

ON DIVERSIFICATION OF RURAL INCOMES: A VIEW FROM THREE VILLAGES OF ANDHRA PRADESH

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This article examines the issue of income diversification among rural households, based on data from a three-village survey conducted in Andhra Pradesh in 2005–06. The three villages belong to different agro-ecological regions of the state. The first finding of the survey is that the per capita household income is much lower than the per capita SDP (State Domestic Product) in all three villages. Secondly, income generation is dominated by the primary sector in two villages. Agriculture (crop and animal husbandry) is the main source of income in Ananthavaram, a village of high-yielding canal-irrigated paddy cultivation in south coastal Andhra and also in Bukkacherla, a dry and drought-prone village of Rayalaseema. Only one village, Kothapalle, in north Telengana, showed greater diversification of income generation and the location of this village on a major highway is clearly a very important factor in this process. Lastly, there was no simple relationship between the dependence on the primary sector and the level of asset ownership.

I. INTRODUCTION: MOTIVATION AND BACKGROUND

The writing of this article was motivated by the ISLE conference theme of 2007 titled ‘Economic Diversification in Rural India’. The majority of papers presented on this theme in the conference (see Vol. 50, No. 4) dealt with diversification of employment (including a discussion of the patterns of employment, earnings, productivity and occupations) and diversification of output (crop mix, shift from agriculture to livestock, etc.). Only two papers discussed diversification in respect of incomes (Sujithkumar, 2007; and Vatta and Sidhu, 2007). This article uses data from a socio-economic survey of three villages in Andhra Pradesh to examine some aspects of rural incomes. The village data set includes information on employment and occupations, costs of cultivation, socio-economic classes and other variables, and allows for a more detailed study of economic diversification. This article, however, focuses on household incomes since there is a relative paucity of discussion and data on household incomes in rural India. Understanding the process of rural income generation is, we believe, central to determining the nature of policy intervention required for enhancing incomes among the economically and socially deprived sections of the rural population.

Internationally, the literature on non-farm employment and incomes is growing rapidly, driven partly by donor interest in livelihood strategies and livelihood diversification.¹ Two facts that have been highlighted in the discussion are that: (a) non-farm income is a significant component of rural income, and (b) the share of non-farm income has risen over time (Reardon, *et al.*, 2006). One of the arguments in the literature, based on studies of Africa, is that rural areas are no longer predominantly agricultural and incomes are no longer only farm-based?²

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In India, there are very few studies on rural income diversification for the main reason that no major national survey collects data on incomes.³ Much of the Indian discussion is based on information on employment. There are some secondary data on earnings but all types of employment are not adequately covered by these data. The exception is a Report from the 55th Round of the NSS titled *Sources of Household Income in India 1999-2000* (GOI, 2001). This Report, however, gives us some information only on the diversity of sources of income (in terms of the number of households reporting income from a particular source) but nothing on the levels of income. In 2002–03, the NSS conducted a special survey on the condition of farming households, the Situational Assessment Survey (SAS), and this survey collected data on incomes and expenditures. However, the data are only for households defined as farming households. The SAS data have been criticised (Bhalla, 2006) but, nevertheless, SAS provides an estimate of incomes from different activities for farming households across states.

There is only one large-scale multi-state survey with data on incomes and this was conducted by the NCAER in 1993 for preparing a profile of human development. Based on these data, Lanjouw and Shariff (2002) estimated that around one-third of rural incomes are derived from the non-farm sector. They further argued that the share of non-farm income in the total income did not vary much across income quintiles. Although Lanjouw and Shariff state that they have “a fairly comprehensive measure of rural household income”, we believe that there are major limitations of this data set in respect of the data on incomes.⁴

For understanding rural incomes and income diversification, we, therefore, have to rely on a handful of village studies. The ICRISAT village studies are based on surveys of six villages in Andhra Pradesh and Maharashtra over the ten-year period, 1975–1984 (Walker and Ryan, 1990, and references therein). Walker and Ryan found, for example, that non-farm incomes did not account for more than 30 per cent of the household incomes but the contribution of non-farm incomes raised average incomes and reduced the variance of incomes. Three of these villages were re-surveyed after a gap of more than a decade in 2000–2001 (Deb, *et al.*, 2002). Deb *et al.* (2002) found that the number of sources of income per household had increased during the survey years, and households with more land had more sources of income. Further, the share of non-farm income had risen while the share of farm income (defined as crop incomes, livestock incomes and incomes from farm labour) had declined.

There have been some more village-based studies on incomes in recent years, including some in West Bengal (Bhaumik, 2007), in Punjab (Vatta and Sidhu, 2007, Vatta and Garg, 2008) and in Andhra Pradesh and Madhya Pradesh (Farrington, *et al.*, 2006). An interesting finding of Vatta and Kumar, based on a sample of 315 households surveyed in 2004–05, is that nearly 70 per cent of the households reported some income from non-farm activities. Bhaumik (2007) finds from his study of 600 households in two districts of West Bengal that the levels of non-farm income are higher in the agriculturally advanced villages as compared to the less developed villages. He also finds that the share of non-farm incomes in the total incomes falls with the farm size. Between 2000 and 2003, the UK Department for International Development (DFID) sponsored a project on livelihoods in Andhra Pradesh and Madhya Pradesh. The study of six villages each of Andhra Pradesh and Madhya Pradesh shows that dependence on agricultural incomes remains high, accounting for 65 per cent of the total household incomes in Andhra Pradesh and 69 per cent in Madhya Pradesh (Farrington, *et al.*, 2006).

Lastly, a group of researchers have initiated a series of village studies, as part of a Project on Agrarian Relations in India, and have thus far conducted surveys in Andhra Pradesh, Uttar Pradesh, Rajasthan, Maharashtra and Madhya Pradesh.⁵ This article examines the aggregate household

income and its components, drawing on detailed village level census surveys of three villages of Andhra Pradesh (conducted in 2005–06).

The specific objectives of this article are:

- a. To describe the various sources of income of households resident in the three study villages, and to assess the role of farm-based or primary sector incomes in the contemporary period.
- b. To identify the role of different sources of income in terms of the proportion of households receiving income from each source and the average income from each source in the three villages.
- c. To assess how the diversification of income varies across villages in different agro-ecological regions.
- d. To examine how the sources of income generation vary with wealth.

