

Unorganised Sector Output in the New GDP Series

Why Has It Shrunk?

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In the new National Accounts Statistics, household (unorganised or informal) sector output for 2011–12 has shrunk by 22% in absolute size, or, by 11 percentage points of GDP, compared to the older series with 2004–05 as the base year. In per capita terms, household sector output as a proportion of GDP in the organised sector has come down from 11% to 7%. A change in the methodology of estimation has been the cause. This article investigates the merits of the new methodology.

In the new series of National Accounts Statistics (NAS), for 2011–12, the absolute size of the household sector's (HH) (unorganised or informal sector) gross value added (GVA, or the gross domestic product (GDP), or output for short) is smaller by 22%, compared to the older series with 2004–05 base year.¹ As a share of GDP, the HH sector, by size, has contracted by 11 percentage points, to 45% in the new series (Figure 1, p 25). It is the mirror image of the rise in the private corporate sector's (PCS) share in GDP in the new series, with the public sector's share remaining unchanged. These changes hold true for 2012–13 as well.

In terms of per capita GDP, the shrinkage of the HH sector size is starker: it is now reduced to just 7% of per capita income of the organised sector for 2011–12, down from 11% previously—signifying even greater income inequality across the two sectors than what was estimated earlier (Figure 2, p 25). Hence, the new figures have serious implications for understanding of the economic structure and its interrelationships.

The contraction is surprising, since it goes against the long held and widely believed view that the unorganised sector output is invariably under-reported, or escapes large-scale official surveys considering the predominance of traditional or non-formal modes of production. The National Statistical Commission

(2001) had in fact endorsed such a view. It said:

5.2.23 Estimate of gross value added (GVA) per worker as per the FUS [follow-up enterprise surveys] is used for the purpose of GDP calculation. Sometimes there are perceptions from the data users that the FuS estimate of GVA per worker does not reflect the reality (see Annexe 5.17) for the estimates of GVA per worker as per the NSS 51st Round: 1994–95 and Special Enterprise Survey: 1998–99). *In fact, the perception is that the same is quite often underestimated.* Reluctance on the part of the enterprises to supply correct and complete information in the surveys is one of the reasons for likely underreporting of receipts and GVA. This reluctance might be due to various reasons such as apprehension that the information supplied may be utilised for taxation purposes (http://mospi.nic.in/Mospi_New/upload/inds_stat_5.html) (emphasis added).

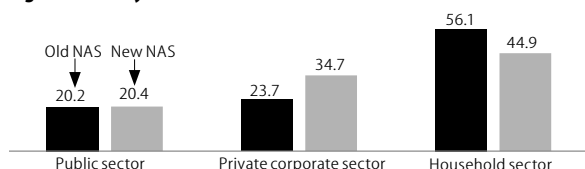
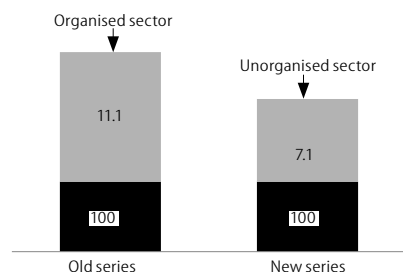
Periodic revision of the base year in the National Accounts raises the hope of a better representation of the unorganised sector's contribution to domestic output. But the shrinkage of its absolute size in the latest revision is a surprise. The contraction holds true for all one-digit industries (or sectors), except for agriculture (which is almost entirely outside the formal sector), mining and construction (Table 1). Hence, the revision is of considerable concern and curiosity.

Table 1: Gross Value Added for the Year 2011–12 from Household Sector at Current Prices (at factor cost for the old series and at basic prices for the new series)

S No	Item	2004–05 Series	2011–12 Series	(%) Difference
1	Agriculture, forestry and fishing	14,20,165	14,26,330	0.4
1.1	Crops*	12,31,323	9,19,045	0.9
1.2	Livestock		3,22,854	
1.3	Forestry and logging	1,22,005	1,19,512	-2.0
1.4	Fishing and aquaculture	66,837	64,919	-2.9
2	Mining and quarrying	28,040	57,495	105.0
3	Manufacturing	3,50,634	1,80,006	-48.7
4	Electricity, gas, water supply and other utility services	3,800	6,047	59.1
5	Construction	4,37,835	5,84,552	33.5
6	Trade, repair, hotel and restaurants	11,70,752	4,95,217	-57.7
6.1	Trade and repair services	10,84,321	4,45,294	-58.9
6.2	Hotels and restaurants	86,431	49,924	-42.2
7	Transport, storage, communication and services related to broadcasting	3,98,210	2,07,622	-47.9
7.1	Transport by means other than railways	3,61,903	1,99,403	-44.9
7.2	Storage	2,833	768	-72.9
7.3	Communication and services related to broadcasting	33,474	7,451	-77.7
8	Financial services	43,526	**	-
9	Real estate, ownership of dwelling and professional services	5,78,549	5,94,985	2.8
10	Other services	2,74,148	1,26,796	-53.7
11	Total GVA	47,05,659	36,79,050	-21.8

*Includes livestock in 2004–05 series; ** in new series, all the unincorporated enterprises in the financial services, including moneylenders, have been classified as quasi-corporations. Source: CSO (2015b: 44).

