the NSSO to estimate inequality in income and consumption. An adjusted NSSO that 'corrects' for the person weight should give vastly higher Gini coefficients in the case of India, removing the absurd finding that India's income inequalities are lower or comparable to that of many progressive east Asian economies and China. This would be our next effort.

The underestimation in the NSS is apparent. Since the underestimation by NSSO is consistent at the state and national levels, we assume that the share of a state in national consumption for an item should remain constant in both NSSO and NAS. We used the following relation:

$$\widehat{NAS}_i^s = \left(\frac{NAS_{i'}^I}{NSS_{i'}^I}\right) \cdot NSS_i^s$$

Where NSS_i^s is the NSSO per capita consumption expenditure of the item i for the state s multiplied by the population estimate of the state.

Since the NSS categories are finer than those for the NAS, we have used the same ratios $\left(\frac{NAS_{i'}^I}{NSS_{i'}^I}\right)$ where i' is over all items of the NAS categories.

Thus we first calculate the blow up or adjustment ratio $\left(\frac{NAS_{i'}^I}{NSS_{i'}^I}\right)$ for the nation as a whole and use these as a multiplying factor to adjust NSS_i^s for each of the i categories for every state. We have also reported the coefficient of variation for the average across the years. It is evident from the table that the coefficient of variation is small, indicating stability in the adjustment factor over-time. The movement over time is also smooth and gradual indicating that these changes arise out of the increase in inequality as incomes rise. Across commodities there are differences, the ratio is greater than one for items consumed largely by high-income classes, and typically closer to one or even lower than 1 for commodities of use by lower income groups. For example, for beverages, which comprises largely of tea consumption by masses, the ratio is marginally less than one. Similarly, for edible oil, and pulses, which are items of mass consumption by lower, middle income groups, the ratio turns out to be less than one.

Since the underestimation by NSSO is consistent for each broad commodity group, we assume that the share of a state in national consumption should remain constant in both NSSO and NAS for each item.

Using the adjustment factor, also implicitly takes into account non-household, non-Government consumption, e.g. by NGOs and free kitchens etc., besides the difference in underestimation (weighting) already considered[14].

Similarly, adjustments for tax exempt sectors are based on sector-wise blow-up of NSSO state level estimates by sector-wise ratio. This is necessary, since the base as of now and for the conceivable future would have these exempt categories, largely food and necessities.

Ultimately though the consumption expenditure would drive GST collection. Fig. 2 below presents state-wise estimates of "Base-intensity"[15], a relative measure of consumption and production, which we define as the ratio of PFCE to GSDP of the state. The base in Fig. 2 includes food and other exempt and sin categories as well. This is done to keep in sight the ultimate difference between the tax base under GST (PFCE) and the economic activity that regional governments support viz. GSDP. The wide variation from as low as 0.3 (Chhattisgarh and Odisha) to as high as 0.64 (Bihar) many be noted. In general, base intensity is higher for states with low production and high (relatively) consumption, such as Bihar, Kerala and Uttar Pradesh. This measure of base intensity is forward looking and most relevant for longer term consideration of the need for devolution to compensate production states – since in the long run exemptions are likely to reduce and government consumption become more proportional to consumption as government spending itself orients more on people with rise in incomes and providing incentives away from production.

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[14] Ideally since it is known that the NSSO is person weighted, while the NAS is entire consumption (implicitly consumption weighted), a more sophisticated way of going from NSS to NAS via the information implicit in the deciles of the NSS is possible for consumers as a whole. Then the consumption of NGOs etc. can be added. Herein since we are not interested per se in the method, we do not do so.

[15] We would think that the measure of Base Intensity would be an important measure in thinking of the extent of payment out of central revenues, that each state would require even after the period of compensation.

First level estimates of Base (A)

Estimation of taxable base of goods and services (RNRS) under GST requires several adjustments in the NSSO expenditure estimates, after obtaining state-wise final consumption expenditure estimates with the help of the blow up ratio.

For the first level estimate – RNRS(AA), we begin by eliminating the final consumption expenditure on exempted sectors from the total final consumption. Base A is therefore measured as the excess of per capita final consumption expenditure minus the expenditure over exempted and not covered commodities and services.

$$Base\ A = \sum_{i=1}^{n} PFCE_{state,i} - \sum_{j=1}^{m} PFCE_{state,j}$$

Where n includes all categories, and m the exempted goods and services, and also sin goods. Base A is therefore the 'Base due to consumption' of all non-exempt and non-sin goods and services.

From the item categories of NSSO, Cereals, Pulses, Fruits and Vegetables and Education are considered to be exempt, following the current tax regime and the discussions in GST Council. PFCE on "Sin goods" is also deducted from the base. The relevant item category representing sin goods is Pan, Tobacco, and Intoxicants. Table 5 brings out the estimates of Base A.

First level estimate of RNR for states (RNRS) is then obtained by using the following relation:
$$RNRS(AA) = Tax(A)/Base(B)$$
Tax A are state taxes comprising of State Sales Tax or VAT, CST, surcharge on sales tax, receipts of turnover tax, and other receipts. Data for State Taxes, given in Table 4. The data is from the RBI's periodic "Study of State Budgets".[16]

This approach is similar to the IMFs macro approach but builds on the direct measure of expenditures from the expenditure side of NAS. The base for checking efficiency as in Subramanian, A. (2015) uses direct expenditure. But its potential to be used for RNRS and for RNR has not been given adequate attention. This methodological improvement overcomes many issues with the conventional method of using taxes and rates to get to the base since that method is crucially dependent on the 'compliance factor' which is known to differ widely across states and even within state across items.