II. DATA AND METHODOLOGY

1. Selection of Villages

The primary data for this article has come from the Andhra Pradesh round of surveys in the project on agrarian relations in India. The Andhra Pradesh round covers surveys conducted in 2005–06 in three villages. A more detailed description of the village survey methodology and of the basic features of the three villages can be found in Ramachandran, *et al.* (2008).

There are five agro-ecological zones in Andhra Pradesh. These are:

- a. North coastal Andhra (Srikakulam, Vishakhapatnam and Vijayanagaram districts);
- b. South coastal Andhra (West Godavari, East Godavari, Krishna, Guntur, Prakasam and Nellore districts);
- c. North Telangana (Adilabad, Warangal, Nizamabad and Karimnagar districts);
- d. South Telangana (Mahabubnagar, Medak, Ramareddy, Nalgonda and Hyderabad districts); and
- e. Rayalaseema (Chittoor, Cudappah, Kurnool, and Anantapur districts).

The survey was conducted in one village of each of the following three regions:

1. The paddy-dominated tracts of South coastal Andhra comprise the first region. We selected Guntur district, which is a typically paddy-dominated area.
2. The second region represents an agricultural economy where irrigation is done from borewells and the cropping pattern is a combination of foodgrain and other crops. We selected Karimnagar district for the second village survey.
3. The third region is that of the dry, drought-prone areas of Rayalaseema. We decided to choose a village from Anantapur district, which is India's most drought-prone district after Jaisalmer in Rajasthan.

Within each of the selected districts, we prepared a shortlist of villages using a set of criteria, and we also searched the literature for villages that have been studied in the past but did not find any village from Anantapur or Karimnagar among these villages.

From the first region, we purposively decided to re-survey Ananthavaram, a village surveyed by P. Sundarayya in 1974. For the second region, we prepared a shortlist of villages based on three census data-based criteria.⁶ From this shortlist, after visits and discussions with local persons, Kothapalle P.N. of Thimmapur LMD (Lower Maner Dam) Mandal was selected. For the third region, again, a shortlist of villages was prepared by using three variables, and after preliminary inquiries, Bukkacherla of Raptadu Mandal was selected.⁷ A brief description of sample villages is given in Annexure 1.

In each of the three selected villages, a complete census-type survey of households was conducted in December 2005. In order to collect detailed data on employment and incomes, a second round sample survey was conducted in May 2006 in each of the three villages. In each village, the households were divided into different strata on the basis of the extent of land ownership. Sampling proportions for each stratum were chosen to ensure that households in the stratum were adequately represented in the sample. Within each stratum, households were sorted by caste and the actual size of ownership holding. Then a circular systematic sample with a random start was drawn.

2. Calculation of Household Incomes

There are serious methodological issues in measurement of household incomes that do not have an easy and unambiguous resolution. The estimates of income presented in this article include all cash and kind incomes; they account for all cash and kind receipts other than from borrowing and from the sale of assets. All incomes are the net of costs incurred by the households in the process of production/income generation.

The income from crop production is calculated for individual crops over paid-out cost. The cost of cultivation estimated for this purpose closely resembles cost A2 used under the Comprehensive Scheme for Studying Cost of Cultivation/Production of Principal Crops (CCPC) of the Commission of Agricultural Costs and Prices (CACPC). It includes, broadly speaking, the cost of all material inputs used (purchased as well as home-produced), the cost of hired labour, rental payments, imputed value of interest on working capital, and depreciation of owned fixed capital other than land. No cost is imputed for family labour and no rent is imputed for owned land. Conceptual and methodological problems in imputing the costs of family labour and owned land have been discussed at length in the writings on CCPC data (see Sen and Bhatia, 2004 for a summary), and shall not be detailed here. We would only like to note the consequences of exclusion of these items of costs from our calculations. As a result of the exclusion of cost of family labour, a household using greater share of family labour incurs, *ceteris paribus*, a lower cost of cultivation than a household that relies more on hired labour. Similarly, the cost of cultivation is higher, *ceteris paribus*, for a tenant than for a landowner because the rental payments of a tenant are included in the costs while no cost is imputed for owned land.

It is not infrequent to find that costs and revenues from multiple sources of livelihood are connected. For example, the by-products of crop husbandry are used as fodder to maintain animal resources and the by-products of animal husbandry are used as manure on the fields. As a result, in the accounting of household incomes, part of the income from crop production is entered as the cost of animal husbandry and vice versa.

3. Methodological Issues in Analysis of Data on Household Incomes

We believe that our data on household incomes are of good quality. Nevertheless, we know that incomes fluctuate substantially across households and over time. It is important to remember that our data on incomes pertain to a particular year and, therefore, give a cross-section picture of income generation in 2005–06.

One feature of the data is the fact of negative net incomes from one or more sources (especially incomes from cultivation) or even in aggregate for some households. This clearly limits the use of certain indices and measures such as the Gini coefficient or the Herfindahl index of diversification. We have not computed indices of diversification on account of the presence of negative incomes, as we did not wish to exclude households with negative net incomes from our analysis. Such exclusion not only narrows down the database but also misses out on a key feature

of household incomes. It is worth noting that Walker and Ryan (1990) excluded households with negative incomes from their analysis.⁸

In this article, we have focused on: (a) whether a household (any of its members) receives income from a specific source or activity, and (b) the average income from that source/activity. We have taken shares of different activities in certain cases but these are generally aggregates for the village or for a set of households.

III. LEVELS AND SOURCES OF INCOME

Table 1 presents the basic descriptive statistics on household incomes and per capita incomes in the three villages and gives a summary picture of the level and variation in household incomes in the three villages. First, the median level of the annual household income in 2005–06 was Rs. 25,017 in Ananthavaram, Rs. 20,287 in Bukkacherla, and Rs. 22,674 in Kothapalle. The median per capita income in 2005–06 was Rs. 7,465 in Ananthavaram, Rs. 5,968 in Bukkacherla and Rs. 5,669 in Kothapalle. The mean incomes are higher as averages are influenced by very high incomes of a few households. The mean household income was Rs. 54,220 in Ananthavaram, Rs. 36,571 in Bukkacherla, and Rs. 33,905 in Kothapalle. The average per capita income was Rs. 14,341 in Ananthavaram, Rs. 8,667 in Bukkacherla, and Rs. 8,013 in Kothapalle.

