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IMF/WORLD BANK STRUCTURAL ADJUSTMENTS IN LESS DEVELOPED COUNTRIES WITH SPECIAL REFERENCE TO INDIA

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One major function of the IMF is to provide its member countries with financial aid to cover short term gaps in the balance of payments. A member country requiring an IMF loan beyond 50 percent of its quota has to agree to a stabilisation programme with the IMF and sign a stand-by agreement. In this, the government of the country concerned has to commit itself to undertake wide-ranging changes in its policies which, the IMF believes, will restore a healthy balance of payments. In 1974, the IMF created the Extended Fund Facility (EFF) to advance (2-3 years') medium-term loans to a member country facing chronic balance of payments problems. In the EFF arrangement, a member country has to agree to more stringent conditions on its economic policies designed to remedy the 'structural' causes of balance of payments deficits.

This conditionality has been a major point of contention in the activities of the IMF. The conditionality is a great departure from the standpoint taken by Keynes at the time of Bretton Woods negotiations— free and unconditional access for deficit countries to the resources of the IMF.

As for the World Bank, their loans for development projects always carried conditions to which the borrower had to agree and some of these conditions required policy changes. Since March 1980, the World Bank in close cooperation with the IMF has been advancing loans to finance structural adjustment programmes in the countries facing serious balance of payments deficits. The majority of the World Bank terms do not differ much from those of the IMF.

The IMF plays the role of a catalyst for other sources of financing. A country facing a payments crisis often decides to sign IMF agreements because this seems to be the only way of restoring the country's credit-worthiness on the international capital markets. So the actual amount of loans by the IMF is of secondary importance : the decisive factor is

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the 'seal of approval' of the IMF. This indicates to the creditors that the country concerned is capable of repaying and willing to repay past loans. Thus the IMF's 'seal of approval' gives a green light for further loans.

What are the conditionalities ? What are the IMF/World Bank rationales behind these ? A high rate of domestic inflation is identified as the basic reason behind the balance of payments deficit of a country. So the adjustment policy aims at fighting inflation. Excessive public expenditure not covered by revenue (budget deficit) is taken as the major cause of inflation. So a reduction in the budget deficit is one of the stabilisation objectives in most of the IMF/World Bank—supported programmes. For this they call for reducing or eliminating food subsidies and expenditures on different social welfare schemes. To reduce the budgetary burden of the government, state enterprises are expected to cover their costs by raising the prices ot their goods and services. Public utility services are not exempted from this conditionality.

Besides all these, the IMF/World Bank ask for limiting domestic credit expansion and raising interest rates to curb the demand for credit. Thus domestic money supply and demand are sought to be controlled by reduction of budget deficit and domestic credit. Another instrument of controlling demand is strict limitation ot wage increase by curbing the power of trade unions. This is also expected to improve the competitive efficiency of domestic firms and encourage foreign investment.

Substantial devaluation of national currency is, as a rule, one of the central demands of the IMF/World Bank as the high rate of inflation leads to an over-valued real exchange rate which in turn encourages imports and discourages exports. Devaluation often goes hand in hand with abolition of exchange controls and restrictions on profit transfers. These are designed to create favourable conditions for foreign investment in order to restore confidence among foreign capital investors and to guarantee a long-term inflow ot capital.

For growth of the economies suffering from balance of payments deficits, the IMF/World Bank believe in the efficiency of the market and rely on the growth of the private sector. So they insist on the privatisation of the state sector and suggest different measures for the private sector to flourish. Liberal entry of foreign capital is also in their menu of growth policies.

A study of India's so-called 'New Economic Policy' (NEP) in the light of the above discussion will make it clear to any independent

observer that there is nothing new—all old wine (IMF/World Bank policy prescriptions) in new bottle (India) I   The question is how far the set of prescriptions are effective.

One important criticism of the structural adjustment programmes is that these put the burden of adjustment only on deficit countries while little pressure is exerted on surplus countries to adjust in order to remove their surplus. Surpluses always occur whenever economies have a limited import capacity compared to their capacity to conquer export markets. The deficit in the balance of payments of the debtor countries, therefore, reflects the structures of the surplus countries.

Another point of criticism is that the IMF/World Bank has put too much emphasis on internal adjustment via demand deflation for eliminating balance of payments deficit and too little on development. Their deflationary policies often lead to short-term stabilisation of the balance of payments at the cost of increasing unemployment and reduction in growth rates or even an absolute reduction in the GDP.

The IMF/World Bank policy of reduction of state influence on the economy also hampers development as it does not automatically lead to an increase in private investment.   In many LDCs, due to the absence of a national entrepreneurial class, only the state can take the intiative for economic development. A reduction in state investment frequently leads to reduction in aggregate investment. Recent studies have shown that IMF/World Bank conditionality led to a decline in the adjusting country's investment as a share of the GDP.   This contradicts their much publicised objective of adjustment with growth.

Moreover, the IMF/World Bank reliance on trade liberalisation and open door policy for transnationals led to a takeover of domestic production by foreign-owned companies and an increase in foreign debt. Some case studies showed that the transnational companies had negative effects on the balance of payments of the host countries. Their operation leads to more imports of arbitrarily priced capital goods, raw materials and intermediate goods, remittances in the form of royalties, technical fees, profits and interests ; the sum total of all these often exceeds the value of the exports produced by them plus the inflow of equity capital and loans generated through their influence. Hence, it can be argued that the less developed countries have lost far more through the IMF/World Bank liberalisation policy packages than they have benefitted from the additional finance.

For a country with a large domestic market as in India, foreign capital inflows do not boost exports. In the past, the Indian government

insisted on transnationals such as Pepsi Cola exporting a part of their products produced in India. But on some pretext or other these companies did not comply with the export clause attached to their conditions of entry. Now under NEP, this export clause does not exist in most of the cases. From Fun Munch (potato chips) to Coca Cola, many 'essential' items are produced/marketed under direct foreign investment or 'technical' collaboration. Inflow of foreign capital has pushed up India's foreign exchange reserves and made the 'floating' rupee stronger. So India can say no to the last installment of IMF loan. But we foresee a swelling debt burden of India in the near future, as happened to other countries under the IMF/World Bank therapy.

Devaluation recommended for curing balance of payments deficits can also be questioned. Export expansion may not be possible through devaluation for a number of reasons such as inelastic demand, competitive devaluation by others producing and exporting similar kinds of products, increasing protectionism in the OECD countries etc.

On the import side, in a country such as India where there is high income inequality and a huge sum of unaccounted money, it is very difficult to control imports through devaluation accompanied by import liberalisation. In spite of devaluation and price rise, increasing imports of luxury goods and inputs and machines to produce these goods cannot be checked.

Moreover, devaluation-led inflation creats a situation where imports may not be much costlier than domestic goods. Besides all these, in the less developed countries such as India, there is always a craze for 'foreign' goods among a large section of the population partly due to the colonial legacy and partly due to the international demonstration effect. Perhaps this is one important factor behind the USA to seek entry of their costly garments to India in exchange of Indian garments to the USA under the new GATT agreement.

