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# CAPITAL FORMATION IN AGRICULTURE AT THE FARM LEVEL\*

(A CASE STUDY OF THREE VILLAGES IN EASTERN INDIA)

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The object of this paper is to examine the extent, pattern and sources of finance of capital investments on farms in three villages of Eastern India in the context of some specific development projects. The paper is based on data collected through a special enquiry into new investments made by the farmers during the five-year period 1956-61. The enquiry was conducted in the year 1961 along with a socio-economic survey which covered all aspects of the economies of these villages.

## SELECTION OF VILLAGES AND HOUSEHOLDS

The three villages under study are Chadiapalli in the Ganjam district of Orissa, Pabakhali in the Nadia district of West Bengal and Hussainabad in the Saharsa district of Bihar. The villages were selected each with reference to a particular development project. From these three villages a total of 179 cultivating households belonging to different holding sizes were selected of which 61 households were located in the village Chadiapalli, 58 in Pabakhali and 60 in Hussainabad. Care was taken to make the sample fairly representative of the cultivating community of each village. The study was conducted mainly on the basis of a special questionnaire relating to positive or negative changes in some physical as well as financial investments made by the selected households.

## DEFINITION AND MEASUREMENT OF CAPITAL FORMATION

Capital formation is usually defined as an addition to the stock of productive equipments over time. But at the present stage of development of Indian agriculture an assessment of capital formation in the agricultural sector by strictly adopting this definition may miss many important (though rudimentary) items of capital formation which are not accounted for in a developed economy. This is because of the fact that a large majority of Indian agriculturists being poor

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\* This paper is part of a more comprehensive research project on Capital Formation in Agriculture with reference to some selected East Indian Villages.

The author is grateful to Dr. G. C. Mandal, Director, Agro-Economic Research Centre, Visva-Bharati University, for his valuable suggestions through the initial stages of the study.

### References :

1. "Capital Formation in Agriculture: A Case Study in Uttar Pradesh, India," *The Economic Bulletin for Asia and Far East*, Vol. XII, No. 2, September, 1961, pp. 29-44.
2. G.C. Mandal: *Studies in the Problem of Growth of a Rural Economy*, World Press, 1961, Chapter 4.
3. G. C. Mandal and Sunil C. Sengupta: *Kashipur—A Report on Re-survey of a Village*, Agro-Economic Research Centre, Visva-Bharati, 1962, Chapter 6.
4. V.M. Jakhade, "Capital Formation in Indian Agriculture—A Note on Methods," *The Indian Journal of Agricultural Economics*, Vol. IX, No. 1, March 1964, pp. 95-104.
5. P. T. Bauer and B. S. Yamey : *The Economics of Underdeveloped Countries*, 1957, Chapter 2.
6. *Studies in the Economics of Farm Management in Bihar: Report for the Year 1960-61*, Agro-Economic Research Centre, Visva-Bharati (unpublished), Chapter 9.

subsistence farmers for whom farming is not a business enterprise but a mode of living, capital investments on the farm generally take place through small bits of acquisitions and activities which lead to an improvement in their productive capacity and not so much in lump sum expenditures on acquisition of machineries and other capital assets. Moreover, as a substantial part of capital assets is created through family labour, labour on exchange and materials available on the farm, without involving money payments, any activity on the part of the farmers which is directed towards augmenting production and income may be taken as index of capital formation. This implies that capital formation in an under-developed economy like that of India should not only cover additions to fixed capital assets but also additions to working capital in the shape of introduction of new crops and new fertilizers, increase in the rate of application of manures and fertilizers and in the employment of hired labour, etc. Additions to working capital definitely form a part of new investments which are directed to increase the level of production and income by raising the level of farm enterprise. At least they reflect the farmers' striving for improvement of the farm efficiency. They indicate bits of additional savings almost imperceptibly ploughed back into production. The definition of capital formation has, therefore, been widened for the purposes of the present paper to include various types of new investments undertaken by the farmers to increase farm incomes and also acquisition of those durable goods which are partly useful in production and partly in consumption such as house, bicycles, etc. Of course, such new investments are in excess of what is required for the replacement of capital and/or the maintenance of the existing level of enterprise. Justification of giving a place to non-agricultural investments as well as investments of financial character in the scheme of the present investigation consists in so far as this is a part of the process-study of capital formation in agriculture indicating whether there is any diversion from agricultural to non-agricultural or from productive to non-productive investment. Capital formation as a process can be broken up into two phases, one is the creation of financial assets—a fund and the other is the passing of this fund into physical capital formation. In an under-developed economy the line of demarcation between the two is very often not perceptible. Financial assets are brought into the picture to show the extent of bifurcation of finance and physical capital formation. For shortage of space, however, discussions are restricted here only to fixed capital formation and financial assets.