The method used here allows therefore for RNRS to be computed for most states. The rates are very low for states which are "consuming" (Bihar, Madhya Pradesh) and high for states which are "producing" (Tamil Nadu) and even higher for "producing" states which are manufacturing oriented (Gujarat, Chhattisgarh) but also have low consumption.

A clear notion of the RNRS is important. The taxes are as on the eve of the introduction of GST if the year 2014 is considered. Even before GST with the CENVAT there has been much movement towards destination of excise and service taxes since both were vatable and went to the central government (with only the IST being a compensation to the state out of central excise collection). But with GST local retention goes away almost entirely.

RNRS(AA)

Hence RNRS(AA) measures the impact of base shifting. If each state has to retain its current taxes (CENVAT and other state taxes but excluding 'sin taxes') then the rate would have to be a low 9% for Assam, 5% for Bihar on the new base (consumption expenditure), and as high as 15.3% and 14.7% for

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[16] Cf. State Finances – A Study of State Budgets, Reserve Bank of India (2004-2015). Retrieved from:
https://www.rbi.org.in/Scripts/AnnualPublications.aspx?head=State%20Finances%20:%20A%20Study%20of%20Budgets

Chhattisgarh and Gujarat respectively. Since these are based on state taxes, the overall GST rate would have to be as high as 30.6% for Chhattisgarh and 29.4% for Gujarat, at a 50-50 split of overall GST (other than GST on inputs) collection, ignoring service tax collection. See Table 6.

No wonder the 'asking rate' for GST was as high as 28% for Gujarat. Clearly such rates would all but kill the market for many goods and services. The solution is therefore not high rates, but lies in a major shift in the way the Finance Commission ought to determine the shares for each state. Indeed the overall rate (not computed here) for non-services is likely to be closer to 18%-20% as was computed for the nation as a whole in the literature (NIPFP, 2013). And the RNR for GST should be guided only by the national average RNR that is based on a pooling of all state and central taxes that are replaced by GST, including service tax.

Yet the state RNRS (on manufacturing) being so divergent – from 5 to 15 or 10-30% as between Bihar and Chhattisgarh, i.e. with a clear 20% of the base points to the enormous inequity in GST for producing states with a focus on manufacturing, which are also poor and/or have low consumption bases.

Second level estimate of RNRS(AB)

Secondly, we add back PFCE on tobacco and tobacco products to the Base, since taxes on Tobacco and Tobacco products are included in State taxes. NAS reports Tobacco and Tobacco products as a separate category. We assume that the share of PFCE on Tobacco products in total PFCE on Pan, Tobacco and Intoxicants category remains constant across states.

We use this share to estimate the state-wise PFCE on tobacco and tobacco products, and add it back to Base A.

Estimates of Base B are given in Table 7:

$$Base\ B = Base\ A + PFCE\ on\ Tobacco\ Products$$

$$RNRS(AB) = \frac{Tax\ A}{Base\ B}$$

RNRS(AB) – Table 8- uses a slightly different estimate of the taxable base of goods and services. The rate in his case comes out to be higher than RNRS(AA), because of addition to the denominator in the former case. Since we have not added the sin taxes (tobacco etc.) to the numerator, this estimate is not an RNRS as such, but only tells us the overall base that is available if consumption on tobacco were to fall to nearly zero. We carried over estimate since the taxes on tobacco and related items collected at the state level were not available. As such these may be seen as RNRS if tobacco is excluded (not taxed) but the base of expenditure is available for other consumption.

Third level estimates including service taxes
We now take forward the analysis of the RNRS, which is more realistic in including service taxes and the service tax base as well. This should be the working figure for the RNRS for the state. Since GST is double till with the rate being split into 2, we assume that half the current collection of service taxes that take place would be collected by the state, so that we have a better estimate of the required RNRS for the state, with the overall GST being twice this measure. Variations across the state in this measure then brings out the divergence across the states. Table 9 gives the estimate of the service taxes collected state wise.

RNR(BB) estimates are given in Table 10. States with low consumption and high production such as Gujarat, Chhattisgarh, and Tamil Nadu have a high RNRS. The lowest RNRS is for Bihar, followed by West Bengal and Uttar Pradesh. These are states with low per capita consumption and low production. Again the variation is quite large from 6.2% (Bihar) to 16.2% (Chhattisgarh) i.e. a gap of 10% on the base, which on the sum of states and central taxes would give a gap of 20%!

Fourth level estimates including service taxes- RNRS(BC)

We now estimate Government purchase of goods and services. We assume that all purchases by state and local government are of local goods and services. We allocate the central purchases of goods and services on the share of GSDP of a state in total GSDP in all states. This method "biases" against the interest of producing states since even in State Government purchases, especially of manufacturing could be in national markets. However therefore the estimates are conservative for the producing states, since the purpose is to bring out the large divergence across states. Due to non-availability of local Government (Urban Local Bodies and Panchayats) purchases data, we multiply by a factor of 1.5, the state Governments' purchases of goods and services.

$$Base\ C = Base\ B + (State\ Govt.Purchase\ of\ Goods\ and\ Services * 1.5) + \\ Central\ Govt.purchases\ of\ goods\ and\ services\ from\ the\ state$$

$$Central\ Govt.purchases\ of\ goods\ and\ services\ from\ the\ state = \\ Central\ govt.purchases\ of\ goods\ and\ services * (\frac{GSDP_{state}}{\sum_{i=1}^{n} GSDP_{state,i}})$$

$$RNRS(BC) = Tax\ B/Base\ C$$

We present Base C data for 4 states, due to non-availability of functional classification of state govt. budget data in public domain[17]. Table 11 gives data for Base C. RNRS(BC) estimates are presented in table 12. These estimates are more important as the asking rates for these states. Thus for Gujarat it is as high as 26.6% double of 13.3% estimated. In relation the asking rate for states like Bihar are much likely to be much lower, which however could not be estimated.