The above discussion leads to some scepticism against devaluation as a policy of curing balance of payment deficit of a country. There are some empirical evidences to substantiate the intuitive arguments. One study considered a selected group of 29 countries covering all the highly indebted countries (HICs) and some large debtor countries. It did not find any significant relationship between the percentage rates of 'real' devaluation and the percentage changes in export volumes over the period 1980-82 and 1983-86.

Recently there was another study on Indian experience over the period 1971-91. It used the latest statistical techniques (unit-root

econometrics) and observed real and nominal devaluation of Indian rupee over the period of study. But the real (and nominal) exchange rate movements do not have any meaningful relationship with India's export performance, import restraints and inflow of foreign funds by way of private remittances ; nor these have any relationship with India's balance of trade and payments behaviour (see *Economic and Political Weekly's* October, 1991 and 1 January, 1994).

From the above analysis, it is clear that the IMF/World Bank stabilisation programmes ensure neither adjustment nor growth in the debtor countries who are compelled to abide by these programmes in the face of their payment crisis and lack of international creditworthiness. Under these stabilisation programmes, measures recommended to various countries show a 70-80 percent overlap of identity. It is difficult to understand that the great variety of circumstances among different debtor countries justifies such identical policy packages. This suggests that the policy packages themselves are derived from preconceived theory rather than from concrete analysis of specific situations of the less developed countries. In this perspective, the countries requiring IMF/World Bank assistance defer their applications as far as possible. In most cases, debtor country seeks such assistance only when it is forced to do so as its economic system is on the verge of collapse. For instance, India asked for IMF help only when it was left with a foreign exchange balance sufficient to pay for only a week's imports. This desperation gave IMF/World Bank leverage to play the role of village money lenders. India should try to free herself from the conditionality of the IMF/World Bank.

BACK VOLUMES ARE AVAILABLE

INTEGRATED RURAL DEVELOPMENT PROGRAMME
VILLAGE LEVEL IMPLEMENTATION IN MIDNAPORE DISTRICT

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One of the major objectives of rural development in India during the post-independence period has been the alleviation of poverty in the rural areas.[1]   Of the programmes for poverty alleviation that have been adopted during the planned era Integrated Rural Development Programme (IRDP) is the single-most important and the much-talked-about programme for the improvement of the lot of the rural poor.[2]   This programme has been in operation throughout the country for about a decade and a half. IRDP's objective has been to enable selected poor families in rural areas to cross the poverty line.   This has been sought to be achieved by providing assets and inputs to the target group members (which consist of small and marginal farmers, agricultural labourers and rural artisans) so that the income generation capacity of the beneficiary families is increased. The assets creation could be in primary, secondary and tertiary sectors and are provided through financial assistance in the form of subsidy by the government and term credit advanced by financial institutions.   The programme is being implemented in all blocks of the country since Second October 1980 as a centrally sponsored scheme funded on 50 : 50 basis by the Centre and the States.[3]   Though physical and financial achievements under IRDP during the Sixth and Seventh Five Year Plan and later have exceeded the target[4], the impact of the programme has not been satisfactory and it varies across the States of India.[5]   Since it continues to be major instrument to alleviate rural poverty, it is proper that the progamme is evaluated at the micro-level to help us understand whether planning and implementation of the programme has been proceeding in the right direction and whether the families covered under the programme within the area of study benefited through generation of additional employment and income.   The income generating capacity of a beneficiary scheme depends not only on the kind of linkages and infrastructures available in the area but also on the skills and efficiency of the implementing authority.   Administration as a whole should take

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responsibility for creating such infrastructures, though the process invol-ved is time—and resource-consuming. Appropriateness of schemes would also have to be looked into as a part of the process of implementation and monitoring. While the general guidelines for the IRDP have been determined at the national level, the implementation of the programme and its performance have been far from uniform across the country.[6] A study of village level implementation and impact of the programme may make for a better understanding of the functioning of the programme. In this perspective the present note is an attempt to study four villages under two blocks of Midnapore district in West Bengal.

II
Objectives of the Study

Keeping in view the aforesaid considerations, the major objectives of the study are as follows :

(i) to assess the role of development agencies involved with the programme ;

(ii) to examine the impact of IRDP on the economic conditions of the beneficiaries assisted ;

(iii) to examine the recovery position of the programme in the study area ;

(iv) to analyse the factors which influence the income (out of IRDP) of the beneficiaries ;

(v) to analyse the relative importance of the factors which explain the totol income of the beneficiaries.

Methodology

Study area and sample design :

Our study area covered four villages, namely Kanko and Chianbera of Binpur-II block (relatively backward) and Pulsit and Kumarhat of Panskura-II block (relatively developed) of Midnapore district in West Bengal. The process of stratified random sampling was adopted. For the study, we had taken randomly from a census list of households 100 IRDP beneficiaries spread over the four villages of the two blocks in the district.

Types and methods of data collection :

Both Primary and Secondary data have been collected for the study. The study has been in the nature of a survey and was mainly based on primary data collected on the basis of a questionnaire and personal

interview method. It was the heads of the beneficiary households who were interviewed, but the data related to all members of the households.

The broad items on which primary data were collected for the study were as follows :

General information : (i) Earning-dependent and age group classification and literacy conditions of the beneficiary household ; (ii) Occupational features ; (iii) Physical assets ; (iv) Use of infrastructural facilities ; (v) Consumption pattern ; (vi) Net income ; (vii) Saving and indebtedness ; (viii) Type and volume of Government assistance other than IRDP assistance.

Particular information about IRDP : (i) Beneficiary identification and selection of schemes for them ; (ii) Type and volume of IRDP assistance ; (iii) Time lag between camp meeting/date of application and loan disbursement ; (iv) Monitoring ; (v) Participation of beneficiaries with the programme ; (vi) Net income from IRDP assets ; (vii) Repayment of loans ; (viii) Beneficiaries' assessment about the IRDP and different agencies relating to the programme.

In addition to the primary data, a good bit of information was collected from secondary sources such as DRDA, Block, Bank, Gram Panchayat. Information for the study were also gathered from personal discussion with the project officers of DRDAs, Block Development Officers of the blocks, bank level branch Managers, Pradhans at the Gram Panchayat level.

Statistical techniques used :

The collected primary and secondary data have been subjected to various statistical techniques for analysis. We used frequency and percentage distribution, average, variance, ratio, correlation, t-test, linear multiple regression for analysis of data.