In the ICRISAT survey of 2000–01, the mean per capita income in the two dry villages of Mahabubnagar district of Andhra Pradesh was Rs. 8,284 in Aurepalle and 9,577 in Dokur (or Rs. 9,824 and Rs. 11,358 at 2005–06 prices).⁹ Our estimate of per capita income for Bukkacherla is lower than these two estimates. The DFID study of six villages in Andhra Pradesh, conducted around 2003, estimated the mean household income of the surveyed households to be 20,220 and the median household income to be Rs. 14,000 (Farrington, *et al.*, 2006). This is equivalent to Rs. 22,283 and Rs. 15,498, respectively, at current prices.

Table 1
Descriptive Statistics on Household and per Capita Income,
Andhra Pradesh Villages, 2005–06 (Rs. per annum)

Village	Median	Mean	Min.	Max.	Coeff. of Variation
Household income					
Ananthavaram, South Coastal Andhra	25,017	54,220	-13,211	1435,903	2.29
Bukkacherla, Rayalaseema	20,287	36,571	-17,944	990,291	1.93
Kothapalle, North Telengana	22,674	33,905	-16,574	2526,197	3.92
Per capita household income					
Ananthavaram, South Coastal Andhra	7,465	14,341	-3,068	159,544	1.5
Bukkacherla, Rayalaseema	5,968	8,667	-8,972	66,019	1.18
Kothapalle, North Telengana	5,669	8,013	-2,762	360,885	2.43

Comparisons with earlier village studies suggest a decline or stagnation in income over the last few years. Further, the average per capita income is much below the national and state per capita income, particularly in Bukkacherla and Kothapalle. In 2005–06, the per capita GDP for India was Rs. 25,176 and the per capita SDP for Andhra Pradesh was Rs. 25,526.

Next, we turn to the diversification of economic activity and sources of income generation. There are various ways in which incomes can be classified, and we are developing a classification suitable for rural incomes. In this article, for preliminary analysis, we have identified the following thirteen types of income:

1. *Crop production*: Gross income from crop husbandry refers to the total value of all products from cultivation on operational holding of the household. The net income refers to the income

net of the paid-out cost, which is defined to be broadly equivalent to Cost A2 used in CCPC (see Section II.2).

2. *Animal resources*: The gross income from animal resources refers to the gross value of all material products from animal resources. The net income refers to income net of all costs incurred on the maintenance of animal resources. The costs cover the value of home-grown and purchased feed, expenditure on veterinary care, the cost of labour hired for the maintenance of animal resources, rent paid for any land hired for animal husbandry, expenditure on the maintenance of buildings used for animal husbandry, expenditure on the insurance of animals, and interest on loans taken for the maintenance of animal resources.
3. *Casual agricultural labour*: This refers to the total wage earnings of all members of a household working as casual workers in agriculture.
4. *Long-term agricultural labour*: This refers to the total wage earnings of all members of a household who worked in agriculture under long-term wage contracts.
5. *Non-agricultural casual wage labour*: This includes the total wage earnings of all members of a household received from casual work in non-agricultural occupations, including casual labour, in public wage employment generation programmes.
6. *Government salaried jobs*: This refers to the earnings of members of a household from working at salaried jobs in the public sector.
7. *Other salaried jobs*: This includes the earnings of members of a household from salaried jobs in the private sector.
8. *Business and trade*: Income from all non-farm businesses and self-employment is included under this category.
9. *Pensions, scholarships and insurance claims*: All receipts from pensions, scholarships and any insurance claims during the reference year are recorded here.
10. *Remittances*: All inflows of remittances and gifts during the reference year are recorded under this category.
11. *Rental income from agricultural land*: All cash rents and value of kind rents received from the leasing out of agricultural land during the reference year is recorded in this category. The gross income from rent refers to the total value of rent received. In the case of net incomes, rental income refers to the rent received net of share in the costs borne by the landowner.
12. *Other rental income*: All other rents—accruing from the renting of machinery, livestock, buildings and non-agricultural land—are included in this category.
13. *Toddy tapping*: Toddy tapping is a traditional caste occupation of households belonging to the Gouda caste in Kothapalle.¹⁰ Thus, a significant number of households in Kothapalle were engaged in this occupation.

These 13 sources of income have been further aggregated as follows:

- a. Incomes from the primary sector (sum of incomes from cultivation, livestock farming, agricultural labour, both casual and long-term, toddy tapping and crop rent);
- b. Incomes from the secondary and tertiary sectors (including earnings of non-agricultural labour, all incomes from businesses and trade, and salaried incomes); and
- c. Other incomes (rents other than crop rent, remittances, and transfers through pensions, scholarships, etc.).

1. Participation in Different Activities

We begin by identifying the proportion of households in each village receiving income from a specified income category (Table 2). The following are some major features of this table:

- (i) Bukkacherla, with the lowest level of landlessness among the three villages, had the highest proportion of households (74 per cent) engaged in cultivation and crop production. In Ananthavaram, despite the high proportion of households without owned land, 53 per cent of households cultivated land. This was on account of the widespread tenancy in Ananthavaram.
- (ii) In Ananthavaram and Bukkacherla, 15 to 18 per cent of the households derived rental income from agricultural land.
- (iii) A substantial proportion of the households, ranging from 49 per cent in Bukkacherla to 56 per cent in Kothapalle, were engaged in animal husbandry. The importance of animal husbandry in Kothapalle can be explained, in part, by the fact that households in Kothapalle, a village on the bank of the lake of Lower Maner Dam, had access to common grazing land on the shores of the lake. In Ananthavaram, the high rate of participation in animal husbandry is linked to tenant cultivation (see Section V.3).
- (iv) Participation in the wage labour market (agricultural and non-agricultural) was high in all the three villages. Households ranging between 47 and 59 per cent of the total earned incomes from wage labour in agriculture and 20 per cent of the households received incomes from casual non-agricultural wage labour. In all the villages, a very small proportion of the households had members who were engaged as long-term agricultural workers. Short-term contracts appeared to predominate in agriculture.
- (v) About 14 per cent of the households in Kothapalle—all households belonging to the Gouda caste—were engaged in toddy tapping.