As new investment and disinvestment on the part of different individuals may offset each other without resulting in any net accumulation of capital for the community, we have taken note of increases or decreases in investment undertaken by the individual farmers in respect of the items mentioned above. The data, therefore, relates to net changes in the magnitude of different activities and stocks.

#### CHARACTERISTICS OF THE SELECTED VILLAGES

Before entering into an analysis of capital formation it is important to have some general information regarding the characteristics of the selected villages.

*Chadiapalli* : The village Chadiapalli (Ganjam) is located at a distance of only three miles from Aska, the Taluk and Block headquarters. Aska is a

rapidly growing township, having all the facilities of transport and communication, education, medical and veterinary services, co-operative and banking organisations. Above all, it constitutes an important market for the agricultural products of this region. The area is agriculturally quite prosperous owing to the old network of irrigation canals. The river Bada Nadi in this region and the wells constructed by the agriculturists extend further facilities of irrigation to the *rabi* crops of this village. The soil of Chadiapalli is rich in clayey loam. These locational advantages of the area have given rise to intensive utilisation of land through multiple cropping which is manifest in the cultivation of cereals like paddy, *ragi*, etc., and the cash crops like sugarcane and a large number of vegetables. The revival of a defunct sugar factory at Aska on a co-operative basis and the growing township are the major forces of change introduced recently in this area which have given renewed incentive to the sugarcane and vegetable growers of Chadiapalli.

For the selected households in Chadiapalli per capita land was 0.62 acres and per capita income was Rs. 140. The extent of literacy among the adult population (15 years and above) was 37 per cent of the total.

*Pabakhali* : The village Pabakhali (Nadia) situated in the boarder area of West and East Bengal is about four miles from Majdia, a railway station and an important wholesale market for agricultural products, particularly pulses. Pabakhali is surrounded on its three sides by the rivers Churni and Ichhamati. The sub-soil of a part of the village land retains sufficient moisture for cultivation of *mesta* and a number of vegetables. The absence of irrigation in this area, therefore, is not an acute problem for Pabakhali. On the contrary, drainage in the rainy season becomes a problem for this village. The cropping pattern of this village consists mainly of *aus* paddy and a number of pulses and vegetables. In the past the village economy was in a stagnant condition. After the partition of Bengal a group of refugees from East Bengal, who were not wholly pauperized, came to settle in this village. The strivings of the refugees for economic and social rehabilitation acted as a new force of change which brought the original inhabitants of Pabakhali into activity. Help from the government through grant of loans and the activities of the Krishnagunj Block were to some extent instrumental in stimulating new economic activities in this village.

In the selected households in Pabakhali, land available per capita was 0.74 acres, per capita income worked out to Rs. 162 and the extent of literacy among adult population was 54 per cent of the total.

*Hussainabad* : The village Hussainabad in the Pratapgunj police station (Saharsa) is located at a distance of 6 miles from Raghapur, the Block headquarters. The village suffers from transport difficulties, as bullock cart is the only means of transport to Raghapur from where the facilities of bus services can be had linking it to other parts of the region. The soil of this area is of sandy-loam type which produces a number of cereals like paddy and inferior millets. Jute is the only cash crop of this village, grown by most of the households though not on an extensive scale. There are no irrigation facilities in this area and cultivation depends entirely on rain water. The Raghapur Block is the only development project in operation in this area which had little impact on the economy of Hussainabad.

