



**AgEcon** SEARCH  
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search  
<http://ageconsearch.umn.edu>  
[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

Vol XXIII  
No. 2

ISSN 0019-5014

APRIL-  
JUNE  
1968

# INDIAN JOURNAL OF AGRICULTURAL ECONOMICS



INDIAN SOCIETY OF  
AGRICULTURAL ECONOMICS,  
BOMBAY

## A STUDY OF MARKETED SURPLUS OF PADDY AT THE FARM LEVEL IN FOUR EAST INDIAN VILLAGES

G. C. Mandal and M. G. Ghosh

Increasing agricultural production loses its significance in relation to the national economy unless it is accompanied by increase in marketable and marketed surplus of agricultural products. The issues are : How far would the marketed surplus increase with an increase in production? What are the general conditions favourable to increasing marketed surplus apart from the influence of increased production?

The purpose of this study is to examine these issues in four selected villages of East India. The data on which this study is based were collected in the course of field investigations conducted in 1960 under our scheme of continuous village surveys. Two of the four villages to which the study is related belong to West Bengal—a comparatively advanced area—the other two belonging to Orissa—a comparatively backward area to present a contrast.

Though this is apparently a case study of conditions in four villages, it is expected to provide an insight into the motivation of marketed surplus at the farmers' end and form a basis of thinking towards policy-making in regard to supply of agricultural products in general which is so vital to economic development.

### THE VILLAGES

The four villages are (1) Golta and (2) Dakshinsiza from West Bengal and (3) Lenda and (4) Pudapalli from Orissa. It may be useful to give a brief description of these villages in respect of their location and market facilities.

(1) *Golta*—The village Golta is in the Arambag sub-division situated six miles north of the town. The usual means of conveyance for those who would not walk is bicycle or bullock cart. Paddy is the main crop in this area. It accounts for about 90 per cent of the total cultivated area. The village solely depends on rain water for the cultivation of paddy and other *kharif* crops. The cultivators are enterprising—they use manures and fertilizers in large quantities. The yield rate of paddy which is about 31 maunds per acre is the highest among the villages studied here. Besides paddy, potato, onion and sugarcane are grown in the village but a very insignificant portion of these crops is marketed. The village enjoys good facilities for marketing of paddy. The market centre Nowadangha is only at a distance of two miles from the village. Rice mill agents and traders from Arambag and even from Serampur and Burdwan give regular visits to this market. There is also a co-operative marketing society in this village. But its performance is not very significant as it accounted for only 29 per cent of the total sale of paddy of the village. Mill agents and traders offer higher prices and certain other benefits to the producers and thus virtually enjoy a monopoly over the market.

(2) *Dakshinsiza* is a village in the Sainthia Police Station in the district of Birbhum. The village is under the Mor Project and is being served with water both for *kharif* and *rabi* crops. Paddy forms the most important crop occupying about 90 per cent of the total cropped area. The other crops grown in the village are sugarcane, potato, onion, pulses, wheat and vegetables. The village enjoys

facilities of two marketing centres: (1) Sainthia—one of the most important rice market in the State of West Bengal; and (2) Ahmedpur which lies at a distance of four miles. There are rice mills in both these centres which are linked with other trading centres of the State with rail and road. Bullock cart is the only means of transport of paddy and other produce to the markets. Almost all the cultivators take their produce to the market direct.

(3) *Lenda*—The village Lenda belongs to Sambalpur district of Orissa. It lies at a distance of three miles from Barpali, the Block and Thana headquarters. Barpali is the centre of the American Friends' Society—an organization for rural upliftment. The sub-divisional town Bargarh is about 15 miles from the village. There are good road communications between the village and the neighbouring towns. The village has the benefit of canal irrigation (Hirakud Dam Project) since 1958. Paddy is the main crop. The nearest market centre is at Barpali.

(4) *Pudapalli*—The village is situated at a distance of four miles from the district town Balangir. A new road has been constructed which passes through this village and terminates at the district town. The village has got no irrigation facilities for *kharif* crops. Paddy is the main crop. Other crops, *viz.*, sugarcane, groundnut, vegetables are cultivated in the homestead lands and are being irrigated by wells which are also a source of drinking water. Marketing of vegetables is a common practice in the village. Paddy is sold by the villagers within the village to the local *mahajan* who is a wholesaler of this locality. The social composition of the village is dominated by the backward and scheduled castes which act as a deterrent to the progress of the village economy.