Table 2
Proportion of Households Engaged in Different Activities/Having Income
from Different Sources, by Village, Andhra Pradesh, 2005–06 (per cent)

<i>Source of income</i>	<i>Ananthavaram South Coastal Andhra</i>	<i>Bukkacherla Rayalaseema</i>	<i>Kothapalle North Telengana</i>
Crop production	53	74	43
Rental income from agricultural land	15	18	6
Animal resources	52	49	56
Casual agricultural labour	59	47	51
Long-term labour earnings	2	1	3
Toddy tapping	0	1	14
Primary sector	88	94	89
Casual non-agricultural labour	21	17	21
Government salaried jobs	5	9	9
Other salaried jobs	11	3	21
Business and trade	18	10	17
Secondary and tertiary sectors	57	37	55
Pensions, scholarships and insurance claims	12	10	10
Remittances	12	6	8
Rents other than crop rent	2	3	5
Any other source	9	4	4
Other incomes	23	18	18
Average of number of sources of income per household	2.71	2.52	2.72

Note: As households obtain incomes from several sources, the columns do not add up to 100.

- (vi) In all the three villages, about 10 per cent of the households received transfer incomes, that is, receipts from pensions, scholarships and insurance claims.
- (vii) In Ananthavaram and Kothapalle, 17 to 18 per cent of the households participated in business and trade activity; the proportion was lower in Bukkacherla (10 per cent only).
- (viii) Lastly, there were a significant proportion of households with incomes from salaried employment, particularly in Kothapalle, where 30 per cent of the households received income from salaries. With the exception of Bukkacherla, the proportion of households with salaried incomes from the private sector was higher than those with salaried incomes from the public sector.

When we examine the sector-wise source of income, an interesting finding is that around 90 per cent of the households in each village still receive some incomes from the primary sector. The proportion of households receiving incomes from the secondary and tertiary sectors is the lowest in Bukkacherla.

2. Average Incomes from Different Activities

Table 3 gives an overview of the income from each source, on an average, for all households resident in each of the villages. The table can be interpreted as follows. On an average, incomes from crop production contributed Rs. 13,895 per annum to a household in Ananthavaram, and accounted for 25.6 per cent of the total household incomes. The average incomes from crop production were lower in the other two villages, particularly in Kothapalle. In aggregate, primary-sector-based incomes accounted for 65 per cent of household incomes in Ananthavaram, 59 per cent in Bukkacherla and 43 per cent in Kothapalle. Thus, Ananthavaram and Bukkacherla can still be characterised as agrarian economies, with more than 50 per cent of the household incomes being generated from agriculture and allied activities.

Table 3
Average Annual Net Income per Household, by Source of
Income and Village, Andhra Pradesh (in Rs.)

Source of income	Ananthavaram South Coastal Andhra		Bukkacherla Rayalaseema		Kothapalle North Telengana	
	Income	%	Income	%	Income	%
	Crop production	13,895	25.6	7,836	21.4	2,425
Rental income from agricultural land	3,259	6.0	3,067	8.4	962	2.8
Animal resources	12,293	22.7	6,120	16.7	6,189	18.2
Casual agricultural labour	5,575	10.3	3,565	9.7	2,474	7.3
Long-term labour earnings	423	0.8	83	0.2	453	1.3
Toddy tapping	0	0	791	2.2	2,223	6.6
Primary sector	35267	65	21464	59	14726	43
Casual non-agricultural labour	1,820	3.3	1,349	3.7	1,931	5.7
Government salaried jobs	3,164	5.8	6,210	16.9	4,409	13.0
Other salaried jobs	2,480	4.5	366	1.0	3,518	10.4
Business and trade	3,692	6.8	3,369	9.2	7,739	22.8
Secondary and tertiary sectors	13282	25	12143	33	17910	53
Pensions, scholarships, etc.	2,107	3.8	343	0.9	312	0.9
Remittances	2,714	5.0	1,162	3.2	217	0.6
Rents other than crop rent	694	1.3	1,459	4.0	741	2.2
Any other source	2,107	3.9	848	2.3	313	0.9
Other incomes	5522	10	2965	8	1269	4
All sources	54,221	100	36,571	100	33,905	100

less than Rs. 20,000. The village is characterised by a large proportion of the households owning small plots of dry land. One-half of all households (50.8 per cent) owned assets worth between Rs.1,00,000 and Rs. 5,00,000.

Asset distribution in Kothapalle is somewhat similar to that in Bukkacherla. In both villages, approximately the top 10 per cent of the households own about 60 per cent of the total assets. Households with assets valued at Rs. 1,00,000–5,00,000 constituted 48 per cent of all the households in Kothapalle.

At the upper end of the distribution, where wealth is under-estimated in our survey since we did not include gold jewellery and financial assets, Ananthavaram is different from the other two villages, with 10 per cent of the households owning more than 10 lakhs each, and accounting for 70 per cent of the assets owned by all residents. In absolute terms, there were 64 households with assets worth over a million rupees in Ananthavaram; the corresponding number of households was 13 in Bukkacherla and 18 in Kothapalle.

2. Participation in Economic Activity by Asset Level

Detailed tables (available with the authors) on participation in different income-generating activities by household asset ownership show the following factors.

In Ananthavaram, the level of participation in different income-earning activities does depend on the wealth of a household, but in rather complex ways. First, the proportion of households receiving income from crop production and crop rent rises with higher asset levels. Second, the proportion of households receiving income from casual agricultural labour declines with asset levels and is zero for the richest category of households. In an agricultural economy, this activity pattern is to be expected but what is perhaps worth noting is that even the poorest households participated in cultivation through leasing-in of land. Further, all but the very wealthiest households participated in wage labour, be it agricultural or non-agricultural labour. In the case of other activities, there is no simple relation between the source of income and asset ownership.