In the households selected in this village the amount of land available per capita was 0.66 acres, income per capita was Rs. 146 and proportion of literates among the adults was only 12 per cent.

#### CAPITAL EXPENDITURE ON DIFFERENT ITEMS

Data relating to the extent of capital expenditure on certain items of new investment and sources of finance in different villages as collected in the course of field investigation are presented in Table I.

*Purchase of land :* Although purchase of land does not lead to any net addition to capital assets in agriculture, it is an important investment on the part of an individual cultivator, as it constitutes an important outlet of savings and adds to the capital assets of the individual farm. In all the villages a large proportion of the total expenditure was devoted to purchase of land. It was as high as 54 per cent (Rs. 495 per farm) in Chadiapalli, about 20 per cent (Rs. 239 per farm) in Pabakhali and 25 per cent (Rs. 77 per farm) in Hussainabad. In all the villages expenditure per farm on purchase of land increased with the increase in the size of holding. The entire amount invested in this item was self-financed in Pabakhali and Hussainabad while in Chadiapalli it was mostly self-financed and partly financed by borrowings from moneylenders and sale of assets.

*Construction and major repairs of houses :* Next to purchase of land, expenditure on construction and repairs of houses was the largest in the case of Chadiapalli and Pabakhali, 35 per cent and 27 per cent of the total expenditure being allocated to this item in the respective villages. In Hussainabad, however, only 12 per cent of the total expenditure was incurred on construction of houses. Expenditure per farm on construction of houses showed a tendency to increase with the increase in the size of holding. The overall average expenditure per farm was Rs. 323 in Chadiapalli, Rs. 335 in Pabakhali and Rs. 37 only in Hussainabad. In all the villages the major portion of the total expenditure on this item was self-financed. Finance by borrowing from moneylenders accounted for 17 per cent of the total expenditure in Chadiapalli, 15 per cent in Pabakhali and 22 per cent in Hussainabad. Sale of asset in Chadiapalli and financial assistance from Government in Pabakhali covered respectively 15 and 2 per cent of the expenditure.

*Reclamation of waste land :* Reclamation of waste land was undertaken in Pabakhali alone. Expenditure on this item totalled Rs. 1,419 (Rs. 24 per farm), accounting for only 2 per cent of the total capital expenditure in this village. Expenditure per farm was found to increase somewhat with the increase in the size of holding. The entire expenditure on reclamation of land was self-financed.

*Irrigation work :* The nature of irrigation work undertaken by the farmers varied from village to village. In Chadiapalli it was wholly confined to construction of shallow wells while in Pabakhali it consisted of excavation of two tanks, sinking of a deep tubewell and acquisition of a pumping set. There was no investment in irrigation work in Hussainabad. In Pabakhali investment in irrigation work was confined mainly to larger holdings. Expenditure per farm in this village was Rs. 152, while in Chadiapalli it was as low as Rs. 25. About 12 per

TABLE I—CAPITAL EXPENDITURE ON SOME SELECTED ITEMS OF NEW INVESTMENTS IN THE THREE VILLAGES DURING 1956-1961 by SOURCE OF FINANCE