Small cultivators (0.01—5 acres) predominate in all the villages. But the proportion of large (15.01—20 acres) and big (20.01 acres and above) cultivators is greater among the Orissa villages while in the West Bengal villages both in respect of the proportion of holdings and of area the medium cultivators (5.01—10 acres) are important. In the Orissa villages the big and large cultivators exert a greater influence on the total structure of the village economy (Table I).

The West Bengal villages are situated in rich tracts and have high yields; as the density of population is high, per capita availability of cultivable land is small. The Orissa villages, however, are located in comparatively backward areas characterized by a relatively large availability of cultivable land per capita and poor yields.

The Orissa villages show a low level of monetization. Kind payments are much less important in the West Bengal villages than the Orissa villages. Consumption requirements cover 50 per cent of receipts (deducting all the fixed payments) in all the villages.

#### RECEIPTS AND DISPOSALS OF CROPS

First of all, receipts and disposals of all crops in the four villages are estimated with a view to making a general appraisal of the problem. Total receipt of a crop in a year is defined as total output received by the farmer plus stocks at the beginning of the year plus receipts by way of kind rent, wages and repayment of loans, if any. Disposals of the crop are made on the following accounts : use as seed,

TABLE I—DISTRIBUTION OF FARM HOUSEHOLDS AND CULTIVATED AREA ACCORDING TO HOLDING SIZE-GROUPS

Size-group (acres)	Percentage of number of households to total				Percentage of cultivated area to total			
	Golta	Dakshinsiza	Lenda	Pudapalli	Golta	Dakshinsiza	Lenda	Pudapalli
0.01—5.00	64.38	61.77	69.39	62.28	27.32	33.56	28.16	23.16
5.01—10.00	26.03	26.46	21.43	19.68	40.92	36.30	26.50	24.30
10.01—15.00	6.85	8.82	2.04	9.84	19.31	19.94	4.18	19.71
15.01—20.00	1.37	2.94	2.04	4.92	4.73	10.19	6.37	13.73
20.01 and above	1.37	—	5.10	3.28	7.72	—	34.78	19.10

TABLE II—DISTRIBUTION OF RECEIPTS AND SALES OF PADDY ACCORDING TO HOLDING SIZE-GROUPS

Size-group (acres)	Percentage distribution of receipts				Percentage distribution of sales			
	Golta	Dakshinsiza	Lenda	Pudapalli	Golta	Dakshinsiza	Lenda	Pudapalli
0.01—5.00	27.53	35.07	25.75	19.89	19.39	25.72	6.57	15.17
5.01—10.00	38.40	36.38	28.81	18.73	39.98	38.85	34.73	14.48
10.01—15.00	20.02	19.04	4.57	21.08	23.17	21.45	4.45	23.45
15.01—20.00	5.40	9.52	6.65	16.35	7.61	13.98	6.12	19.31
20.01 and above	8.64	—	34.21	23.96	9.85	—	48.14	27.58

payment of wages, rent, loan, etc., sale and consumption. What remains as a surplus of total receipt of the crop over its total disposals is the net balance (closing stock). While sales constitute the marketed surplus, net balance is capable of making further contribution to marketed surplus.

An analysis of data regarding total receipts and disposal of crops indicates that paddy is the most important of all crops in all the four villages as a means of fetching cash for the farmers through sale in addition to the fact that it covers by far the largest proportion of total crop output of the farmers. Moreover, paddy is not only the most important cash crop commanding about 95 per cent of the aggregate sale proceeds in West Bengal and about 78 per cent in Orissa, but also the most important medium of kind transactions towards payment of wages and rent and settlement of other obligations.

While, on the whole, the crop enterprise in the West Bengal villages is more market-oriented than that in the Orissa villages, this is mostly due to greater disposal of paddy by sale in the former than in the latter villages. In respect of other crops, *e.g.*, sugarcane, potato, pulses, etc., the Orissa village Pudapalli seems to be more market-oriented than any of the West Bengal villages. This, however, does not contradict the overall marketing superiority of the West Bengal villages to a further analysis of which we shall turn later.

Paddy, being the most important crop both from the point of view of production and marketing, is selected for more detailed analysis relating to its market supply and marketable surplus.