With some exceptions, the pattern is similar in Bukkacherla in terms of the relation between cultivation and casual labour, on the one hand, and wealth, on the other hand. Households in the top two asset categories were similar in terms of their activity status: in both groups, 100 per cent of the households engaged in cultivation and zero per cent in any type of wage labour.

In Kothapalle, 26 per cent of all the households, those in the lowest two asset categories, did not engage in cultivation, unlike in Ananthavaram, where landless households could cultivate land through the practice of tenancy. In terms of participation in casual labour, however, Kothapalle is similar to the other two villages. Another interesting feature of Kothapalle is the importance of salaried employment, particularly in the government sector, among richer households.

3. Level of Income by Source and Asset Ownership

Estimates of average income by source of income for households in different asset categories are shown in Appendix Tables A1, A2 and A3. These tables are to be read as follows: The first row for Ananthavaram shows that for households with assets worth less than Rs. 20,000, on an average, the income from crop cultivation was negative (-Rs. 96), while from casual agricultural labour it was Rs. 6,651, and so on. Some interesting observations emerge from these data. These are delineated below.

Crop production in Ananthavaram was highly profitable for some households and loss-making for other households. In the lowest three asset groups, on an average, crop cultivation resulted in losses. These are mainly tenant households. At the same time, of all three villages, the highest

average incomes from crop cultivation, of over Rs. 1,00,000 per annum, are observed among the households in Ananthavaram. To characterise a village like Ananthavaram, in the canal-irrigated paddy growing areas of coastal Andhra Pradesh, as agriculturally advanced and prosperous is misleading in terms of the incomes accruing from agriculture for different types of households. Agriculture is a source of prosperity for some but not all the households.

Incomes from animal husbandry constitute an important source of income for all but the poorest in the three survey villages. Casual labour is the only activity wherein there is a clear negative association with wealth, that is, the share of income from casual labour falls as wealth rises. However, the highest average income from casual labour is not that earned among the poorest households but those with some minimal assets. Salaried jobs contribute to incomes of the rich and the poor, and reflect the fact that there is a diversity of jobs under this heading. In Ananthavaram, remittances are important for rich households. Pensions and scholarships do make a contribution to the incomes of the poor, particularly in Ananthavaram.

Among the asset-poor households, those in the lowest asset category, in Ananthavaram, a striking feature of our survey is that indicating the losses from crop production. These are landless households that leased-in land for cultivation, and made losses after the payment of rent. The single largest source of income for these households was, of course, the earnings from manual labour, particularly in agriculture. Incomes from petty trade, salaried employment, and pensions and scholarships also mattered. Households in the next asset category also made losses from crop incomes (see the discussion on tenancy below). These were compensated by incomes from cattle-raising and casual agricultural labour.

There were two types of tenancy contracts in Ananthavaram. In the first type, that were common for land on which paddy was cultivated in the kharif season, a fixed annual rent was paid in kind at the end of the kharif season, and all costs of cultivation were met by the tenant. This was the kind of contract under which landless and small landowning households leased in land. In the second type of contract, mainly prevalent in the case of cash crops like sugarcane and betel leaves but also sometimes used for paddy land, a fixed annual rent was paid in cash at the start of the year. These contracts were typically associated with reverse leasing, that is, cases wherein land was leased in by rich peasants and capitalist farmers from poor and small landowning households.

The peculiar feature of the first type of tenancy contract was that the rent constituted, on an average, about 78.5 per cent of the total production of paddy. At the end of the kharif season, tenants were left with a small amount of paddy and all the paddy straw. Some of the losses of the kharif season were recovered by the cultivation of a rabi crop, usually maize, for which the tenants did not have to pay any rent. However, the total annual income from crop production, accounting for both kharif and rabi crops, was negative for many tenants on account of the punishingly high rent paid at the end of the kharif season. The economic logic for such tenancy contracts lies, perhaps, in the fact that the paddy straw kept by tenants allowed them to maintain milch cattle and thus gain earnings from animal husbandry. For landless tenants, entering into a tenancy contract gave them access to land and the means to maintain livestock. It is clear that the tenants' calculations are based on total incomes from both crop production and animal husbandry, which were positive, though small.

In Kothapalle, the asset-poor and landless households do not engage in cultivation; their main sources of income are from undertaking agricultural labour and petty salaried jobs. Incomes from toddy tapping are highest for the households in the middle asset category (Rs. 50,000–1,00,000, and Rs. 1,00,000–5,00,000). For households in the upper two asset categories, the crop incomes are relatively low. Incomes from animal husbandry are higher than those from crop

cultivation for households with assets ranging between Rs. 5,00,000 and 10,00,000. Incomes from business constitute the most important source for the richest category of households.

In Bukkacherla, for households in the two poorest asset categories, the average income is almost the same. For these two groups of households, incomes from casual labour constitute the major source of income, that is, between 45 and 50 per cent of the total household incomes. The data also show that salaried employment, particularly in the public sector, is an important source of livelihood, particularly for rich households, in Bukkacherla. Given the lack of work opportunities in the village (on account of a single crop a year), many workers look for employment in Anantapur, the district headquarters, which is only 14 km away.

4. Degree of Diversification

The aggregate indices of diversification have not been computed since they do not capture the complexity of diversification and since there are, as mentioned earlier, several households with negative incomes. However, a measure of the degree of diversification can be obtained from Table 5, which shows the share of income contributed by the primary sector. There is no consistent relation between dependence on the primary sector and asset ownership in the three villages. In Ananthavaram, diversification out of the primary sector is highest among the asset-poor and lowest among the wealthy. In general, there is a tendency for the share of incomes from the primary sector to rise with asset levels in Ananthavaram. Among the wealthiest households, incomes (including very importantly crop rent) from agriculture and allied activities account for 77 per cent of total incomes. In Bukkacherla, in contrast, the poorest receive 76 per cent of their incomes from the primary sector, and the wealthiest households obtain about half their total incomes from the primary sector. In Kothapalle, the richest households derive most of their income from business and trade (68 per cent). In Kothapalle, the households that appear to be most dependent on the primary sector are those with assets worth Rs. 50,000 to Rs. 1,00,000.