It is much better to use the estimates of Table 10 for the divergence across states. This is so, not only because they are available across many states, but also because Government purchase, which is a function of the level of state action (which is endogenous to the tax collected) is itself subject to incentive effects. Thus Kerala has large state expenditure in re-distribution subsidies and social sectors. Gujarat encourages production in an intense way. The latter has positive effects on other states and encourages production expansion for the nation as a whole, which would be (relatively) dis-incentivized under the GST (when without any weight for tradable goods and services production in the disbursement of central collections to the states).

CONCLUSIONS

It is evident from the large dispersion of the RNRS across states, that emerges systematically, that GST is going to be very hurtful to producing states. The current proposals would put the states' share at 50%. (GST Council is still evaluating what the share should be but the range under consideration is 40-60%). One estimate of RNRS for Gujarat is around 15% (2014, Table 14 for Gujarat). At 50% of the total GST going to the state this should give a RNR for all GST collected by Gujarat of 30%. In contrast similar figures for Bihar is only 12.4%! And for Bengal it is 16.4%.

Neither is it desirable nor necessary to reverse GST to remove the fiscal bias against production. Indeed, GST is most conducive to bringing about locational, scale and logistic efficiency. However, for large near federated systems that are yet to complete their economic transformation, it has the potential to hurt. This is because regional governments have the major role of attracting and sustaining investments and economic activity especially of manufacturing and tradable services for good of the national economy as a whole. This further necessitates the need to design the allocation and compensation mechanisms in such a way as to incentivize states to encourage the local embedding of manufacturing and tradable services.

Coastal states like Gujarat, Tamil Nadu, Odisha, Andhra Pradesh, Karnataka and Maharashtra would have to play that role more vigorously than other states. Similarly mineral and resource rich states would have to bear the role of producing minerals metals and other materials required for industrialization. However, the compensation by the Centre at 15% per annum rise in nominal terms for the next 5 years would not be

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[17] Which can be easily carried out by the GST council which has access to this data.

enough to compensate for the long term fiscal losses that Gujarat, Chhattisgarh and Tamil Nadu would encounter. More spending on infrastructure and other supportive measures from the point of view of local tax generation are disincentivised

The way out is to arrange for an upfront share of the Centre's collection of around 40-50% to be allocated purely on the basis of origination or better yet the gross capital formation realized by states in the previous three years, before the allocations by the Finance Commission comes in. (Finance Commission allocation on the residual amount after the Centre's own expenditure can then be on the usual basis of population and poverty etc.)

The insistence by states to have their own separate administrative machinery for GST is misplaced. Does this mean that they (ex-ante) plan to have levels of collection efficiency? Clearly that would be inadmissible. **It is therefore recommended that since the rates are coordinated anyway, a single till system with half the revenue going to the Centre and other half to the state in question should be put in place, with an integrated administrative machinery. Best option would be single till – both bureaucracies being merged into one – with a single board at every regional level that has 50% its members from the state; and 50% from the Centre.**

Our earlier study on "Inflationary impact of GST" (Morris, et. al, 2018) points to the negligible impact of inflation on GST. So there is no need to be conservative on a movement to fewer rates on that count. Nor should the current high rates of 28% be a permanent feature. These high rates have been driven by the need for RNRS for the producing states. Instead, the mechanism of an upfront 50% of the Centre's collection being allocated on the basis of capital formation (or origination) would allow the rates to be in fewer chapters, and also for not having the very high rates of 28%, except of course for sin products, where it perhaps needs to be even higher.

Appendix
The Case of Taxes and Allocations in China – A Brief Note
(Based on Shen et al (2012) and Wang and Herd (2013))

In China, the GST covers only goods and is levied by the Centre. Service taxes also called "Business Taxes" are levied by the states and almost 97% of the same is both collected and retained locally. There is vatting in business taxes for local sales but not for cross regional sales. Of the taxes on goods which the Centre collects about 25% goes back to the states on origination basis. In fact much of the revenue that is devolved is on the basis of value added that takes place since the initial tax share is protected out of rising centrally collected taxes.

Equally importantly since the local governments (especially of cities) are important as owners of capital in businesses they do derive a fairly significant part of their revenue in the form of non-tax receipts, which is not often recognized in the "international" comparative studies. Similarly, revenues by way of rental real estate and capital gains in land development which are monopolies of governments, are important sources of revenue for local governments. These revenues strongly incentivize the local governments to be supportive of production, and especially of infrastructure and industrial development.

Direct compensation for low per capita incomes in regions is nearly absent except for the minority provinces. There is significant compensation for debilities of governance since government activities tend to have scale issues. Governance requires fixed expenditures. This means that for equal government effectiveness with regard to core public services –police, judiciary etc., and areas of market failure – water sanitation, public health and education and local transportation – the expenditure required per person is likely to be inversely dependent upon population size, and density; and there is significant compensation for the same from the centre in China. The excess of standard costs of governance, and standard costs per person of basic services over what is financed from standard revenues that can be raised locally is then incremented every year by the rate of rise in centrally collected taxes, drive these equalization measures.

Thus the Chinese system of taxes and the devolvement of revenues is highly functional to production and value creation. This has given much value to the locational tournaments that characterized the rapid growth of China. The human condition and improvements therein are designed to arise naturally out the process of growth and by way of intervention by government that does not hurt the process of transformation.