Table II indicates distribution of sales of paddy (marketed surplus) as well as its receipts between different holding-groups. The largest contribution to the total market supply of paddy in the villages of West Bengal was made by farmers belonging to the holding group 5—10 acres (39 to 40 per cent of the total), while in the two Orissa villages the largest contribution (48 and 28 per cent) was made by farmers with holding of 20 acres or more. But even in these two villages of Orissa the contribution of farmers of the group 5—10 acres is substantial (14 to 35 per cent of the total).

The contribution of farmers in the group 0—5 acres seems to be less than proportionate to their share in the total receipts of the crop. The contribution of the group 5—10 acres is almost proportionate to their share of the crop. The contribution of larger farmers (above 10 acres) tends to be more than proportional to their share of the crop.

The smaller proportion of the contribution of smaller farmers compared to their share in the receipts can be explained by their meagre capacity to yield surplus product for the market after meeting their own consumption requirements. It is, however, remarkable that the contribution of even the small farms belonging to the group 0—5 acres is not negligible (except in one village, Lenda in Orissa) covering around 20 per cent of the total supply.

Turning to receipt and net balance per capita (Table III), it is observed that in the West Bengal village of Dakshinsiza, the net balance per capita rose from a

TABLE III—PER CAPITA RECEIPTS, SALE AND NET BALANCE OF PADDY

*(in maunds)*

Size-group (acres)	Pudapalli (Orissa)			Lenda (Orissa)			
	Per capita		Per capita balance	Size-group (acres)	Per capita		Per capita balance
	Receipts	Sale			Receipts	Sale	
0.01— 2.50 ..	4.03	0.05	— 1.71	0.01— 1.25	4.79	0.00	— 3.55
2.51— 5.00 ..	11.20	1.88	+ 0.70	1.26— 2.50	8.31	0.24	— 1.96
5.01— 7.50 ..	12.50	1.23	+ 0.63	2.51— 3.75	9.91	0.51	— 1.86
7.51—10.00 ..	19.06	2.13	+ 5.80	3.76— 5.00	13.53	0.93	+ 1.57
10.01—15.00 ..	33.61	5.15	+12.09	5.01— 7.50	24.36	4.45	+ 4.63
15.01—20.00 ..	33.09	6.36	+15.55	7.51—10.00	36.27	8.08	+12.65
20.01—25.00 ..	56.00	10.00	+27.70	10.01—15.00	29.12	4.71	+ 9.88
30.00 and above..	87.50	12.50	+50.50	15.01—20.00	32.73	5.00	+14.50
				29.01—30.00	59.21	14.21	+20.37
				30.01 and above	89.06	18.59	+41.91
	Dakshinsiza (West Bengal)			Golta (West Bengal)			
0.01— 1.25 ..	2.66	0.04	—4.52	0.01— 1.25	3.42	0.43	— 4.76
1.26— 2.50 ..	9.97	2.39	—0.69	1.26— 2.50	10.76	2.30	— 0.67
2.51— 3.75 ..	14.56	5.58	+0.58	2.51— 3.75	18.69	6.79	— 0.52
3.76— 5.00 ..	16.25	5.28	+1.48	3.76— 5.00	15.05	5.49	— 0.81
5.01— 7.50 ..	15.26	6.61	+0.23	5.01— 7.50	24.68	10.59	+ 1.14
7.51—10.00 ..	23.76	11.78	+0.69	7.51—10.00	24.23	12.05	+ 1.25
10.01—15.00 ..	24.93	12.03	+2.29	10.01—15.00	24.14	11.83	+ 1.04
15.01—20.00 ..	30.13	18.96	+1.88	15.01—20.00	65.11	38.89	+11.67
				20.01—25.00	52.11	25.17	+ 7.44

deficit of 4.52 maunds to a net surplus of 2.29 maunds as the farm size increased, resulting in an increase in the receipt of the crop from 2.66 maunds to 30.13 maunds per capita. In the West Bengal village of Golta, the net balance per capita rose from a deficit of 4.76 maunds to a net surplus of 11.67 maunds, while the receipt per capita rose from 3.42 maunds to 65.11 maunds with the increase in farm size. In this village the net balance turned out to be negative for farms in lower holding-groups 0—5 acres. In the Orissa village of Pudapalli, the net balance per capita rose from a deficit of 1.71 maunds to a net surplus of 50.50 maunds following an increase in the receipt from 4.03 maunds to 87.50 maunds per capita with an increase in farm size. In the village of Lenda, deficits were to the extent of 3.55 to 1.86 maunds per capita among the holding-group 0—3.75 acres. Above 3.75 acres the net balance increased from 1.57 to 41.91 maunds per capita with an increase in the receipt from 13.53 to 89.06 maunds per capita. Thus there appears to be a definite tendency of increasing net balance per capita with an increase in farm size. This is true even when bigger farms are observed to sell larger quantities of the product.