Table 5
Share of the Primary Sector in Total Income by Asset Categories, Sample Villages, Andhra Pradesh

Value of assets owned (in Rs. per household)	Share of farm income in total income (%)		
	Ananthavaram South Coastal Andhra	Bukkacherla Rayalaseema	Kothapalle North Telengana
0–20,000	37.5	75.9	58.1
20,000–50,000	51.2	56.8	48.9
50,000–1 lakh	55.5	50.7	67.6
1 lakh–5 lakh	67.7	64.2	41.8
5 lakh–10 lakh	59.6	70.5	59.8
10 lakh +	76.6	49.6	25.6
All households	65.2	58.7	43.4

Note: The primary sector includes income from crop production, crop rent, animal husbandry, agricultural labour (casual and long-term) and toddy tapping.

V. CONCLUDING REMARKS

Data collected from three villages of Andhra Pradesh in 2005–06, as part of a larger project on agrarian relations, provide detailed information on incomes and other household characteristics. In this article, which is part of ongoing research, we examined some features of household incomes, in particular the levels and sources of income, at the aggregate village level and disaggregated by asset ownership.

The first observation from our study is that a majority of the households in all the three villages—located in different agro-ecological regions of the state—received low incomes. In relation to per capita GDP and SDP, the average incomes, particularly median incomes, are low in all the three villages.

Secondly, income generation is still dominated by agriculture and allied activities in two villages belonging to very different agro-ecological zones. In aggregate, primary sector-based incomes accounted for 65 per cent of household incomes in Ananthavaram, 59 per cent in Bukkacherla and 43 per cent in Kothapalle. Agriculture (crop and animal husbandry) is the main source of income in Ananthavaram, a village of high-yielding canal-irrigated paddy cultivation in south coastal Andhra and also in Bukkacherla, a dry and drought-prone village of Rayalaseema. Only one village, Kothapalle, in north Telengana, showed greater diversification of income generation and the location of this village on a major highway is clearly a very important factor in this process.

There was a lot of variation in incomes from crop production across households and across villages. On an average, incomes from cultivation contributed around Rs. 14,000 per annum in Ananthavaram, Rs. 7,800 in Bukkacherla and Rs. 2,400 in Kothapalle. However, there was huge variation within Ananthavaram: crop production was highly profitable for some and loss-making for others. The richest households obtained more than a lakh of rupees a year each from crop cultivation while the asset-poor suffered losses.

Another finding that emerges from our village data is the importance of animal resources and animal-raising in the rural economy. In all three villages, and for households, irrespective of caste and wealth, livestock-rearing is a major economic activity. The proportion of households receiving income from animal husbandry ranged from 49 per cent in Bukkacherla to 56 per cent in Kothapalle. For households of manual workers, income from livestock-rearing is often the only way to compensate for unemployment. For tenant households, the main contribution of crop cultivation is often the fodder that goes to feed their cattle. For wealthier households, large-scale dairy farming or fisheries bring in big profits.

Thirdly, there was no simple relationship between diversification out of the primary sector and the level of wealth. However, the villages differed in respect of the source of income of the rich. In Ananthavaram, the wealthiest households derived 77 per cent of their incomes from agriculture and allied activities. In contrast, in Kothapalle, only 26 per cent of the incomes of the rich came from agriculture-related activities.

Notes

1. See, for instance, the issue of World Development, March 2001, which is wholly on rural non-farm employment and incomes in Latin America. The UK Department for International Development, DFID, has a website on livelihoods (www.livelihoodoptions.com).
2. See, for example, the paper by Bryceson (ed.) (1997) on 'de-agrarianisation' in Africa.
3. See review in Bakshi (2008).
4. A reading of the questionnaire shows that detailed data were collected only on incomes from hired manual labour. Incomes from cultivation were imputed on the basis of area and cropping pattern (no data on yields, prices or costs were collected at the household level). Incomes from all other sources were reported by the household as 'annual income for 1993'. For self-employment, and particularly activities such as livestock raising or fisheries, estimates of incomes based on a household's reply without verification of the details (e.g. number of cattle, milk production, costs of fodder) is likely to be an unreliable estimate. Lanjouw and Shariff state that only incomes from primary occupations were included. The implications of this are unclear. For women workers, for example, incomes from secondary occupations may be significant, or, in areas of high seasonality, secondary occupations may be important sources of income.

5. We also have detailed data on incomes for Gokilapuram village in Tamil Nadu for the years 1977 and 1999 (see Ramachandran and Swaminathan, 2002).
6. The three criteria were: villages with population in the modal size class of 500–900 households, an irrigation index of 45–65, and a village with the share of groundwater- irrigated area to the total area ranging between 40 and 90 per cent.
7. The three criteria were: villages with population ranging between 250 and 650 households, an irrigation index ranging between 7 and 16 per cent, and the share of groundwater in total irrigation ranging between 70 and 85 per cent.
8. Farrington, *et al.* (2006) do not discuss the method of calculation of household incomes or ways of dealing with households with zero or negative incomes.
9. We have used the SDP deflator for Andhra Pradesh to update earlier estimates.
10. A caste-based village society assigns tapping rights over specified trees to individual households.
11. This section is extracted from Ramachandran, *et al.* (2008).
12. Water for the surface irrigation system comes from the Varalapuram canal, which, in turn, is fed by the Prakasam barrage on the Krishna river in Vijayawada.

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ANNEXURE

Description of Sample Villages¹¹**1. Ananthavaram***a) Location and Population*

Ananthavaram village is located in Kollur Mandal, Guntur district. The nearest town and railway station is at Tenali, at a distance of 17 km. The Mandal headquarters, Kollur, is 8 km away. The village has a concrete all-weather road passing through it, with two bus stops in the village, and a bus is available at least every 45 minutes.

The area of the village, according to the Census of 2001, is 1029 hectares or 2543 acres. At time of the Census of 2001, the population of Ananthavaram was 3091 persons (1550 males and 1541 females). The population density was 301 persons per sq km. Ananthavaram had the highest population density among the three survey villages. A total of 667 households comprising 2,424 persons were interviewed in our census survey of 2005.