III

Socio-economic perspective of the blocks and villages

To make the perspective clear, a brief socio-economic profile of the blocks was prepared. This shows that the block Binpur-II was backward relative to Panskura-II block of the district. Binpur-II block, is situated in extreme North-West corner of Jhargram sub-division of Midnapore district covering an area of 576.19 square kms (wholly rural). In view of its geographical location, extremity of weather, low fertility of soil, undulation of earth and low agricultural productivity, Government has declared it a Drought Prone Area Programme (DPAP) block. In contrast, Panskura-II is one of the developed blocks of Tamluk sub-

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division of Midnapore district, situated on the Eastern Region of the district and covering an area of 152·76 sq. kms.

Table-1 SOME SOCIO-ECONOMIC CHARACTERISTICS OF
BINPUR-II AND PANSKURA—II BLOCKS

Sl. No.	Indices	Binpur-II block	Panskura-II block
1.	Percentage of SC/ST population to total population	49.35	8.76
2.	Percentage of workers to total population	46.46	29.75
3.	Percentage of cultivable area to total area	39.61	76.99
4.	Percentage of area in which more than one crop is grown	23.89	53.37
5.	Percentage of irrigated area	37.43	56.17
6.	Percentage of Draught Prone area	100·00	00·00
7.	Percentage of villages electrified	3.20	30.70
8.	Literacy rate	43.90	60.98
9.	Percentage of rice area to total cropped area	95·00	91·00
10.	Rice yield per hectare (kgs)	1505	1916

Source :   (i)   Census—1991 (Provisional)
        (ii) Economic Review, Govt. of West Bengal
       (iii) Annual Plan on Agriculture, 1986-87, Midnapore.

Binpur-II block is backward in respect of infrastructural facilities and in terms of other indices (Table 1). In respect of power infrastructure, health facilities and supply of drinking water the block is very poor ; the block headquarter is situated at Belpahari at a distance of 40 kms from the subdivisional headquarter Jhargram. While Midnapore district town is beyond 100 kms., the only communication with the towns are point to point bus service.

The economy of the Binpur-II block is almost wholly dependent on agriculture and allied activities. In industry sector, the block is definitely backward. Like other backward regions, the economic and social overheads are poor in Binpur-II and naturally the tempo and growth of enterpreneurship is slow. In terms of industry, Panskura-II

block is relatively developed.   Kolaghat Thermal Power Plant (K.T.P.P.) is located in Panskura-II block area. The distance of the block head-quarter from Calcutta is within 80 kms., while that between Binpur-II block and Calcutta is beyond 250 kms.

Soil conditions in the block Binpur-II are adverse for the pursuit of agriculture, as 95 per cent of the total area is laterite whereas only 5 per cent alluvial soil is available mainly for single cultivation. The percentage of cultivable area to total area is only 39.61 and the area in which more than one crop is grown is 23.59 per cent of the total culti-vable area of the block. On the other hand, in Panskura-II block soils are mostly alluvial and about 77 per cent of total area is used for cultivation. Further, more than 50 per cent of cultivable area are sown more than once.

Table 2 presents some general information   about   the sample villages of Kanko, Chianbera Pulsita and Kumarhat. As noted earlier Kanko and Chianbera belong to relatively backward block of Binpur-II. Between these two villages, Kanko is relatively developed in which only 4.6 per cent of population belong to SC and ST community and literacy rate

Table-2   GENERAL INFORMATION OF THE SAMPLE VILLAGES

SI. No. (1)	Items (2)	Kanko (3)	Chianbera (4)	Pulsita (5)	Kumarhat (6)
1.	Area (in hectares)	128.18	125.05	63.5	69.48
2.	No. of Households	186	109	113	189
3.	Total population	1017	523	772	1132
4.	Percentage of SC/ST population	4.6	95.1	2.6	26.9
5.	Literacy rate	56.2	45.1	59.6	N.A.
6.	Distance from nearest market (km)	1	6	½	1
7.	No. of IRDP beneficiary families during 1935-86 to 1990-91 (approx.)	70	31	55	50

Source :   (i)   District Census Handbook (1981), Midnapore.
          (ii) Respective Gram Panchayat Office.

is higher than that in Chianbera and Kangsabati canal is the main source of irrigation. Kanko is situated on pucca road and near the market. Binpur is only 1 km distant. Whereas in Chianbera, SC/ST dominated village, there is no canal and is approached by Kutcha cart road which becomes well-nigh impassiable during the rainy season. Both the villages Pulsit and Kumarhat are electrified and situated on the pucca road and near the market centre.

IV

Tests of Hypothesis

Basic hypotheses to be tested were the following :

(i) The percentage of beneficiaries crossing the poverty line is higher in the relatively developed area than in the backward area ;

(ii) The higher the performances of the development agencies the greater the impact of the programme ;

(iii) The poorer the economic conditions of the beneficiary households the lower the recovery of loan ;

(iv) Project cost, time delay in grounding of the scheme, monitoring and beneficiary's choice of the scheme are the important determinants of income under IRDP of the beneficiary households ;

(v) Amount of productive assets, size of land holdings and income generated by IRDP fund are the crucial factors to explain the variation in total income of the beneficiary families.

The Tests

We observe that the percentage of beneficiary households crossing the poverty line of Rs 2200 per capita annual income in Panskura-II (which is the relatively developed block) was 35, while for the Binpur-II, the backward block, the same was 20 per cent. The said percentage for the sample villages was 50 per cent for Kanko, 10 per cent for Chianbera, 40 per cent for Pulsit and 30 per cent for Kumarhat. It has also been observed that there was a great difference in respect of project cost, time delay of grounding the scheme, monitoring, income from IRDP asset, repayment of loan, asset possession and level of living between the beneficiaries who crossed the poverty line and the others who did not (Table-3). Hence, our first hypothesis is accepted.

While reviewing the performance of the IRDP at the block level we got some remarkable insights. The physical achievement of the programme during the 7th five year plan in Panskura-II block has exceeded the target by 24.4 per cent, whereas in Binpur-II block

Table-3   SOME STATISTICAL MEASURES AS REGARDS ATTRI-
BUTES OF IRDP AND PHYSICAL QUALITY OF LIFE
FOR THE BENEFICIARIES

Sl. No.	Items	Beneficiaries who crossed proverty line		Beneficiaries who did not cross the poverty line	
		$\bar{x}$	C.V	$\bar{x}$	C.V
1.	Project Cost (Rs)	7711	24	4474	50
2.	Time delay of grounding the scheme (Month)	6.5	35	15	46
3.	Monitoring (No. of visits)	2.9	14	1.6	50
4.	Income out of IRDP Fund (Rs/month)	492	19	140	54
5.	Repayment of loan (Rs)	1080	90	722	99
6.	Consumption expenditure (Rs per capita per month)	243	16	118	26
7.	Literacy rate (%)	85	20	55	42
8.	Land (in acre)	1.33	102	0.81	66
9.	Other productive assets (Rs)	4472	38	1948	88

Note : $\bar{x}$=Mean value of the respective items.
C.V.=Coefficient of variation.