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Figure 1: GDP by Institutions for 2011–12 in Old and New NAS**Figure 2: Per Capita GDP in Unorganised Sector Relative To the Organised Sector**

The unorganised sector, by definition, consists of innumerable small, traditional, at times irregular, labour-intensive and household enterprises, often representing non-market (or premodern) forms of production bordering on survival strategies of the disguised unemployed. Such enterprises often do not (or cannot) maintain modern double-entry bookkeeping procedures, or they cannot do so given the informal, irregular nature of their production and low levels of literacy of self-employed workers. In other words, the unorganised sector in India largely consists of subsistence activities in the labour surplus economy (as opposed to modern or capitalist enterprises) as analysed in development economics (Ray 1998). The question therefore is why has the HH sector output shrunk in the new series? Answer: a change in methodology. So, this article investigates the merits of the changes.

Older Methodology

For the reasons mentioned above, unorganised sector output has all along been estimated as a product of (i) output per worker and (ii) number of workers employed (called the labour input (LI) method). Output per worker is invariably obtained from the nationwide (mostly NSS) sample surveys for the most recent years. Number of workers is estimated by projecting the employment growth rate in inter-NSS survey years for the most recent period.² Evidently, it is a rough measure. But given the diversity of informal economic activities, the LI method is a widely

accepted (even as per the System of National Accounts 2008 (SNA), which the recent NAS revision has sought to implement).

New Methodology

The recent revision has found two shortcomings in the LI methodology: One, it does not differentiate between workers with varying productivity; two, the method of projecting the benchmark estimates using the annual compound growth of the previous five years (using NSS employment–unemployment surveys) is claimed to yield wrong estimates. The subcommittee that looked into the matter made the following critical comments on the methodology:

The Labour Input Method, however, suffers from inherent problems. Firstly, while compiling GVAPW [gross value added per worker]..., it is assumed that there is equal contribution from all categories of workers engaged in an economic activity that is, the contribution of an employer, a wage-employee (Regular or Casual), or a family worker, is taken to be equal. Second issue is in projecting the LI [labour input] for subsequent years... The CAGR [compound average growth rate] concept

based on past two rounds of EUS [employment unemployment surveys] being used to project the LI ends up overestimating the LI for most of the compilation categories especially in the scenario where there is a drop in the LI over the next two consecutive surveys (EUS) (CSO 2015a: 6).

To capture varying productivity among different categories of workers, the new NAS has sought to obtain a weighted average of three types of workers, namely, (a) owner worker, (b) hired worker, and (c) helper, by estimating a “non-linear nested Cobb Douglas production function” to compute the marginal product of an “effective worker.” It is called the “effective labour input method” (ELIM), the details of it are reproduced in the Box.

The model used for the purpose is:

$$\text{Log } Y = \text{Log } A + \beta \text{ Log } K + \alpha \text{ Log } [L_2 + \delta_1 L_1 + \delta_2 L_3] + YS$$

where,

$Y = \text{GVA}$

$K = \text{capital}$

$L_1 = \text{owner}$

$L_2 = \text{hired worker (formal + informal)}$

$L_3 = \text{helper}$

$S = \text{dummy variable for sector (Rural} = 0, \text{Urban} = 1).$

Box: ‘Effective Labour Input’ Method

2.17 In the Labour Input Method (LI Method), as was being used in the earlier series, while compiling GVAPW from the Enterprise Survey, it is assumed that there is equal contribution from all categories of workers engaged in an economic activity, that is, the productivity of an employer, a casual wage worker, or a family worker is equal. The new method addresses differential labour productivity issue by assigning weights to the different categories of workers engaged in an economic activity based on their productivity. The weights were compiled using the data on establishments covered in the NSS 67th round Survey on Unincorporated Enterprises, 2010–11 (hereinafter referred to as ES). A nested Cobb Douglas function has been used for computing the weights of different categories of workers.