Ananthavaram is a multi-caste village with a significant Scheduled Caste (SC) or *Dalit* population. *Dalit* households constituted 45 per cent of the population, *adivasi* households, 6.5 per cent of the population, and households of the Kamma caste (the dominant landholding caste), 20 per cent of the population.

b) Land Use, Irrigation and Cropping Pattern

The net area sown by all households resident in the village was 1,108 acres, the gross cropped area (GCA) was 1,891 acres, and the index of multiple cropping was 171. The high intensity of cropping is on account of the availability of irrigation: 90 per cent of the gross cropped area of the village reported some irrigation. Official data on the village indicate that almost all the cultivated land was classified as under canal irrigation. The village is irrigated by the waters of the Krishna river.¹²

During the kharif season, paddy cultivation dominated the agriculture of the village (96.9 per cent of the cropped area was sown to paddy). The two most important crops of the rabi season were maize and black gram. Sugarcane was cultivated throughout the year. While we listed a total of 25 crops in our survey, four crops—paddy, maize, black gram and sugarcane—accounted for 95 per cent of the gross cropped area. Median yields for these four major crops indicate that Ananthavaram is a relatively advanced agricultural village. The median paddy yield of 5.6 tonnes per hectare is above the mean for Andhra Pradesh as well as the Indian average. The maize yields are three times the Indian average, and the sugarcane yield is 50 per cent higher than the Indian average.

c) Land Ownership and Tenancy

Land hunger is acute in Ananthavaram: 65 per cent of households did not own any agricultural land, and 65 per cent did not operate any land. The Gini coefficients for ownership and operational holdings of land were 0.89 and 0.83, respectively. Only 20 per cent of the *Dalit* households owned agricultural land. However, 40 per cent of the *Dalit* households reported some operated land. Almost all *adivasi* households (98 per cent) had neither ownership nor operational holdings.

Tenancy was widely prevalent in Ananthavaram. Tenants comprised 28.5 per cent of all households and 64.8 per cent of all cultivating households. Of the total land operated, 52 per cent was cultivated under tenancy arrangements. The terms of land-lease contracts are thus an important factor in the distribution of crop incomes.

2. Bukkacherla

a) Location and Population

Bukkacherla village is located in Raptadu Mandal of Anantapur district. The Mandal headquarters, Raptadu, is 8–9 km away, and Anantapur, the nearest town and railhead, is at a distance of 14–15 km. The approach road to the village is a *kachcha* road and difficult to travel on during the monsoons.

The area of the village, according to the 2001 Census, is 1944.9 hectares. At the time of the Census of 2001, the population of Bukkacherla was 1383 persons (712 males and 671 females). With a population of 71 persons per sq km., Bukkacherla had the lowest population density among the three survey villages. Our census survey of 2005 covered 1220 persons in 292 households. At the time of the Census of 2001, the village had 296 households and a population of 1383 persons. Households of the dominant landholding Kapu caste constituted 40 per cent of households, and *Dalit* households constituted 20 per cent.

b) Land Use, Irrigation and Cropping Pattern

The important feature of land use in Bukkacherla is that unirrigated land accounts for 89 per cent of the land under cultivation. Further, between 1991 and 2001, there was a steep decline in the total irrigated area, from 294 hectares to 178 hectares. The total water availability actually declined during the last decade in Bukkacherla.

Typically, there is a single agricultural season in the village, with cultivation occurring mainly in the kharif season. There is very little multiple cropping (the index of multiple cropping was 104). Cultivation of oilseeds and pulses predominates in Bukkacherla. Specifically, the two main crops are groundnut and red gram. Median yields for groundnut indicate that it is not a high-yielding crop in Bukkacherla.

c) Land Ownership and Tenancy

There is not as high an incidence of landlessness in Bukkacherla as in Ananthavaram. In Bukkacherla, only 15 per cent of the households did not own land and 18 per cent did not operate land. The Gini coefficient for both ownership and operational holdings of land was 0.58. However, there was a high degree of concentration in land ownership, with nine households or 3 per cent of all the households owning 27 per cent of the land. The biggest landlord of the village owned 280 acres. The modal size-class was the 5–10 acre category, with 37 per cent of the households belonging to this size class and owning 31 per cent of the total land.

Tenancy was not widespread in Bukkacherla: tenants accounted for 15 per cent of the households and cultivated 11 per cent of the operated area of the village.

3. Kothapalle P.N.

a) Location and Population

Kothapalle P.N. (Post Nustlapur) village is located in the Thimmapur (Lower Maner Dam Colony) Mandal of Karimnagar district in the south Telengana region of Andhra Pradesh. The village is at a distance of 5 kms from the Mandal headquarters of Thimmapur (which is also the nearest police station). A state highway, connecting Karimnagar, at a distance of 16 km, to Hyderabad, passes through the village. A bus passes through the village every 10 minutes.

The area of the village, according to the 2001 Census, is 715.5 hectares. At the time of the Census of 2001, there were 390 households and a total population of 1534 persons (751 males and 783 females) in Kothapalle. The population density was 214 persons per sq km. Our village

census survey covered 1430 persons in 372 households. Kothapalle has an almost equal number of persons from the two major landholding castes of Reddys (20 per cent) and Goudas (22 per cent). *Dalit* households accounted for 27 per cent of the population.

b) Land Use, Irrigation, and Cropping Pattern

Typically, there is a single agricultural season in the village, the kharif season. Despite the expansion of irrigation, the index of multiple cropping (share of gross cropped area to net sown area) was only 121. The construction of the Lower Maner dam has raised the water table by improved the recharge of groundwater in the village. The irrigated area of the village increased by 232 acres between 1991 and 2001 on account of increased groundwater irrigation.