Source :   Field Survey

that has fallen short by 17.4 percent of the target. Best performance has been recorded in Panskura-II block in respect of the coverage of old families during the 7th plan period. In this respect the percentage of achievement to target was 118.82 for Panskura-II block, whereas the figure for Binpur-II block was only 39.80 per cent during the plan. As against the stipulated target in respect of SC/ST coverage Panskura-II block has achieved the target whereas Binpur-II has lagged behind in this respect also.

The overall impression one gets from the analysis of the study is that the Panskura-II block has an impressive performance in respect of IRDP compared to Binpur-II block and the credit for this goes mostly to the Block and Bank officials and particularly to the Gram Panchayat functionaries who are attached with the grass-root level of the programme of the block.

Table-4 SOME STATISTICAL MEASURES AS REGARDS IRDP
        PROJECTS OF THE SAMPLE BLOCKS

Aspects of projects	Mean		Difference of Mean	t-value
	Binpur-II	Panskura-II		
Project cost (Rs)	4571	6158	1587	1.98
Time delay in grounding the scheme (month)	15.8	9.7	6.1	2.94
Monitoring (Average No. of visits)	1.7	2.1	0.4	1.58
Project income (Rs)	2295	3425	1130	1.72

Source : *Field Survey.*

Moreover, from the study of the sample beneficiaries it has been
observed that there was a significant difference in respect of project cost,
time delay in grounding of the scheme, monitoring, project income of the
programme between Panskura-II block and Binpur-II block (Table-4).
The table shows that in every respect Panskura-II block is in better
position compared to Binpur-II block. Hence, our second hypothesis is
also accepted.

As regards the loan component of IRDP it has been observed from
the study that the recovery of loan is partially associated with the income
generation of the project which in turn depends upon the success of the
programme. About 80 per cent of sample beneficiaries under Binpur-II
block has been recorded as defaulter, whereas the said figure for
Panskura-II block was 30 percent. The study has also reflected the fact
that it was not unwillingness to pay but inability to pay that was the
main reason of default in most of the cases of repayment of loan. The
correlation coefficient of the loan repayment with income of the bene-
ficiary was 0.61 and with productive assets it was 0.78. Thus, our third
hypothesis is accepted. It may be noted in this context that another
important factor which might explain loan default was the expectation of
the beneficiaries about the Government announcement of loan remission.
It has also been observed that there was a lack of co-operation between
the officials and the elected bodies of the Panchayat Raj.

Our fourth hypothesis has been tested on the basis of the results
obtained in linear multiple regression model. The estimated regression
model is

$$Y = -1539.350 + 0.628X_1^* - 16.933X_2^{NS} + 402.949X_3^* + 748.476X_4^*$$
$$(61.27) \quad (-2.66) \quad (15.37) \quad (10.41)$$
$$R^2 = 0.844, \quad \bar{R}^2 = 0.837, \quad F = 128.49$$

No. of observations = 100, Degrees of freedom = 95

where,

Y = Project income (in Rs)

X_1 = Project investment (in Rs)

X_2 = Time delay in grounding of the scheme (in month).

X_3 = Monitoring (Average No. of visit).

X_4 = Dummy (= 1 for beneficiary's choice of scheme, = 0 for otherwise)

[**Note** : The figures in parentheses just below each of the regression coefficient in the functions indicate the percentage contribution to the explained variation by the corresponding independent variable.

* indicates significant at one per cent

** indicates significant at five per cent

NS indicates not significant.]

It is observed that about 84 per cent variation in the model is explained by the independent variables X_1, X_2, X_3 and X_4. The highest variation was explained by the variable project investment, X_1 (61.27 per cent) followed by monitoring, X_3 (15.37 per cent) and beneficiary's choice of scheme i.e. dummy variable, X_4 (10.41 per cent). The variables—project investment, monitoring and dummy—are statistically significant and have positive contribution to the income generation from the project (Y) while the time delay in grounding the scheme (X_2), as expected, has negative contribution but it is insignificant. Hence, our fourth hypothesis is accepted.

To test the fifth hypothesis we used the results obtained in the following linear multiple regression model

$$Y = 3902.497 + 0.531 X_1^{**} + 0.535 X_2^* + 3519.437 X_3^*$$
$$(21.90) \qquad (48.09) \quad (8.31)$$

$R^2 = 0.783$, $\bar{R}^2 = 0.776$, F = 115.47

No. of observations = 100, Degrees of freedom = 96

Where,

Y = income of the beneficiary families (in Rs)

X_1 = income generation from the project (in Rs)

X_2 = amount of productive assets (in Rs)

X_3 = size of land holdings (in acre).

The results indicate that the model is statistically significant at one per cent level which, in a way, suggests that the variation to the extent of 78.3 per cent was explained by the model. The highest variation was explained by the variable 'productive asset', X_2 (48.09 per cent), followed by income generation from the project, X_1 (21.90 per cent) and size of

land holdings, X_3 (8.31 per cent). It is also observed that all independent variables have desired sign i.e. the variables X_1, X_2 and X_3 have positive effect on family income (Y) of our sample beneficiary households. Hence, the fifth hypothesis is also accepted.

<div align="center">V</div>

Summary and Conclusion :

One of major objectives of rural development in India during the post-independence period has been the alleviation of poverty in the rural areas. Of the programmes for poverty alleviation, Integrated Rural Development Programme (IRDP) which was introduced in the late 1970's and continues to be implemented in all blocks of the country as a centrally sponsored scheme is a single most important and the much talked-about-programme for the improvement of the lot of the rural poor. The present note has made an attempt to study four villages under two blocks of Midnapore district in West Bengal. From the micro level study based on randomly selected 100 beneficiaries spread over four villages it has been observed that the impact of the programme is higher in relatively developed area than in the backward area. Moreover, the success of the programme is greater in cases of the beneficiaries who have possessed greater amount of productive assets. The study has also reflected the fact that the higher the performance of the development agencies involved with the programme the greater the impact of the programme. There is a significant difference in respect of project cost, time delay in grounding the scheme, monitoring, income generation from the project, recovery of loan of the programme between the developed and the backward study area. Regarding the implementation of the project it has been observed that the time delay in grounding the scheme is, on the average, more than one year for the sample as a whole against the stipulated time lag of 3 months (as per IRDP guidelines), which results in cost escalation of projects and, moreover, the enthusiasm of the beneficiaries in implementation of the project gets eroded considerably during this period. Monitoring is an essential aspect of IRDP implementation but this task has not been given due attention by the DRDA and block. While examining IRDP loan, the study has reflected that it is not the unwillingness to pay but inability to pay was the main reason of default in case of repayment of loan. Another factor which explains loan default was the expectation of the beneficiaries about the Government announcement of loan remission. There is a lack of co-operation among the development agencies in respect of recovery of loan. Multiple regression analysis shows that the project cost and monitoring are the important determinants of the income from the IRDP fund of the beneficiaries. It has also

been observed that the amount of productive assets, size of land holdings and income generation from the project are important variables in explaining the variation in income of the beneficiary households.