Village	Quantity/ No./Area	Total amount of new investment or disinvestment (—) (Rs.)	4	5	Total Amount Invested by Source of Finance							
					New in- vestment or dis- investment (—) per farm* (Rs.)	Self		Moneylender		Sale of Asset		Government
						Rs. Per cent	Rs. Per cent	Rs. Per cent	Rs. Per cent	Rs. Per cent	Rs. Per cent	
1	2	3	4	5	6	7	8	9	10	11	12	
Chadiapalli Pabakhali Hussainabad	Acreage 10.62 22.69 N.A.	30,235 (53.99)† 13,880 (19.72) 4,650 (25.60)	495.6 239.3 77.5	23,530 13,880 4,650	<i>Purchase of Land</i>							
					77.82	5,425	17.94	1,280	4.23	—	—	
					100.00	—	—	—	—	—	—	
Chadiapalli Pabakhali Hussainabad	Number 26 13 10	19,760 (35.25) 19,475 (27.66) 2,215 (12.19)	323.9 335.8 36.9	<i>Construction and Major Repairs of Houses</i>								
				13,520	68.42	3,340	16.90	2,900	14.68	—		
				16,225	83.31	2,900	14.89	—	—	350	1.80	
Pabakhali	Acreage 9.18	1,419 (2.01)	24.5	1,419	<i>Reclamation of Waste Land</i>							
					100.00	—	—	—	—	—	—	
					—	—	—	—	—	—	—	
Chadiapalli Pabakhali	Number 30 4	1,547 (2.76) 8,840 (12.56)	25.4 152.4	1,412 3,400	<i>Irrigation Work</i>							
					91.27	135	8.73	—	—	—	—	
					38.46	—	—	—	5,440	61.54	—	
Pabakhali	Acreage 8.43	1,126 (1.60)	19.4	1,126	<i>Laying Orchards</i>							
					100.00	—	—	—	—	—	—	
					—	—	—	—	—	—	—	
Chadiapalli Pabakhali Hussainabad	No. of Cat- tle gained(+) or lost(—)	-720 7,368 (10.47) 4,900 (26.98)	-11.8 127.0 81.7	<i>Draught Animals</i>								
				—	—	—	—	—	—	—		
				100.00	100	2.04	—	—	—	—		
Chadiapalli Pabakhali Hussainabad	-12 +9 +4	-892 1,145 (1.63) 1,080 (5.95)	-14.6 19.7 18.0	<i>Milch Animals</i>								
				—	—	—	—	—	—	—		
				100.00	—	—	—	—	—	—		

(Contd.)

TABLE I—Contd.

1	2	3	4	5	6	7	8	9	10	11	12
Pabakhali	.. .. .	205 ( 0.29)	34.2	110	Improved Tools 53.66	.. .. .	.. .. .	.. .. .	.. .. .	95	46.34
Chadiapalli	.. .. .	335 ( 0.60)	5.5	295	Bullock Carts 88.06	40	11.94	.. .. .	.. .. .	.. .. .	.. .. .
Chadiapalli	.. .. .	3,140 ( 5.61)	51.5	2,640	Business or Industry 84.08	500	15.92	.. .. .	.. .. .	.. .. .	.. .. .
Pabakhali	.. .. .	1,400 ( 1.99)	24.1	1,400	100.00	.. .. .	.. .. .	.. .. .	.. .. .	.. .. .	.. .. .
Pabakhali	.. .. .	1,309 ( 1.86)	22.6	1,309	Bicycles 100.00	.. .. .	.. .. .	.. .. .	.. .. .	.. .. .	.. .. .
Chadiapalli	.. .. .	50 ( 0.09)	2.1	50	Ornaments 100.00	.. .. .	.. .. .	.. .. .	.. .. .	.. .. .	.. .. .
Pabakhali	.. .. .	1,208 ( 1.72)	20.8	1,208	100.00	.. .. .	.. .. .	.. .. .	.. .. .	.. .. .	.. .. .
Hussainabad	.. .. .	5,310 (29.23)	88.5	5,210	98.12	100	1.88	.. .. .	.. .. .	.. .. .	.. .. .
Chadiapalli	.. .. .	930 ( 1.66)	15.2	930	Purchase of Shares 100.00	.. .. .	.. .. .	.. .. .	.. .. .	.. .. .	.. .. .
Pabakhali	.. .. .	250 ( 0.35)	4.3	250	100.00	.. .. .	.. .. .	.. .. .	.. .. .	.. .. .	.. .. .
Hussainabad	.. .. .	10 ( 0.05)	0.4	10	100.00	.. .. .	.. .. .	.. .. .	.. .. .	.. .. .	.. .. .
Pabakhali	.. .. .	10,532 (14.96)	181.6	10,532	Savings Bank Deposits .. .. .	.. .. .	.. .. .	.. .. .	.. .. .	.. .. .	.. .. .
Pabakhali	.. .. .	2,239 ( 3.18)	38.6	2,239	Life Insurance Premium .. .. .	.. .. .	.. .. .	.. .. .	.. .. .	.. .. .	.. .. .
Chadiapalli†	.. .. .	55,997 (100.00)		55,997	Total Volume of Capital Expenditure (100.00)						
Pabakhali	.. .. .	70,396 (100.00)		70,396	(100.00)						
Hussainabad	.. .. .	18,165 (100.00)		18,165	(100.00)						

\* Expenditure per farm is calculated on all the farms investing or non-investing.