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Figure 1: Per-Capita Final Consumption Expenditure in Relation to Per Capita SDP of States

Table 1 : All India Average Consumption Expenditure (Rs. Crore)

Item	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Cereals	133729	143718	157870	174377	188184	203085	219165	236518	255246	275456	297266
Pulses	23850	28996	33850	35911	41518	48001	55496	64162	74180	85763	99154
Sugar	16466	20891	20410	18051	21568	25770	30791	36789	43957	52520	62753
Edible oil	37973	37861	41222	51527	57221	63544	70565	78363	87022	96638	107316
Fruits and vegetables	64700	76556	87468	99754	110738	122930	136465	151490	168170	186686	207241
Milk & milk products	74893	81614	93251	102606	121868	144746	171919	204192	242525	288053	342128
Egg, fish & meat	27555	35694	37104	41879	48810	56889	66304	77278	90067	104974	122348
Spices	16894	18511	21925	24288	28541	33539	39412	46314	54424	63955	75155
Other food	3055	3756	4404	4701	5496	6425	7511	8781	10265	12001	14029
Beverages, etc.	46736	51592	59471	80445	94697	111475	131224	154473	181840	214057	251980
Pan, tobacco, and intoxicants	19206	21770	24447	26529	30452	34954	40122	46053	52862	60678	69649
Clothing	60315	62223	69013	80750	92747	106526	122353	140530	161409	185389	212932
Footwear	9370	10568	11538	13161	16245	20052	24752	30553	37714	46554	57465
Rent	22714	29074	30000	38945	47201	57208	69337	84037	101853	123447	149619
Fuel and light	85654	100263	110740	124927	141311	159843	180806	204518	231340	261680	295998
Misc. consumer goods	55820	62130	71551	82373	95973	111817	130277	151785	176844	206040	240055
Durable goods	31844	39199	49016	52733	68458	88872	115374	149778	194442	252424	327697
Consumer services	86608	108434	125456	149662	174484	203422	237160	276494	322350	375812	438141
Medical (Institutional + Non institutional)	54033	69069	83443	78827	92592	108761	127753	150061	176265	207045	243199
Education	40674	44760	58299	71058	78050	85731	94167	103433	113611	124791	137070
Total	912089	1046678	1190480	1352506	1556154	1793590	2070952	2395603	2776387	3223961	3223961

NB: Monthly Per Capita Consumption Expenditure X Projected Population X 12

Figures for 2004, 2005, 2006, 2007 and 2011 pertain to NSSO 60th, 62nd, 63rd, 64th, and 68th rounds respectively. Figures for rest of the years are estimations. Average expenditure figures as per Uniform Recall period are used for all NSSO rounds.

Table 2: All-India Private Final Consumption Expenditure as per National Accounts Statistics (Rs. Crore)

Item	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Cereal	165490	180320	202452	229799	249839	250651	289526	323334	326425	355353	386845
Pulses	15873	19015	23713	26453	29050	33115	38949	41921	53877	62769	73129
Sugar	33339	36852	38589	37627	45834	65062	65217	67763	73325	80917	89295
Edible oil	37778	34306	33593	41570	45257	44177	55821	63694	76519	83577	91286
Fruits and vegetables	167901	192118	211033	246775	260828	319751	372173	427332	476763	543199	618892
Milk and milk products	134069	143542	156950	177822	208124	246909	294902	341816	381220	434417	495037
Egg, meat, and fish	62424	70150	79645	88963	101087	119646	143742	163336	191346	220104	253184
Spices	18213	19968	21887	23985	26280	28789	31531	34529	37773	41379	45330
Other food	15277	17965	20857	21531	24212	31276	35565	39261	45574	52246	59894
Beverages	27049	32271	42562	56176	61457	62093	71456	102791	112894	134970	161362
Pan, tobacco and other intoxicants	54489	60389	65119	66208	82904	89993	103677	116379	120381	132920	146764
Clothing	108477	127098	162343	166799	181402	218257	312359	325507	354558	411132	476732
Footwear	19352	24045	27250	37840	39259	48325	49812	57840	64325	74746	86855
Rent	181949	198190	225418	265150	317904	359988	424535	482270	538629	616889	706520
Fuel and light	84485	92648	103635	114887	126215	141507	161325	190501	223335	252191	284774
Misc. consumer goods	283919	332116	388721	433683	502106	561646	671785	820940	934221	1084193	1258240
Durable goods	35995	33075	38915	42151	46189	60871	77982	95400	95607	108024	122054
Consumer services	351398	403463	489308	600788	720779	831438	955452	1217438	1421306	1692578	2015625
Medical	95560	105244	115900	127648	140595	154872	170624	187954	207014	228016	251149
Education	32555	36762	40798	44539	48624	53088	57963	67440	73641	81552	90312
Total	1925592	2159537	2488688	2850394	3257945	3721454	4384396	5167446	5808733	6668391	7655273

Table 3: Adjustment or "Blow Up" Ratio [PFCE(NAS)/Consumption Expenditure (NSSO)]