Certain policy prescriptions emerge from our above analysis :

(i) Sufficient dose of investment to the beneficiary families and necessary infrastructural facilities are essential for the success of the programme.

(ii) There is the need for improving the quality and efficiency of the IRDP by means of significant strengthening of the planning, implementation and monitoring machinery at the district level and below. Much more emphasis should be placed on people's involvement in the planning, implementation and monitoring of IRDP by involving elected bodies.

(iii) Measures should be taken so that unusual delay in grounding the scheme is avoided.

(iv) Individual project should be effectively monitored.

(v) In order to improve the recovery position of the programme the development agencies, particularly the Gram Panchayat functionaries, should co-operate with the bank officials in recovering the loan.

Notes

1. See Government of India, Department of Rural Development : *Annual Report*, 1991-92, p 5.

2. Sachinandan Sau, "Integrated Rural Development Programme in West Bengal : An Appraisal in All-India Perspective", *Econnmic Development Review*, Vol. 1, 1990.

3. See Government of India, Department of Rural Development : *Annual Report*, 1990-91, p 24.

4. A total of 15 million families were expected to receive IRDP assistance during the sixth plan which allocated Rs 1500 crores for the programme. The banks were expected to advance credit to the extent of Rs 3000 billion. 16.56 million families were actually assisted and total plan expenditure amounted to Rs 1661.17 crores. This total investment exceeded the target by 5.84 per cent and total number of beneficiaries by 10.41 per cent. 6.46 million SC/ST families were assisted against the target of 5.0 million. But per capita investment achieved fell short of targetted amount by 4.3 per cent on account of per capita bank credit advanced being less than targetted by 6.35 per cent.

During the seventh plan also, achievements in respect of number of beneficiaries and percentage share of SC/ST beneficiaries surpass target by more than 13 per cent and 50 per cent respectively. But the achievement in respect of women's share fell short of the target of 30 per cent of the beneficiaries (See Table 5 below).

3

Table-5 IRDP : TARGETS AND ACHIEVEMENTS DURING THE SEVENTH PLAN (1985-86 to 1989-90)

Year	Target (in lakh)	Achieve-merts (lakhs)	% of achieve-ments	SC/ST %	Women (%)	Subsidy Rs Crores	Bank Credit Rs Crores	Total Investment Rs Crores	Per Capita Investment Rs
1985-86	24.71	30.61	123.8	43.23	9.89	441.10	730.16	1171.25	3574*
1986-87	35.00	37.47	107.1	44.84	15.13	613.38	1014.88	1628.66	4347
1987-88	39.64	32.47	107.1	44.71	19.53	727.44	1175.35	1902.79	5860
1988-89	31.94	37.72	118.1	46.39	23.16	768.46	1231.62	2000.09	5302
1989-90	9.09	33.51	115.2	46.10	25.62	765.43	1220.53	1985.96	5926
Total	160.38	181.77	113.3	45.09	18.89	3315.82	5372.53	8688.35	4780

Source :   Government of India (1990)

Note   :   *Combined for old and new families.

During 1990-91, 28.98 lakh families were assisted under IRDP, which constitutes 122.24% of the target. SC/ST families constituted 49.91 per cent of assisted families and the women beneficiaries constituted 30.89 per cent. Per family investment for new family amounts to Rs 6422 (Government of India, 1992.)

5. The study of the IRDP by the Reserve Bank of India revealed that 17 per cent of the beneficiaries had crossed the poverty line, while the evaluation report of the programme by the Programme Evaluation Organisation of the Planning Commission (PEO Study) of 1985 placed the corresponding figure to 49.4 per cent. Concurrent Evaluation of the IRDP carried out during 1987 revealed that 60 per cent of the beneficiaries in India as a whole crossed the poverty line of Rs 3500, while the said percentage for poverty line of Rs 6400 was only 12. There was significant variation in the percentage of beneficiaries crossing the poverty line across different states and union teritorries, the coefficient of variation being estimated to be 36 per cent for the poverty line of Rs 3500 and 86 per cent for the poverty line of Rs 6400.

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URBAN POOR AND RURAL-URBAN LINKAGES : A CASE STUDY OF CALCUTTA.

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Introduction

The urban poor are mainly an overflow of rural poor into the urban area. Fundamentally they belong to the same class as the rural poor[1], but by living in urban environment for long they acquire characteristics of their own. While little is known of their life and labour in the growing cities, some of the mystries of their life style come to limelight only through sporadic surveys undertaken by one organisation or others. Two such surveys were undertaken by Calcutta Metropolitan Development Authority on Pavement Dwellers[2] and Slum Dwellers[3], and the data generated therein form the basis of the present paper.

Who are the Urban Poor ? A proper identification of the target group is really difficult. Again, it is more difficult to quantify them. Nevertheless, the urban poor in Calcutta, to my judgement. may be broadly classified location-wise into two categories (a) Pavement Dwellers and (b) Slum Dwellers, although these are not exhaustive denotation of the urban poor. By the above categorisation of the urban poor, it is intended only to mean that these two locations (Slums and Pavements) provide accommodation to most of these under-privileged and hence socio-economic information on life style of these people may be construed as sufficient and adequate representation of the class of people under reference.

Due to large rural urban differential in income and employment opportunities, the rural poor are migrating from the hinterlands and taking refuge either in slums or on pavements of the city. Consequently insanitary living environments, endemic health problems and inadequate earnings opportunities are some of the problems faced by these poor living and working in urban informal sector. The continuous rural-urban migration, is on the other hand, a matter of concern to the civic authorities as the

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new entrants stake their claim over basic amenities causing a pressure on physical infrastructural network. In the Calcutta city the problems are visible and require constant policy intervention by planning, development and civic authorities.

In view of the aforesaid two-dimensional problems—increasing inmigration and pressure on physical infrastructural network—this paper seeks to examine the extent of rural-urban linkages maintained by the urban poor of Calcutta and its impact on future migration pattern in the city. If the linkage is high, more migration from the rural hinterland is a possibility. With this premise and in view of existing settlement pattern, the present analysis tends to advance a theory that rural-urban linkage is one of the key parameters to determine the extent of future migration from rural hinterland of the city.

The study is divided into four sections. The first section enumerates the historical background of settlements of the poor in the city of Calcutta. The second section highlights the socio-economic profile of this section of urban population. The third section describes the methodology adopted for assessment of rural-urban linkages and elaborates the extent of linkages maintained by urban poor through "remittances" and "visits" to their respective native places. The last section seeks to derive some inferences and to analyse the emerging issues followed by suggestions for public policy intervention.