† Figures in brackets denote percentages to total.

‡ Figures relating to total volume of capital expenditure in Chadiapalli are exclusive of disinvestments in draught and milch animals.



cent of the total capital expenditure in Pabakhali and only 3 per cent of that in Chadiapalli were devoted to irrigation work. In Pabakhali this investment was partly (30 per cent) self-financed and largely (62 per cent) financed by the Government while in Chadiapalli it was largely (71 per cent) self-financed and partly (9 per cent) financed by borrowings from moneylenders.

*Laying of orchards* : Investment in laying orchards was observed in Pabakhali alone. The total expenditure on this item was Rs. 1,126 (Rs. 19 per farm), which was wholly self-financed. Expenditure per farm on this item was found to be higher in the larger holdings.

*Draught cattle* : Purchase of draught cattle was remarkably extensive in Pabakhali and Hussainabad which involved a total expenditure of Rs. 7,368 (Rs. 127 per farm) and Rs. 4,900 (Rs. 82 per farm) in the respective villages. The proportion of total capital expenditure devoted to this item was about 10 per cent in Pabakhali and as high as 27 per cent in Hussainabad. Expenditure per farm on this item was higher for the larger farms. Self-financing covered the entire expenditure in Pabakhali and about 98 per cent of the total expenditure in Hussainabad. In Hussainabad finance by borrowings from moneylenders accounted for only 2 per cent of the total expenditure. In Chadiapalli there was a net disinvestment of Rs. 720 in draught cattle. Deaths of a number of cattle due to spread of cattle disease were responsible for the net loss of this capital asset in Chadiapalli.

*Milch animals* : New investment in milch animals was less extensive than that in draught cattle, as a sum of only Rs. 1,145 (Rs. 20 per farm) in Hussainabad and only Rs. 1,080 (Rs. 18 per farm) in Pabakhali were spent on this item. The proportion of total capital expenditure devoted to this item was 6 per cent in Hussainabad and only 2 per cent in Pabakhali. The entire expenditure in both the villages was self-financed. Taking all the selected farms in Chadiapalli there was a net loss of capital in this item also. The net disinvestment in milch cattle amounted to Rs. 892, i.e., Rs. 15 per farm.

*Improved tools* : Expenditure on acquisition of improved tools like seed-drills and wheel-hoes was observed in Pabakhali alone. A total sum of Rs. 205 only was spent on improved tools. About 46 per cent of this expenditure was met by financial assistance from the Government and the rest was self-financed.

*Bullock carts* : New investment in bullock cart was observed in Chadiapalli alone. Expenditure on this item constituted an insignificant part (0.6 per cent) of the total capital expenditure in this village. About 40 per cent of the total amount (Rs. 335) spent on bullock carts was financed by borrowings from moneylenders and the rest was self-financed.

*Business or industry* : Expenditure in setting up new business or industry accounted for 5 per cent of the total capital expenditure in Chadiapalli and only 2 per cent in Pabakhali involving a total sum of Rs. 3,140 (Rs. 51 per farm) and Rs. 1,400 (Rs. 24 per farm) in the respective villages. There was no new investment on this item in Hussainabad. In Chadiapalli this investment was largely self-financed and partly financed by borrowings from moneylenders, while it was wholly self-financed in Pabakhali.

*Bicycles* : Purchase of bicycles was noticed in Pabakhali alone. Farms belonging to all holding groups invested in bicycles. The total amount invested in this item was Rs. 1,309 (Rs. 22 per farm) which was self-financed to the fullest extent.