Model Expression: $Y = AK^\beta [L_2 + \delta_1 L_1 + \delta_2 L_3]^\alpha$ - (1)

2.18 After taking the natural log of eq. 1 and adding a dummy variable representing the sector (rural, urban),

$$\text{Log } Y = \text{Log } A + \beta \text{ Log } K + \alpha \text{ Log } [L_2 + \delta_1 L_1 + \delta_2 L_3] + YS$$

where, $Y = \text{GVA}$

$K = \text{Capital}$

$L_1 = \text{Owner}$

$L_2 = \text{Hired worker (formal + informal)}$

$L_3 = \text{Helper}$

$S = \text{Dummy variable for sector (Rural} = 0, \text{Urban} = 1)$

2.19 The coefficients of labour terms, δ_1 and δ_2 , in this equation give the relative marginal productivities which are used as conversion factors for conversion of “owners” and “helpers” in terms of hired worker for computation of “effective labour input”...

2.24 The GVA adjusted for labour productivity (Effective GVA) was then computed as the product of Effective LI from EUS and GVA per effective worker from ES. This method, referred to as “effective LI method” was adopted for the unorganised manufacturing as a whole. Effective LI method was used for the unincorporated enterprises of mechanized road transport, services incidental to transport, courier services, cable operators, professional, scientific and technical activities, activities of membership organisations and all categories of personal services.

2.25 The Effective LI method based on establishment was modified in a few categories of non-financial services, namely, education, health, water transport, storage, real estate, renting of machinery, computer and related services, legal and accounting services, by using effective LI and the GVA per effective worker (GVAPW) of rural establishments and urban directory establishments, as the case may be. This method would be referred to as “modified effective LI method.”

(http://mospi.nic.in/Mospi_New/upload/Changes%20in%20Methodology%20NS%202011-12%20June%202015.pdf, accessed on 1 December 2015.

Source: CSO (2015b: 9).

Based on the coefficients of labour in the estimated equation, GVA in the HH sector is estimated using the following equation, separately for rural and urban areas:

- (i) $GVA = \text{Effective LI (Rural)} \times GVAPEW (\text{Rural Establishments}) + \text{Effective LI (Urban)} \times GVAPEW (\text{Urban directory Establishments})$,
- (ii) $GVA = LI (\text{Rural}) \times GVAPW (\text{Rural Establishments}) + LI (\text{Urban}) \times GVAPW (\text{Urban Directory Establishments})$ (CSO 2015b: 10). GVAPEW stands for gross value added for effective labour input.

To confirm that there is no misrepresentation of the new methodology, we once again quote from the subcommittee report:

3.22 The GVA adjusted for productivity (effective GVA) is then computed as a product of Effective LI based on EUS and Population census 2011, and GVA per effective worker from ES (CSO 2015a: 20).

If this is the correct description of the new method, then it appears incomplete for estimating the GVA. The equation accounts only for the marginal contribution of effective labour, omitting the marginal contribution of capital, which together should add up to GVA—unless we have misread the equation for which we are open to correction.³ From the text reproduced in the Box, evidently, the subcommittee has used a two-variable (labour and capital) long-run production function, not a single variable (labour) short-run production function. Hence the output should be the sum of the marginal productivities of both the factors of production.

This omission of the marginal contribution of capital, *prima facie*, seems to be the reason for the contraction of the HH sector output in the new series. The subcommittee report, however, claims it to be an accurate measure of labour input, which, in its view, was overestimated previously.

Thus, the crux of the dispute is this: does the shrinkage in the new estimates of HH sector (compared to the older estimates) represent a more accurate measure of labour input and hence a reduction in GVA, or is it the case of (an erroneous) omission of the marginal product of capital, leading to an underestimation of output? Probably (to give it the benefit of doubt) the subcommittee assumed the marginal contribution of capital to be

negligible, given meagre capital employed per worker in the unorganised sector; or dropped it for some practical reason.

True, capital employed per worker in the HH sector is very low: In fact 72% of factor income in the unorganised sector consists of “mixed income” of the self-employed—a combination of wages, and entrepreneurial profit—and 21% is wage income (Figure 3).⁴ A priori, a disaggregation of the mixed income is ruled out.

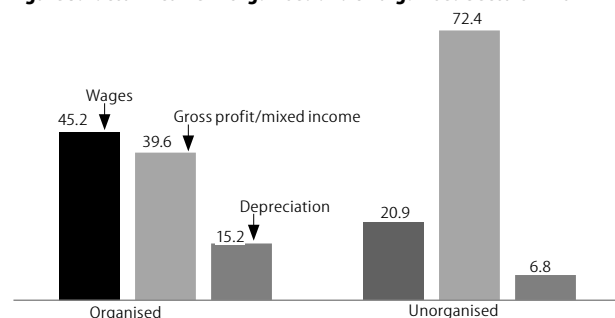
In this context, it is worth remembering that about 50% of workers in the informal sector in India are self employed. In manufacturing, about one-third of workers are employed in HH enterprises. In economic censuses, nearly a third of the informal sector constitutes own account workers (OAW).