The village data reveal a complex cropping system. The two most important crops are maize and paddy. Maize is sown separately and is also intercropped with pulses. Groundnut, cowpea and cotton are also sown in the village. There are mango orchards and other fruit trees (lime, mango, coconut and pomegranate), accounting for almost 5 per cent of the total gross cropped area. Tapping toddy from palmyra trees is an important village occupation. The paddy yields in Kothapalle are lower than those in Ananthavaram. Maize yields are also low in relation to the state average.

c) Land Ownership and Tenancy

Almost one-half of the households in the village have neither ownership nor operational holdings of land. Of the remaining households, the majority are very small landowners: 39 per cent of the households owned less than 3 acres each, and accounted for 30 per cent of the total land owned among the survey households. Only 4 households owned more than 10 acres each. This accounted for 45 per cent of the land owned by village residents. Tenancy was present but not on a large scale. Tenants comprised 15 per cent of the cultivating households and operated 16 per cent of the cultivated land.

Appendix Tables

Table A1
Average Income from Different Sources, by Size-classes of Asset Holdings, Ananthavaram, South Coastal Andhra

Source of income	Size-classes of asset holdings (Rs.)						All households
	0-20,000	20,000- 50,000	50,000-1 lakh	1 lakh-5 lakhs	5 lakhs-10 lakhs	>10 lakhs	
Crop production	-96	-2039	-219	4186	15,959	112829	13,685
Rental income from agricultural land	0	659	469	892	3583	24274	3264
Animal resources	100	6648	15,061	16,312	16,504	40,999	12,312
Casual agricultural labour	6651	10651	4436	4016	1023	0	5583
Long-term labour earnings	0	0	2231	428	779	0	424
<i>Primary sector</i>	6655	15,919	21,978	25,834	37,849	1,78,102	35,267
Casual non-agricultural labour	880	3954	1974	2270	142	0	1822
Government salaried jobs	0	4916	8457	1061	6873	2890	3169
Other salaried jobs	2751	1277	4201	3552	1871	671	2483
Business and trade	3303	838	1809	1280	15636	9067	3697
<i>Secondary and tertiary sectors</i>	7834	12,523	17,352	8514	24,542	25,085	13,282
Pensions, scholarships and insurance claims	2367	2554	183	1061	205	6078	2110
Remittances	875	96	114	2691	951	16973	2718
Other rental income	0	0	0	71	8	6307	695
Income from other sources	900	1538	912	351	20	12457	2110
<i>Other incomes</i>	3241	2650	296	3823	1164	29358	5522
Total household income	17,730	31,092	39,627	38,171	63,555	2,32,545	54,071

Table A2
Average Income from Different Sources, by Size-classes of Asset Holdings, Bukkacherla, Rayalaseema

Source of income	Size-classes of asset holdings						All households
	0-20,000	20,000-50,000	50,000-1 lakh	1 lakh-5 lakhs	5 lakhs-10 lakhs	>10 lakhs	
Crop production	7049	1888	2911	6396	18,367	35,883	7836
Rental income from agricultural land	0	0	627	1278	0	30,781	3067
Animal resources	928	925	3017	5485	53,460	12,573	6120
Casual agricultural labour	5244	7009	3020	3484	0	0	3565
Long-term labour earnings	0	0	0	164	0	0	83
Toddy tapping	0	0	0	1556	0	0	791
<i>Primary sector</i>	<i>13,222</i>	<i>9822</i>	<i>9575</i>	<i>18,362</i>	<i>71,827</i>	<i>79,236</i>	<i>21,464</i>
Casual non-agricultural labour	3550	565	2872	870	0	0	1349
Government salaried jobs	0	4364	1524	2826	30,000	41,220	6210
Other salaried jobs	0	1091	505	288	0	0	366
Business and trade	0	1318	3328	3040	0	13848	3369
<i>Secondary and tertiary sectors</i>	<i>3775</i>	<i>7338</i>	<i>8229</i>	<i>7696</i>	<i>30,000</i>	<i>61,610</i>	<i>12,143</i>
Pensions, scholarships and insurance claims	325	118	142	543	0	0	343
Remittances	100	0	947	1910	0	0	1162
Other rental income	0	0	0	85	0	18,977	1459
Income from other sources	225	0	0	672	0	6542	848
<i>Other incomes</i>	<i>425</i>	<i>118</i>	<i>1089</i>	<i>2538</i>	<i>0</i>	<i>18,977</i>	<i>2965</i>
Total household income	17,422	17,278	18,894	28,596	1,01,827	1,59,823	36,571

Table A3
Average Income from Different Sources, by Size-classes of Asset Holdings, Kothapalle, North Telengana

Source of income	Size-classes of asset holdings						All households
	0-20,000	20,000-50,000	50,000-1 lakh	1 lakh-5 lakhs	5 lakhs-10 lakhs	>10 lakhs	
Crop production	0	0	2862	1085	9534	14,266	2425
Rental income from agricultural land	0	0	0	82	100	19,142	962
Animal resources	362	1006	8400	5741	10257	17707	6189
Casual agricultural labour	3588	2321	3035	2567	66	0	2474
Long-term labour earnings	1632	0	0	579	0	0	453
Toddy tapping	1465	0	3632	2676	0	0	2223
<i>Primary sector</i>	<i>7046</i>	<i>3327</i>	<i>17929</i>	<i>12729</i>	<i>19958</i>	<i>51115</i>	<i>14726</i>
Casual non-agricultural labour	840	188	3395	2279	0	0	1931
Government salaried jobs	0	0	0	6587	2426	22645	4409
Other salaried jobs	2520	2075	4135	3842	5256	0	3518
Business and trade	1100	126	620	3724	4424	1,12,906	7739
<i>Secondary and tertiary sectors</i>	<i>4460</i>	<i>2467</i>	<i>8361</i>	<i>16976</i>	<i>12,105</i>	<i>1,35,551</i>	<i>17,910</i>
Pensions scholarships and insurance claims	390	475	130	58	0	3627	312
Remittances	50	540	0	109	505	1677	217
Other rental income	180	0	95	571	809	7830	741
Income from other sources	0	78	211	543	0	0	313
<i>Other incomes</i>	<i>620</i>	<i>1015</i>	<i>225</i>	<i>738</i>	<i>1314</i>	<i>13135</i>	<i>1269</i>
Total household income	12,126	6809	26,515	30,443	33,376	1,99,801	33,905