A function of the form  $Q = g + rT$  is now fitted to the data by the Least Squares method, where  $Q$  is quantity held as balance,  $T$  is quantity of receipt of the crop and  $g$  and  $r$  are constants. Of these,  $r$  means marginal propensity to hoard on the part of the farmers. The following values of  $g$  and  $r$  are derived from the actual functions :

Village	$g$	$r$	Level of significance
Dakshinsiza (West Bengal)	-3.20	0.20	Significant at 0.1 per cent.
Golta (West Bengal)	-4.86	0.24	Significant at 0.1 per cent.
Pudapalli (Orissa)	-6.80	0.63	Significant at 0.1 per cent.
Lenda (Orissa)	-6.17	0.52	Significant at 0.1 per cent.

Thus from the above values of  $r$ , it appears that while in the West Bengal villages for every additional output of 100 maunds, 20 or 24 maunds will tend to be held in stock as net balance, in the Orissa villages as much as a quantity of 52 or 63 maunds out of an additional output of 100 maunds is likely to be hoarded. The marginal propensity to hoard in the Orissa villages is undoubtedly much higher than in the West Bengal villages.

Another function of the form  $\log N = \log A + t \log M$  (where  $N$  = quantity of sale of the crop,  $M$  quantity of receipt,  $a$  and  $t$  are constants) is fitted to data of per capita sales and receipts in different size-groups of holdings (Table IV) to give the following values of  $\log A$  and  $t$  :-

Village	$\log A$	$t$	Level of significance
Dakshinsiza (West Bengal)	-2.32	2.52	Significant at 0.1 per cent.
Golta (West Bengal)	-1.14	1.53	Significant at 0.1 per cent.
Pudapalli (Orissa)	-1.89	1.67	Significant at 0.1 per cent.
Lenda (Orissa)	-2.13	1.86	Significant at 0.1 per cent.



The *t* figures indicate the elasticities of marketed surplus with respect to receipt. These figures estimated for the villages under study and as given above imply that the elasticities of marketed surplus are appreciably large even in the Orissa villages, though the marginal propensity to hoard is higher there than in West Bengal. All this means that even in Orissa the marketed surplus would substantially increase if there is an increase in production. Therefore, the net balance held in stock by the Orissa farmers does not represent some abnormal hoarding—it is just a normal propensity to save consistent with a low level of living to which these farmers are accustomed.

By fitting a function of the form  $\log Y = \log L + K \log X$  [ where *Y* = sale (maunds), *X* = size of farm (acres), *L* and *K* are constants ] to data of per farm sale and holding-size, we also estimated values of *K*—the elasticities of sale with respect to size of farm, and  $\log L$  as given below :

Village	log L	K	Level of significance
Dakshinsiza (West Bengal)	0.15	1.95	Significant at 0.1 per cent.
Golta (West Bengal)	0.74	1.47	Significant at 0.1 per cent.
Pudapalli (Orissa)	0.65	1.91	Significant at 0.1 per cent.
Lenda (Orissa)	0.12	1.41	Significant at 0.1 per cent.

It is observed that in each of the villages the elasticity of sale with respect to size of holding is greater than unity. From the values of elasticities marginal propensities to sell paddy with reference to a unit increase in holding-size are derived for each holding-group in each of the villages as shown in Table IV. These show that in each of the villages, the marginal propensity to sell increases with an increase in holding-size.