Item	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Coefficient of variation
Cereals	1.24	1.25	1.28	1.32	1.33	1.23	1.32	1.37	1.28	1.29	1.30	0.03
Pulses	0.67	0.66	0.70	0.74	0.70	0.69	0.70	0.65	0.73	0.73	0.74	0.04
Sugar	2.02	1.76	1.89	2.08	2.13	2.52	2.12	1.84	1.67	1.54	1.42	0.16
Edible oil	0.99	0.91	0.81	0.81	0.79	0.70	0.79	0.81	0.88	0.86	0.85	0.09
Fruits and vegetables	2.60	2.51	2.41	2.47	2.36	2.60	2.73	2.82	2.84	2.91	2.99	0.08
Milk and milk products	1.79	1.76	1.68	1.73	1.71	1.71	1.72	1.67	1.57	1.51	1.45	0.06
Meat, egg and fish	2.27	1.97	2.15	2.12	2.07	2.10	2.17	2.11	2.12	2.10	2.07	0.03
Spices	1.08	1.08	1.00	0.99	0.92	0.86	0.80	0.75	0.69	0.65	0.60	0.20
Other food	5.00	4.78	4.74	4.58	4.41	4.87	4.74	4.47	4.44	4.35	4.27	0.05
Beverages	0.58	0.63	0.72	0.70	0.65	0.56	0.54	0.67	0.62	0.63	0.64	0.09
Pan, tobacco and other intoxicants	2.84	2.77	2.66	2.50	2.72	2.57	2.58	2.53	2.28	2.19	2.11	0.09
Clothing	1.80	2.04	2.35	2.07	1.96	2.05	2.55	2.32	2.20	2.22	2.24	0.10
Footwear	2.07	2.28	2.36	2.88	2.42	2.41	2.01	1.89	1.71	1.61	1.51	0.20
Rent	8.01	6.82	7.51	6.81	6.74	6.29	6.12	5.74	5.29	5.00	4.72	0.16
Fuel and light	0.99	0.92	0.94	0.92	0.89	0.89	0.89	0.93	0.97	0.96	0.96	0.04
Misc. consumer goods	5.09	5.35	5.43	5.26	5.23	5.02	5.16	5.41	5.28	5.26	5.24	0.02
Durable goods	1.13	0.84	0.79	0.80	0.67	0.68	0.68	0.64	0.49	0.43	0.37	0.31
Consumer services	4.06	3.72	3.90	4.01	4.13	4.09	4.03	4.40	4.41	4.50	4.60	0.07
Medical (Institutional and Non-Institutional)	1.77	1.52	1.39	1.62	1.52	1.42	1.34	1.25	1.17	1.10	1.03	0.16
Education	0.80	0.82	0.70	0.63	0.62	0.62	0.62	0.65	0.65	0.65	0.66	0.11
Total	2.11	2.06	2.09	2.11	2.09	2.07	2.12	2.16	2.09	2.07	2.37	0.04

Figures for 2004, 2005, 2006, 2007 and 2011 pertain to NSSO 60th, 62nd, 63rd, 64th, and 68th rounds respectively. Figures for rest of the years are estimations.

Average expenditure figures as per Uniform Recall period are used for all NSSO rounds.

Figure 2: Base Intensity

Base Intensity (PFCE / GSDP)

Base intensity numbers presented are based on 4 years average values (2011-2014)
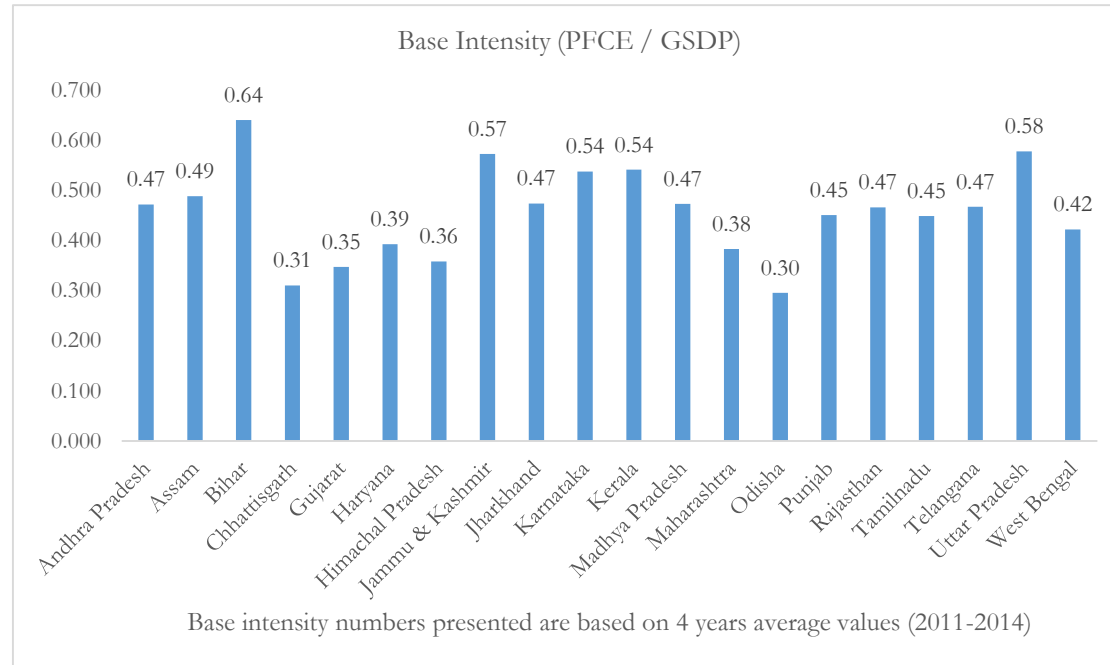
Table 4: State' Taxes (Tax A) (Rs. Crore)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Andhra Pradesh	5697	6471	7981	9818	11276	12199	15039	18014	21009	25150	28749
Assam	2098	2568	2783	2691	3110	3535	4318	5693	6223	6848	8175
Bihar	1890	1733	2081	2534	3016	3839	4557	7476	8670	8453	12820
Chhattisgarh	1673	2089	2843	3023	3610	3712	4840	6006	6928	7929	9800
Gujarat	8308	10561	12817	15104	16810	18199	24893	31202	39464	40976	45242
Haryana	4760	5604	6853	7720	8154	9032	11082	13383	15376	16774	19930
Himachal Pradesh	542	726	914	1092	1246	1487	2101	2476	2728	3141	3470
Jammu & Kashmir	780	1092	1211	1480	1852	2130	2424	3414	4174	4578	4530
Jharkhand	1782	2149	2458	2789	3715	4200	4503	5522	6421	7305	9267
Karnataka	8700	9869	11761	13893	14622	15832	20234	25020	28414	33719	36924
Kerala	6701	7037	8563	9371	11377	12770	15833	18938	22511	24885	29135
Madhya Pradesh	3912	4508	5261	6045	6842	7723	10256	12516	14856	16649	19500
Maharashtra	18816	19676	24130	26752	30680	32676	42482	50596	60079	62530	69089
Odisha	2471	3011	3764	4118	4803	5408	6806	8196	9684	10728	12435
Punjab	3816	4626	4829	5342	6435	7577	10016	11171	13217	14846	17760
Rajasthan	4797	5593	6720	7750	8904	10163	12629	15766	18574	21215	25625
Tamil Nadu	12996	15554	17727	18156	20674	22661	28614	36288	44041	53532	61565
Telangana(ii)	N,A.	N,A.	N,A.	N,A.	N,A.	N,A.	N,A.	N,A.	N,A.	N,A.	26963
Uttar Pradesh	8888	11284	13278	15023	17482	20825	24836	33107	34870	39645	44828
West Bengal	5716	6108	7079	8060	8955	10509	13275	15888	18554	21931	24992