If the marginal productivity of the self-employed worker is just 50% of that of the wage worker (as estimated in the production function estimation), a majority of the mixed income would count as return on capital employed. Since the marginal product of capital is completely left out in computing the GVA, we would contend, it has resulted in an underestimation of output.

If, however, the marginal contribution of capital is negligible (as seems to be assumed in the new estimates), then most of the mixed income should be counted as wage income of the self-employed, and hence its contribution to marginal product cannot be a mere 50% of wage worker's marginal product (as estimated using the production function estimation).⁵ Hence there seems to be an underestimation of the marginal product of self-employed workers, which accounts for three-and-a-half times the share of wages.

Thus, either way, the GVA estimates for the household sector obtained using ELIM are inconsistent with the majority share of mixed income accruing to self-employed workers in the HH sector. It is not possible for us to come up with alternative estimates to buttress our contention without getting access to all the data. However,

Figure 3: Factor Income in Organised and Unorganised Sectors in 2011–12



if the foregoing reasoning is correct, then it is reasonable to question the validity of ELIM methodology underlying the new household sector estimates.

Granting, for the sake of argument, that the foregoing contention is incorrect, the new methodology can yet be contested on theoretical grounds, that is, on the inappropriateness of applying the neo-classical production function for the unorganised sector, where the majority of enterprises are subsistence activities by self-employed workers often using the surplus labour intensively, whose opportunity cost is close to zero. To assume that such livelihood efforts represent modern profit maximising firms operating in a competitive economy, that pay wages equal to their marginal product seems quite unrealistic.

Thus, considering the analytical shortcomings of applying the production function to household sector, it would be better to stick to the simpler yet sound measure of the labour input method—following Keynes's dictum, “to be broadly right than precisely wrong”—of average product per worker (capturing contribution of all factors of production), than to use the marginal product of labour obtained using the production function to estimate unorganised sector output.

Conclusions

In the new National Accounts Statistics, for 2011–12, household (unorganised or informal) sector output has shrunk by 22% in absolute size, or, by 11 percentage points of GDP, compared to the old series with 2004–05 as the base year. It means per capita GDP in the household sector, as a proportion of per capita GDP in the organised sector, has got reduced from 11% to 7% for 2011–12. This change has serious implications for understanding

of the structure of economic output and its distribution.

The contraction is on account of a change in the methodology. Previously, unorganised sector output was estimated as a product of (i) average output per worker and (ii) number of workers employed. The method was faulted for not taking into account differences in productivity among various categories of workers. To correct for it, the new methodology has estimated a weighted average of marginal product of three kinds of labour, obtained using a neoclassical production function.

This article contends that the new methodology has ignored the marginal productivity of capital in estimating unorganised sector output, resulting in its contraction. The new estimates are inconsistent with the distribution of factor income. Moreover, the new methodology can also be doubted for its applicability

for unorganised sector which has a large share of self-employed workers in a labour surplus economy often engaged in livelihood activities. If the objections raised are valid, then the new output estimates for the HH sector are questionable.

NOTES

- 1 This is broadly correct though not strictly so, since quasi-corporations, a minor item—defined in the SNA 2008 as “an unincorporated enterprise that has sufficient information to compile a complete set of accounts as if it were a separate corporation and whose de facto relationship to its owner is that of a corporation to its shareholders”—is reclassified in the new series as part of private corporate sector (PCS). In other words, quasi-corporations consist of proprietary and partnership firms with complete set of accounts (Rao 2015).
- 2 A lot of methodological details are omitted here on purpose, to focus on the analytical core of the new method. For example, the difference between GVA at basic prices (in the new series) and GDP at factor cost (in the old series) is just at 0.1%, hence negligible. So, to minimise the confusion, this paper uses the term “GDP” uniformly to connote “GVA at basic prices” in the new series, and “GDP at factor cost” in the old

series (unless otherwise stated). Likewise, all computations reported here are at current prices, but not mentioned in the text.

- 3 Author is grateful to Shubhro Sarkar for clarifying analytical doubts in production theory.
- 4 It is based on the old series; factor income table is not yet available for the new series.
- 5 3.19 “ δ_1 and δ_2 in equation (2) are the conversion factors (or relative marginal productivity) of the owner and helper categories of workers respectively in terms of hired worker. For example, $\delta_1 = 0.5$ implies that 10 owners are equivalent to 5 hired workers” (CSO 2015a: 19).

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