TABLE IV—MARGINAL PROPENSITIES TO SELL PADDY WITH RESPECT TO HOLDING-SIZE

Size-group (acres)	Dakshinsiza	Golta	Lenda	Pudapalli
0.01—1.25 .. ..	0.6410	4.5486	—	—
1.26—2.50 .. ..	11.5459	11.0793	0.8016	0.2473
2.51—3.75 .. ..	18.708	17.9078	1.0797	—
3.76—5.00 .. ..	15.11	16.0553	1.8993	2.9908
5.01— 7.50 .. ..	18.2120	17.4998	4.7988	1.4754
7.51—10.00 .. ..	24.4332	22.7051	7.8874	1.9368
10.01—15.00 .. ..	18.7920	23.4385	4.4368	3.3895
15.01—20.00 .. ..	26.2496	27.5100	4.3576	3.9877
20.01—25.00 .. ..	—	20.1333	—	6.6462
25.01—30.00 .. ..	—	—	6.8064	5.4379
Above 30.00 .. ..	—	—	8.4612	—

\* This analysis is due to Shri Dilip K. Bagchi, Junior Research Officer (Statistics).

In Dakshinsiza (West Bengal), the marginal propensity to sell increases from 0.64 maund in the lowest holding-group to 26 maunds in the holding-group 15—20 acres and in Golta from 5 maunds in lowest holding-group to 20 maunds in the group 20—25 acres. The marginal propensity to sell rises in Pudadalli (Orissa) from 0.24 maund in the lowest holding-group to 5 maunds in the group 25—30 acres and in Lenda (Orissa) from 0.80 maund in the lowest group to 7 maunds in the group 25—30 acres. It is remarkable that the marginal propensities to sell are very much lower in the Orissa villages than in the West Bengal villages. It can be said, however, that the marginal contribution to marketed surplus of paddy would be larger in all the villages with an increase in holding-size.

For a fuller understanding of the higher degree of holding stock of paddy by the farmers of the Orissa villages we turn to an analysis of levels of expenditures of the farm households in the villages under study. An analysis of the data relating to the total of both farm and consumer expenditures incurred by the farmers in the four villages of West Bengal and Orissa reveal that the levels of expenditures in Orissa villages (Rs. 211—Rs. 239 per capita) are appreciably lower than that of West Bengal (Rs. 300—Rs. 423 per capita). While total expenditure per capita ranges from Rs. 239 to Rs. 449 and from Rs. 255 to Rs. 684 among different holding-groups in Dakshinsiza and Golta villages respectively in West Bengal, the corresponding ranges of variation in total expenditure per capita in the Orissa villages are from Rs. 144 to Rs. 414 (Pudadalli) and from Rs. 173 to Rs. 446 (Lenda). Moreover, both the levels and proportions of cash expenditures to total expenditure are lower in the Orissa villages than those in West Bengal. While cash expenditures cover 39—43 per cent of total expenditure in the West Bengal villages, these constitute only 23 per cent of the total expenditure in the Orissa villages. Thus the low level of total expenditure and also the low percentage of cash expenditure, that is, the low level of monetization of the economy clearly reflect the higher rate of stock-holding of paddy in the villages of Orissa.

#### CONCLUSION

The conclusion emerging from the study is as follows :

Marketed surplus would increase with an increase in farm size and output. In spite of the fact that marketed surplus of paddy is responsive to increase in the total receipt of the crop, a substantial amount of net balance after all disposals is held in stock by the farmers. The marginal propensity of the farmers to hold such stock is higher in the backward villages of Orissa than in West Bengal. It is, therefore, quite probable that with an improvement of the level of living and enterprises of the farmers as well as an increase in their access to inputs, a larger quantity of the crop would flow into the market.

Thus a fundamental aspect of the problem of marketed surplus is connected with the structural relationship of the agricultural sector with the non-agricultural sector which in its turn evolves with adjustments in the structure of the agricultural as well as the industrial economy. The marketed surplus of agricultural products will be largely determined by the supply of industrial goods for the agricultural sector. The higher the level of farm operations and the level of living of the farm family, the larger will be the demand for both the consumer goods and requisites of

farm production in the rural sector. The larger the demand for these goods in the farm sector, the larger will be the marketed surplus of farm products as a means to the acquisition of non-farm products. On the other hand, there is a profound truth in the proposition that 'supply creates its demand' in so far as it concerns a developing economy. It means that supply itself has a definite impact on its demand. Many goods are not demanded in the farm sector mainly because it has no easy access to these goods and has no share in the perception of their productivity. The consumption and investment horizon of the farm sector can be widened by a proper dissemination of knowledge and by increasing access to the new goods and technology. This in turn would be most conducive to the supply of agricultural products in the market.



The Bank of Maharashtra  
helps agriculture

CONTACT NEAREST BRANCH

**THE BANK OF  
MAHARASHTRA LTD**

At your service with 119 Branches

BM/68/9