I

A look on settlement pattern of the urban poor in Calcutta finds a visible trend of concentration. Either mother-tongue or religion or place of origin or kinship ties are found to be the binding force which help the formation of communities in different clusters. Eventually a slum has grown in such a way that it can be easily identified as predominant group of one community or other like Bengali speaking, Hindi-speaking, Urdu-speaking. The same thing happened in the case of Pavement Dwellers as well. On this process of group or community formation, migration reinforces natural population growth. Persons migrating into this city are generally being helped by the relative or community member of same native place who has already settled in this city and thus the prospective migrants have had some apriori idea as to where they are going to settle down in the city which are in most cases respective locality of their kinsmen.

Target Group and their Origin

The Slum dwellers and Pavement dwellers constitute the target group for this study.

What is a Slum ?

According to the Slum Area (Improvement and Clearance) Act 1956 enacted by the Government of India, slums have been defined as those areas where buildings are in any respect unfit for human habitation. Physically, slums consist of clusters of hutments comprising of several rooms constructed with temporary buildings materials where each room is inhabited by a family sharing the common latrine, without arrangement for water-supply, drains and disposal of solid wastes and garbage within the slum boundaries. Apart from degrading environmental conditions slums in Calcutta are also characterised by almost total absence of community and recreational facilities hindering mental development of the young.

It is worth mentioning that in Calcutta, some of these slums have another nomenclature as "Bustee" which is, in fact, a legal entity. According to Section 2(8) of The Calcutta Municipal Corporation Act 1980, which came into force on and from 16 January 1984, "Bustee means an area containing land not less than seven hundred square meteres in area occupied by or for the purpose of any collection of huts or other structures used or intended to be used for human habitation". Thus, all bustees are slums but all slums are not bustees. In view of this slum-bustee differentiation, slum dwellers may be typified into two groups—(i) bustee dwellers and (ii) squatters.

Who are the Pavement Dwellers :

Pavement dwellers are, in fact, as a group the poorest of urban poor. For the purpose of this analysis Pavement dwellers are truely shelterless persons who do not have municipal addressess but live in various open spaces such as pavements, open verandahs, under bridges, railway platforms, abandoned large pipes, courtyards of religious places and even on hand-carts that they pull in the day time to earn their living. Thus the section of urban poor who live in unauthorised shacks and hutments (commonly known as squatters) are not included in the list of pavement dwellers.

Origin and growth of Slums :

Once Job Charnak's village "Calcutta" has grown into a large metropolis during the course of last 300 years or so. People say that the city of Calcutta was formally established by this English merchant sometime in August 1690 on the banks of the river Hooghly, primarily to promote trade and business interests of the East-India Company. The river acted as the main artery of transport. Consequent upon the industrial growth and rapid urbanisation, working class people from all over eastern and northern India poured into this city in search of employment and income. These people found cheaper accommodation, mostly in huts

constructed by middlemen, popularly known as Thika tenants on land leased out to them by landlords. The gradual densification in those huts without basic infrastructural facilites eventually led to growth of slums in certain parts of the city.

Apart from migration of cheap labour force from northern and eastern India, two other factors contributed to the growth of slums as well as pavement dwellers in this city. The partition of Bengal in 1947 resulted in large-scale migration of refugees from the erstwhile East Pakistan (now Bangladesh) to Calcutta. A large number of refugees because of economic compulsions took shelter in slums. Secondly, relatively better prospect of income and employment opportunities in the city encouraged a good number of people from rural hinterland of West Bengal to come over to this city in search of employment. This led to added pressures on existing settlements and helped new slums coming up on vacant land, usually in low lying areas.

<div align="center">II</div>

Socio-Economic Profile

The urban poor constitute more than one third of the total population of CMA. The largest sub group is slum dwellers who were estimated to be 3·03 million according to 1981 Census out of CMA's total population of 8·33 million. According to CMDA's study of 1987, the number of Pavement dwellers was found to be 56 thousands living within Calcutta Municipal Corporation area. Moreover, the squatters settlements over public land, particularly along canal sides and railway lines extended over CMA, account for about 100,000 population. In the intervening period population has increased. According to an estimate[4] made by the Town and Country Planning Organisation, Government of India, the slum population. of Calcutta crossed 4·38 million mark in 1990 as against the urban population of 12·53 million for the same area. It means that the ratio of the slum population in particular and the urban poor in general to total urban population of Calcutta continue to remain the same with an upward trend.

Geographical Location

Where do those urban poor live ? In other words, where could they be geographically located ? Though spread all over the city, they tend to concentrate more in certain places of specific landuse character. For example, out of 56 thousand Pavement dwellers half of them are found to be located in the Central Business District (CBD) Area. Further details about some of major places of concentration are shown below (Table-1).

Table-1 MAJOR CENTRES OF CONCENTRATION OF
PAVEMENT DWELLERS OF CALCUTTA.

Ward No.	Name	% Share	Land Use
45	Esplanade / B. B. D. Bag	8·66	Commercial / Wholesale markets.
36	Sealdah	4·16	Railway station / Wholesale markets
22	Posta	3·63	Wholesale Trade
43	Tirrete Bazar & Surroundings	3·44	Commercial
46	Esplanade Surroundings	3·24	Commercial

There are two key factors which influence the decisions of the Pavement dwellers to concentrate in one place more than the others.[5] This is evident from the information contained in Table 2 which shows Pearson's correlation for 100 Wards for which data were available. Only two variables have statistically significant relationship.

The lesser the distance from the CBD the more densely populated the Pavement Dwellers are. Secondly, there is a negative correlation between the Pavement dwellers and the population of the ward. Moreover, the standardised residual scores clearly indicate that the density of the Pavement Dwellers is the maximum at the transportation nodes inside the CBD like the railway stations, shipping docks and truck loading areas. Sealdah and Howrah stations, docks at Kidderpore are places of exchange of goods and services, centres of commercial activities, transit points and the meeting grounds of various economic activities.

So far the slum dwellers are concerned, they are found to be scattered over 3 municipal corporations and 31 Municipalities. It is worthmentioning that the share of the Calcutta Municipal Corporation (CMC) area is found to be as high as 62 percent. The concentration can, perhaps, be explained by the fact of concentration of economic activities in and around metro core. In respect of other municipal areas, the concentration pattern tends to show that higher the degree of industrial activities with large endurance, the greater the number of slum dwellers over the area and slums grew up proximity to their working places (i.e., centres of economic activities) as a logical necessity.