NB: State taxes comprise of State sales tax/VAT, CST, Surcharge on sales tax, Receipts of turn over tax, other receipts

For divided Andhra Pradesh, the total tax collections for years prior to division, are allocated between Andhra Pradesh and Telangana on the basis of the ratio of tax collections in the year 2014-15, the first year for which tax collection data is available for Andhra Pradesh and Telangana separately.

Source RBI (various years), "Review of State Finances", Reserve Bank of India

Table 5: Estimates of Tax Base (A) (Rs. Crore)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Andhra Pradesh	64996	71882	85532	88126	101635	117854	141813	170895	196796	224347	255200
Assam	26038	26043	28049	35914	43474	47860	54597	61763	67412	77670	89524
Bihar	65132	70589	80537	85956	94756	110602	134774	161023	185772	217437	254527
Chhattisgarh	17510	23954	32308	38901	33529	36524	41282	46733	50637	56764	64256
Gujarat	86396	86658	93206	120256	139267	155584	178443	207245	228678	265867	308059
Haryana	41714	39257	39155	51051	58703	71367	88970	112248	135959	154905	173383
Himachal Pradesh	10869	11293	12481	15488	15615	17613	20350	23677	26218	29374	33686
Jammu & Kashmir	16311	17043	18766	21666	23234	26969	32266	38617	44191	50312	50514
Jharkhand	26879	28051	31509	35005	42616	47829	55751	64560	71733	81722	93425
Karnataka	75551	84504	101674	102188	150653	172368	204434	245026	280665	330031	377030
Kerala	73951	75403	84154	99328	109939	124242	143993	169055	188236	214450	245059
Madhya Pradesh	61636	66506	75698	77767	96745	111452	132211	157320	178545	194010	220896
Maharashtra	193711	201899	228156	269615	290844	328711	382014	450188	505333	577150	644629
Odisha	28010	29094	32419	34616	43851	49164	57261	66253	73778	80168	91278
Punjab	51907	56336	64392	73305	77255	86942	99811	116014	128386	142992	157523
Rajasthan	77126	80894	89301	102377	106507	126658	154207	188826	220764	243037	269769
Tamil Nadu	130113	131254	146815	148781	178057	204784	243877	293315	336319	385706	441001
Telangana(i)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	170593	184586	203462	260289
Uttar Pradesh	183534	185945	200505	229684	248590	285618	337061	397942	450104	497599	563091
West Bengal	105465	107073	117513	131774	139140	159204	188775	223543	254439	297984	337756

The Monthly per capita consumption data for Districts under Telangana is obtained from the Pooled Report on Household Consumption Expenditure and Employment and Unemployment in Telangana; NSS 68th Round (2011-12) (Central and State Sample Data). The figures pertain to Central sample estimates for Uniform Recall Period. The figures for 2012-14 are projected on the basis of the assumption that the growth in consumption expenditure follows the same rate as All-India consumption expenditure as per NSSO 64th and 68th round estimates.

NB: The data for Andhra Pradesh and Telangana are problematic and have not been verified independently. The problem with Andhra Pradesh is that before the bifurcation, the data refers to the undivided Andhra Pradesh in many but not all instances including here.

Table 6: RNRS(AA) i.e. Tax A/Base A

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Andhra Pradesh	0.088	0.090	0.093	0.111	0.111	0.104	0.106	0.105	0.107	0.112	0.113
Assam	0.081	0.099	0.099	0.075	0.072	0.074	0.079	0.092	0.092	0.088	0.091
Bihar	0.029	0.025	0.026	0.029	0.032	0.035	0.034	0.046	0.047	0.039	0.050
Chhattisgarh	0.096	0.087	0.088	0.078	0.108	0.102	0.117	0.129	0.137	0.140	0.153
Gujarat	0.096	0.122	0.138	0.126	0.121	0.117	0.140	0.151	0.173	0.154	0.147
Haryana	0.114	0.143	0.175	0.151	0.139	0.127	0.125	0.119	0.113	0.108	0.115
Himachal Pradesh	0.050	0.064	0.073	0.071	0.080	0.084	0.103	0.105	0.104	0.107	0.103
Jammu & Kashmir	0.048	0.064	0.065	0.068	0.080	0.079	0.075	0.088	0.094	0.091	0.090
Jharkhand	0.066	0.077	0.078	0.080	0.087	0.088	0.081	0.086	0.090	0.089	0.099
Karnataka	0.115	0.117	0.116	0.136	0.097	0.092	0.099	0.102	0.101	0.102	0.098
Kerala	0.091	0.093	0.102	0.094	0.103	0.103	0.110	0.112	0.120	0.116	0.119
Madhya Pradesh	0.063	0.068	0.070	0.078	0.071	0.069	0.078	0.080	0.083	0.086	0.088
Maharashtra	0.097	0.097	0.106	0.099	0.105	0.099	0.111	0.112	0.119	0.108	0.107
Odisha	0.088	0.103	0.116	0.119	0.110	0.110	0.119	0.124	0.131	0.134	0.136
Punjab	0.074	0.082	0.075	0.073	0.083	0.087	0.100	0.096	0.103	0.104	0.113
Rajasthan	0.062	0.069	0.075	0.076	0.084	0.080	0.082	0.083	0.084	0.087	0.095
Tamil Nadu	0.100	0.119	0.121	0.122	0.116	0.111	0.117	0.124	0.131	0.139	0.140
Telangana(i)								0.099	0.107	0.116	0.104
Uttar Pradesh	0.048	0.061	0.066	0.065	0.070	0.073	0.074	0.083	0.077	0.080	0.080
West Bengal	0.054	0.057	0.060	0.061	0.064	0.066	0.070	0.071	0.073	0.074	0.074