*Ornaments* : In Hussainabad the largest proportion (29 per cent) of the total capital expenditure was devoted to purchase of ornaments. It was widespread among farms of all sizes. Purchase of ornaments was an insignificant item of expenditure in Chadiapalli and Pabakhali and was wholly self-financed. Self-financing in Hussainabad met 98 per cent of the expenditure and the rest was effected by borrowings.

*Purchase of shares* : Expenditure on purchase of shares was the highest (Rs. 930) in Chadiapalli, followed in order by Pabakhali (Rs. 250) and Hussainabad (Rs. 10). The proportion of total capital expenditure incurred on this item was about 2 per cent in Chadiapalli, while it was 0.3 per cent in Pabakhali and only 0.05 per cent in Hussainabad. In all the villages the entire amount was self-financed.

*Deposits in Savings Bank* : In Pabakhali deposits in Savings Banks were noticed among farms of all size-groups. The total sum deposited during the five-year period 1956-61, was Rs. 10,532 (Rs. 182 per farm), which accounted for as high as 15 per cent of the total capital expenditure. Deposits in Savings Banks were not found in Chadiapalli and Hussainabad.

*Life Insurance* : During the five-year period 1956-61, a total amount of Rs. 2,239 (Rs. 39 per farm) was paid towards life insurance premium by the selected farms in Pabakhali. Investment in life insurance was confined to farms below 10 acres in size. About 3 per cent of the total capital expenditure was devoted to this item. There was no investment in life insurance in Chadiapalli and Hussainabad.

#### CONCLUSION

From the foregoing observations it is apparent that the pattern of capital formation in the agricultural sector of the three villages under study is characterised by predominance of either house construction or purchase of land. House construction is indicative of the pressing need for the housing of farm households. Purchase of land is a mere transfer of asset from one owner to another. It is capital formation from the point of view of the individual farms but has little significance in terms of physical capital formation for the community as a whole. There is scope for more activities in respect of improved tools and implements to raise the level of farm efficiency. Greater backwardness of the village of Hussainabad is reflected in the largest proportion of new investment in ornaments observed here. Such hoarding adversely affected physical capital formation in the farm economy of this village. Epidemic diseases by taking heavy toll of cattle lives very often work as a capital-decumulating factor. This is evident from the experience of Chadiapalli which is, however, progressive in other directions.

Self-finance, that is to say, savings out of income constitute the greatest source of capital formation, the credit system being still too undeveloped to exert its influence on finance. In the absence of an elaborate credit system anything

that would increase farm income including price support measures would be helpful to capital formation.

Migration and resettlement of a community often lead to new ways of living at the cost of traditions and conservatism. Greater degree of capital formation in the village of Pabakhali is a development in the wake of new patterns of living. Growth of market, urbanization and greater progress of development efforts around Chadiapalli obviously induced new investment in this village including introduction of new crops on a large scale, introduction of improved variety of sugarcane and enhanced rate of application of fertilizers.

Similarly, inadequacy of development efforts in Hussainabad accounted for deficiency of this village in capital formation.

Development projects should, therefore, be so designed as to promote new institutions and patterns of living as well as a comprehensive credit system which would provide an effective stimulus to accumulation of physical capital—an essential condition for maintaining a continuous increase in agricultural production.

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## POSSIBILITIES OF CAPITAL FORMATION IN AGRICULTURE IN CUTTACK (ORISSA)

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In this paper an attempt is made to study the effects of irrigation and size of farms on capital formation in agriculture. The study is confined to Jagatsinghpur police station of Cuttack district in Orissa. The study refers to the year 1961-62.

### *Sampling Technique*

Jagatsinghpur police station has 366 villages out of which 28 villages are unirrigated and the rest are canal irrigated. All the villages were stratified into irrigated and unirrigated villages and one from each category was selected at random with probability proportional to cultivating population. The sample villages were further classified into five size-groups of 0-2, 2-4, 4-6, 6-8, and above 8 acres. From each of the villages and from each of the size-groups, two farms were selected at random for the purpose of the study. Thus 20 holdings were selected out of the two sample villages. They constituted about 17.30 per cent of the total cultivated area of the sample villages. The enquiry was conducted by survey method.