Place of Origin

The survey revealed that 41 percent of households in Calcutta slums has been living there for more than a generation, 14 percent has come from different districts of the State of West Bengal. Refugees migrated

4

Table-2 PEARSON'S CORRELATION COEFFICIENTS FOR 100 CASES

	PAVDWELL	PERPABDW
DISTFRCB	− ·4352 P = ·000	−·4352 P = ·000
TOTPOP	− ·2741 P = ·003	−·2743 P = ·003
TOTAREA	− ·0824 P = ·208	− ·0813 P = ·211
DENSITY	·0579 P = ·284	·0572 P = ·286
AREACOMM	·0893 P = ·189	·0888 P = ·190
PERCOMM	·1839 P = ·033	·1827 P = ·034
ARBATRAN	·0297 P = ·385	·0298 P = · 84
PERTRAN	− ·0208 P = ·418	−·0202 P = ·421
PAVDWELL	1·0000 P = ·	1·0000 P = ·000
PERPAVDW	1·0000 P = ·000	1·0000 P = ·

(Coefficient / Cases / 1-Tailed Significance)

" • " is printed if a coefficient cannot be computed

Variables :

DISTFRCB	Distance of ward from the central business district in kilometers
TOTPOP	Total population of the ward
TOTAREA	Total area of the ward
DENSITY	Population density of the ward per square kilometer
AREACOMM	Area of the ward in commercial land use
PERCOMM	Percent commercial area to total area of the ward
AREATRAN	Area of the ward in transport landuse
PERTRAN	Percent transport landuse to total area of the ward
PAVDWELL	Number of pavement dwellers in the ward.
PERPAVDW	Percent pavement dwellers to total population of the ward

Source :   Reference No. 5

from Bangladesh (erstwhile East Pakistan) accounted for 17 percent of the respondent families while some Nepalese families are also living in slums whose share constitutes less than one percentage point. The rest 27 percent originated from adjoining states of West Bengal and more particularly from the Hindi speaking belt.

Note : *MC=Municipal Corporation*

        M = Municipality

So far Pavement Dwellers are concerned 5 percent originated from Calcutta and 47 percent migrated from nearby rural hinterland over different districts of West Bengal, while 43 percent came from other states and 5 percent from Bangladesh.

Mother Tongue

Among the respondents households living in Calcutta slums 55·94 percent are found to be Bengali-speaking. The share of Hindi-speaking households has been found to be 21·90 percent followed by Urdu-speaking of 20·80 and the remaining of about 1 percent includes Nepali, Oriya, Tamil. Telegu etc.

The Pavement dwellers were found to be predominantly Bengali speaking, coming from Calcutta's immediate hinterland of South 24-Parganas District. Bengali accounted for the mother tongue of about 55% of the sample population, while Hindi accounted for another 41%. The balance of the population had mother tongues from almost all the major linguistic regions of India and the neighbouring countries.

Male-Female Ratio.

In overall terms, and quite predictably, the male population constitutes a major proportion of pavement dwellers in Calcutta, with a male-female ratio of 65 : 35. However, even within pavement dwellers as indicated in Table 3 the sex ratios favour males.[6] This feature is significant in all age groups, including the very young population of children less than 12 years. The last two columns of the Table compares the 1987 findings with the results of the ISI Survey of 1976.[7] The percentage share of the group in working age (18 years to 57 years) appears to have registered a sharp increase. The share of young dependents, according to the 1987 Survey was around 30% of the population.

Table-3   PAVEMENT DWELLERS BY AGE AND SEX (%)

| Age | 1987 Study | | Total | |
	Male	Female	1987	1976
0—12	15·3	10·2	25·5	29·5
13—17	5·3	1·8	5·1	8·3
18—57	42·9	20·8	63·7	54·0
58 and over	3·7	2·0	5·7	8·2
Total	65·2	34·8	100·00	100·00

The large share of children in the population has meant that despite a significant presence of single migrants, families constitute the major demographic group among the poorest of the urban poor residing on Calcutta's pavements.

The male population constitutes the major proportion of slum dwellers in Calcutta with a male-female ratio of 54 : 46. But it varies among the people of different linguistic groups as indicated in Table 4. The ratio is relatively low in respect of Bengali speaking and Urdu-speaking population which indicate that majority of these households live in Calcutta slums with their families. In case of other language groups, people have come to this city for jobs. They maintain a small family here presumably to maximise savings so that they can remit sizeable income to their respective native places (permanent residence) where the rest of their families are living. It is worthnoting that male-female ratio has marginally gone up (from 53 : 47 in 1980[8] to 54 : 46 in 1990) during the last decades in favour of males.

Table-4   DISTRIBUTION OF MALE AND FEMALE
POPULATIONS BY MOTHER TONGUE

Mother Tongue	Male-Femal Ratio
Bengali	52 : 48
Hindi	60 : 40
Urdu	54 : 46
Oriya	60 : 40
Punjabi	58 : 42
Nepali	62 : 38
Others	59 : 41
Total	54 : 46

Occupational Pattern and Income

The pavement dwellers are found to be employed in over thirty vocations of the tertiary sector in the city[9]. For analytical convenience occupations are divided into "mainstream" informal sector, where average weekly income ranges between Rs 80 and Rs 110 (on a daily living basis) and a "marginal" informal sector, in which average earnings are substantially lower. The latter group of vocations consists of ragpickers, paper pickers, beggars, coalpickers, cowdung makers and domestic servants. Table 5 compares the major occupational groups of CMDA's study in 1987 with the findings of the ISI estimate of 1976.

Table-5   OCCUPATIONAL DISTRIBUTION OF CALCUTTA PAVEMENT DWELLERS (%)

	1976 (1)	1987 (2)
Transport	21·9	30
Service-related	9·0	13
Other mainstream vocations	35·6	35
Domestic Servants	11·8	5
Ragpickers and Beggars	21·7	17

The transport sector provides 30 percent employment. About half the number is employed as porters or headload carriers, who secure employment in the commercial areas, and are engaged in transhipping materials and equipments over short distances. The other half is almost equally divided between hand cart pullers and rickshaw pullers. The former group rent out their wooden handcarts to ferry heavier loads within the city, while the latter cater to the needs of short distance commuters.

The second major group consists of self-employed persons who have been divided into two groups, service-related and other occupations. Service-related vocations are providing employment for at least 13 percent of the sample population. They are : Tea Shop Keepers, Vendors, Hawkers and Sweepers. Other occupations cover diverse range of service and production activities ranging from paper bag makers to painters, from cobblers to temple priests.

The Third group comprises daily labour engaged in a miscellaneous range of activities such as shop assistants, helpers to skilled construction workers and labour that is supplied to the city's daily labour markets.

Domestic employment, however, enables a large proportion of women living in pavement dweller families to earn supplementary income. Rag-pickers collect recyclable wastes from the city's garbage dumps. Beggars constituting about 6 percent of the population are the poorest of the urban poor.

Information contained in Table 6 tends to suggest that majority of households in Calcutta slums are engaged in what can be termed as "mainstream" informal sector. The occupation of 37 percent are found to be service-related while sales-related occupations constitute about 23 percentage share of "Profession" and "Production" groups are comparable. In the marginal sector, on the otherhand, the major occupational group is "Casual labour" which constitutes 23 percent of the aggregate households occupations.