NB: The figures for Telangana are based on Back-ward projections for State Tax collections.

Table 7: Base B (Rs. Crore)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Andhra Pradesh	67348	74585	88561	90976	105173	121897	146841	176402	203231	231683	263544
Assam	27612	27660	29641	37602	45766	50165	57121	64197	69916	80555	92849
Bihar	66692	72378	82461	88023	97002	113132	137876	164373	189632	221955	259815
Chhattisgarh	18184	24749	33180	39620	34644	37734	42711	48220	52288	58614	66351
Gujarat	88842	89012	95381	122216	141849	158607	182296	211571	233858	271890	315038
Haryana	42872	40423	40281	52079	60143	72795	90511	113713	137445	156598	175278
Himachal Pradesh	11246	11666	12835	15848	16121	18162	21001	24355	26972	30219	34655
Jammu & Kashmir*	16808	17488	19146	22058	23682	27441	32806	39163	44779	50981	51186
Jharkhand	27649	28993	32571	36062	44051	49308	57410	66199	73461	83691	95675
Karnataka	77683	87000	104402	104697	153497	175778	208884	250141	286938	337408	385457
Kerala	75929	77344	85983	101502	113013	127378	147477	172463	191792	218502	249689
Madhya Pradesh	63843	68787	77954	80682	100596	115463	136759	161861	183381	199265	226880
Maharashtra	197178	205410	231567	272978	295238	333526	387756	456218	512090	584867	653249
Odisha	29356	30354	33549	36044	45310	50715	59055	68080	75763	82326	93734
Punjab	52688	57340	65559	74591	78251	88071	101204	117528	130141	144947	159677
Rajasthan	80000	83938	92379	105365	110493	131155	159730	194799	227655	250624	278191
Tamil Nadu	132538	133434	148684	151419	181377	208580	248601	298492	342371	392647	448937
Telangana(i)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	176090	190621	210217	269066
Uttar Pradesh	189745	192145	206447	235480	255525	293163	345996	407262	460474	509063	576063
West Bengal	109018	110544	120771	135393	143698	164014	194299	229130	260468	305045	345760

NB: Private Final Consumption Expenditure on Tobacco in Telangana is assumed to be the same proportion of total PFCE as in Andhra Pradesh. See note to Table 5.

Table 8: RNRS(AB) i.e. Tax A/Base B

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Andhra Pradesh	0.085	0.087	0.090	0.108	0.107	0.100	0.102	0.102	0.103	0.109	0.109
Assam	0.076	0.093	0.094	0.072	0.068	0.070	0.076	0.089	0.089	0.085	0.088
Bihar	0.028	0.024	0.025	0.029	0.031	0.034	0.033	0.045	0.046	0.038	0.049
Chhattisgarh	0.092	0.084	0.086	0.076	0.104	0.098	0.113	0.125	0.132	0.135	0.148
Gujarat	0.094	0.119	0.134	0.124	0.119	0.115	0.137	0.147	0.169	0.151	0.144
Haryana	0.111	0.139	0.170	0.148	0.136	0.124	0.122	0.118	0.112	0.107	0.114
Himachal Pradesh	0.048	0.062	0.071	0.069	0.077	0.082	0.100	0.102	0.101	0.104	0.100
Jammu & Kashmir*	0.046	0.062	0.063	0.067	0.078	0.078	0.074	0.087	0.093	0.090	0.089
Jharkhand	0.064	0.074	0.075	0.077	0.084	0.085	0.078	0.083	0.087	0.087	0.097
Karnataka	0.112	0.113	0.113	0.133	0.095	0.090	0.097	0.100	0.099	0.100	0.096
Kerala	0.088	0.091	0.100	0.092	0.101	0.100	0.107	0.110	0.117	0.114	0.117
Madhya Pradesh	0.061	0.066	0.067	0.075	0.068	0.067	0.075	0.077	0.081	0.084	0.086
Maharashtra	0.095	0.096	0.104	0.098	0.104	0.098	0.110	0.111	0.117	0.107	0.106
Odisha	0.084	0.099	0.112	0.114	0.106	0.107	0.115	0.120	0.128	0.130	0.133
Punjab	0.072	0.081	0.074	0.072	0.082	0.086	0.099	0.095	0.102	0.102	0.111
Rajasthan	0.060	0.067	0.073	0.074	0.081	0.077	0.079	0.081	0.082	0.085	0.092
Tamil Nadu	0.098	0.117	0.119	0.120	0.114	0.109	0.115	0.122	0.129	0.136	0.137
Telangana								0.096	0.103	0.112	0.100
Uttar Pradesh	0.047	0.059	0.064	0.064	0.068	0.071	0.072	0.081	0.076	0.078	0.078
West Bengal	0.052	0.055	0.059	0.060	0.062	0.064	0.068	0.069	0.071	0.072	0.072

Table 9: Service Taxes Originating in the State Slated Towards State GST (Rs. Crore)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Andhra Pradesh	290	497	848	1069	1328	1276	1605	2210	3035	3513	3839
Assam	87	134	209	358	485	448	540	718	947	1108	1226
Bihar	275	460	772	922	1048	1018	1292	1791	2473	2940	3306
Chhattisgarh	71	158	318	507	445	397	466	599	770	876	953
Gujarat	429	645	995	1675	2128	1935	2304	3018	3926	4635	5159
Haryana	215	305	434	724	856	849	1103	1573	2230	2581	2774
Himachal Pradesh	59	95	153	230	234	215	259	343	451	514	566
Jammu & Kashmir*	75	124	205	294	348	334	419	579	792	916	883
Jharkhand	105	169	268	406	535	493	593	784	1029	1191	1308
Karnataka	305	561	1007	1177	1867	1830	2353	3332	4697	5609	6154
Kerala	484	745	1168	1629	1966	1809	2177	2864	3763	4353	4778
Madhya Pradesh	275	489	847	1078	1409	1311	1596	2125	2817	3109	3400
Maharashtra	1085	1751	2848	4171	4465	4181	5122	6889	9222	10696	11475
Odisha	104	182	309	346	509	479	590	791	1061	1171	1281
Punjab	288	510	886	1101	1219	1129	1367	1810	2387	2700	2857
Rajasthan	383	614	993	1392	1522	1500	1934	2734	3846	4300	4584
Tamil Nadu	616	973	1559	1864	2293	2246	2878	4050	5662	6595	7242
Telangana								2206	2846	3234	4035
Uttar Pradesh	949	1454	2250	3172	3604	3414	4229	5698	7684	8626	9376
West Bengal	516	843	1371	1730	1961	1851	2284	3070	4125	4906	5341

NB: Half of the total service taxes arising within the state boundary

Table 10: RNRS(BB) i.e. (Tax B/ Base B)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Andhra Pradesh	0.089	0.093	0.100	0.120	0.120	0.111	0.113	0.115	0.118	0.124	0.124
Assam	0.079	0.098	0.101	0.081	0.078	0.079	0.085	0.099	0.102	0.098	0.101
Bihar	0.032	0.030	0.034	0.039	0.042	0.043	0.042	0.056	0.058	0.051	0.062
Chhattisgarh	0.096	0.091	0.095	0.089	0.117	0.109	0.124	0.137	0.147	0.150	0.162
Gujarat	0.098	0.126	0.144	0.137	0.133	0.127	0.149	0.161	0.185	0.167	0.159
Haryana	0.116	0.146	0.181	0.162	0.149	0.135	0.134	0.131	0.128	0.123	0.129
Himachal Pradesh	0.053	0.070	0.083	0.083	0.091	0.093	0.112	0.115	0.117	0.120	0.116
Jammu & Kashmir*	0.051	0.069	0.074	0.080	0.092	0.089	0.086	0.101	0.110	0.107	0.105
Jharkhand	0.068	0.080	0.083	0.088	0.096	0.095	0.088	0.095	0.101	0.101	0.110
Karnataka	0.116	0.120	0.122	0.144	0.107	0.100	0.108	0.113	0.115	0.116	0.111
Kerala	0.094	0.100	0.113	0.108	0.118	0.114	0.122	0.126	0.136	0.133	0.135
Madhya Pradesh	0.065	0.072	0.078	0.088	0.082	0.078	0.086	0.090	0.096	0.099	0.100
Maharashtra	0.101	0.104	0.116	0.113	0.119	0.110	0.122	0.125	0.135	0.125	0.123
Odisha	0.088	0.105	0.121	0.124	0.117	0.116	0.125	0.132	0.141	0.144	0.146
Punjab	0.078	0.089	0.087	0.086	0.097	0.098	0.112	0.110	0.119	0.120	0.129
Rajasthan	0.065	0.074	0.083	0.086	0.094	0.089	0.091	0.094	0.098	0.101	0.108
Tamil Nadu	0.103	0.124	0.129	0.132	0.126	0.119	0.126	0.135	0.145	0.153	0.153
Telangana	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	0.108	0.118	0.128	0.115
Uttar Pradesh	0.052	0.066	0.075	0.077	0.082	0.082	0.084	0.095	0.092	0.094	0.094
West Bengal	0.057	0.063	0.070	0.072	0.076	0.075	0.080	0.082	0.087	0.087	0.087

NB: Figures for Telangana for the years 2011-13 are backward projections. See notes to Table 6 as well.

Table 11: **Base C (i.e. including Governments' purchase of goods and services into Base B)(Rs. Crore)**

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Chhattisgarh	21267	28436	37687	45220	42051	46635	54479	64896	73026	86205	103731
Gujarat	102672	105257	112943	141914	164896	185133	214210	248238	277053	323344	377380
Haryana	50050	48963	49632	62884	73429	88614	109315	135781	163641	187570	212218
Kerala	91426	93544	102269	118287	131176	146400	167766	194410	217526	243554	276998

Table 12: RNRS(BC) i.e. Tax B / Base C

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Chhattisgarh	0.082	0.079	0.084	0.078	0.096	0.088	0.097	0.101	0.105	0.102	0.103
Gujarat	0.085	0.106	0.122	0.118	0.114	0.108	0.127	0.137	0.156	0.141	0.133
Haryana	0.099	0.120	0.147	0.134	0.122	0.111	0.111	0.110	0.107	0.103	0.107
Kerala	0.078	0.083	0.095	0.093	0.101	0.099	0.107	0.112	0.120	0.119	0.122