Table 6   PERCENTAGE DISTRIBUTION OF HOUSEHOLDS IN CALCUTTA SLUMS ACCORDING TO BROAD OCCU- PATIONAL CATEGORIES AND INCOME LEVEL

Occupational Group	% distribution of household.	Average monthly income (Rs)	Standard deviation	Coefficient of variations
Clerical	37·42	1212	153·60	12·68
Sales	22·67	919	191·38	20·82
Production	7·03	687	149·39	21·74
Profession	6·53	892	220·09	25·80
Casual labour	22·85	643	100·85	15·62
Others	3·48	——	——	——
All	100·00	907	151·01	16·64

Income level

Among each of the occupational categories, wide variations in income level are observed as indicated in Table 6. For instance, the average monthly income in clerical group has been worked out to be highest being Rs 1212 whereas the corresponding figure for casual worker is only Rs 643 i.e., about half of the former group.

Not only the clerical group earn higher wages but also their employ- ment status is much more stable as indicated by lower value of co-efficient of variation. As expected the highest variation is observed in case of "Profession" group which covers a wide range of workers from medical practitioners to painters. The dispersal is moderate in case of "Sales"

and "Production". In the highly competitive product market the quality of salesmanship matters and the professional competence, scale of operation and quality of goods are capable of making perceptible difference in income level of those who are engaged in sales profession. In the case of production category, moderate dispersal can be explained in terms of (a) wide variation in product range within the group and (b) varying degree of competition (both price and quality) among different entrepreneures.

The income level of casual worker is lowest (Rs 643) amongst all earners with low value of coefficient of variation (15˙62 percent). The Casual workers are unskilled labourforce who earn their livelihood by supplying physical labour. They are generally engaged as helpers mostly in construction industry or in transport sectors. The wage rates are more or less the same for similar work everywhere mainly because of strong influence of trade unionism.

Among each of the occupational categories among pavement dwellers Table 7 indicates wide variations in income levels observed.

Table-7   AVERAGE INCOME OF DIFFERENT

OCCUPATIONAL CATEGORIES

	Average incomes (Rs) (per week)	Coefficint of variation %
Handcart pullers	98	33
Rickshaw pullers	79	41
Porters	96	35
Service related (hawkers etc.)	75	51
Helpers	80	65
Daily Casual Labourers	84	49
Domestic Servants	50	90
Ragpickers	67	124
Beggars	30	79

The variations in income levels are substantial in all groups. However, three major categories appear to be relevant from the table. The first, consisting of marginal vocations, exhibit coefficients of variation exceeding 75%, indicating a very wide dispersion in weekly earnings. It has been found that because in many cases whole families of these respondents participate in earning income (notably among ragpickers), a wide range of households income is observable. Moreover, ragpicker with

access to the garbage vat outside a laxury hotel or a fashionable residential complex can be expected to earn much more than another person who has to be content with the pickings from a depressed nieghbourhood.

The second category with coefficient of variation over 50% cover the non-transport sector. In the transport sector where physical strength is essential, the coefficients of variation appear to be the least.

In overall terms, the pavement dwellers have had their income levels keeping pace with inflation[10].

<div align="center">III</div>

Rural-Urban Linkages

The Urban poor of Calcutta are either present generation migrants or living in this city for more than a generation. For the purpose of analysing rural-urban linkages, only the present generation migrants have been taken as reference population. The present generation migrants again may be grouped into two categories—those who left native places permanently and set up permanent homes in Calcutta and those who have not severed relationship with their place of origin and maintaining close contacts. The Second category constitutes the target group for this study. To examine the rural-urban linkages "remittances" and "visits to native places" have been chosen as explanatory variables.

Out of 3200 respondents among the pavement dwellers in the sample study, 7% claimed Calcutta pavements to be their place of birth itself. The remaining persons reported village home in West-Bengal, Bihar, Orissa, U.P., and some other states as their ancestral homes. The 40% of mogrants was remitting money home to their villages and the average annual remittances was Rs 1124, or approximately 20% of the individual's earnings. However, the standard deviation was Rs 1165, indicating a wide dispersion around the average.

Remittance and Duration of Stay

Most pavement dwellers in Calcutta remitting money home have stayed on the pavements for considerable lengths of time. Dr. N. Vijay Jagannathan and Dr. Animesh Halder in their paper[9] divided pavement dwellers into two categories ; those who have stayed on the pavements for ten years or less, and those who have lived on the pavements for more than ten years. Their findings are presented in Table-8. The second and fourth columns indicate that there is a wide range of variation in remittances. The other important point that emerges is that there is no significant correlation between the length of stay of a migrant and the

amount remitted. They have cited instances of a twenty year old migrant remitting Rs 200 a month home, and a 60 year old migrant remitting the same amount. Similarly the amounts remitted also indicate wide variation

Table 8   REMITTANCES CHARACTERISTICS

Stay in the city	$<$	10 years	$>$	10 years
	$\bar{X}_1$	Coefficient of variation (%)	$\bar{X}_2$	Coefficient of variation (%)
Age (Years)	31	31	34	27
Remittances (Rs)	108?	101	1173	102
Average daily wage in the city (Rs)	14·5	10	14·4	10
Duration of stay (Years)	2·9	5·0	21	38

from Rs 5000 to Rs 50 per annum. Similar variations were observed in remittances patterns across districts of the country. Migrants from the surrounding districts of West Bengal and Bihar exhibited wide variations in remittances and vocations. In general, however, migrants from marginal vocations remitted much smaller amounts.

The CMDA's sample study of 1990 on 20 slum clusters on the other hand revealed that in overall terms about 25 percent of the present generation migrant households have been sending money to their native places. Of course, it varied widely among different clusters ranging from 8 to 95 percent. For analytical convenience the samples are classified into four groups based on incidence of remittances. In group one the incidence is more than 75 percent (i.e. more than 75 percent of households send money at least once a year to their respective native places). The second group exhibits the class mark of 51-75 percent, for third group it ranges between 26 and 50 percent and the clusters where incidence of remittances do not exceed 25 percent are included in the fourth group. It would appear from Table 9 that one slum could be typefied in the first group while none fall under second group. The third consists of 8 slums and 11 slums exhibit the characteristics of fourth group.

Except for Darapara and Belgachia, the predominant language under fourth group is Bengali. The predominant language of those two respond-ing households is Urdu. Out of the total number of 5517 households in those 11 slums, 3132 households i.e. about 56·77 percent are found to be present generation migrants. Of them only 16 percent are reported to be

5

making remittances to their native places. The low incidence of remittances from these clusters suggest that the majority of the migrant households have severed their native places gradually and set up permanent homes at Calcutta.

Table-9   INCIDENCE   OF REMITTANCES   TO   NATIVE PLACE
          AMONG SAMPLE SLUMS

Categorisation based on incidence of remittances	No. of sample survey	Name/locations for sample slums	Percentage of sender households.	No. of sample households	No. of present generation households.
Group-1. (more than 75% of migrant households remit)	1	Betbagan	95	331	198
Group-2. (51-75 percent of households remit)	Nil	—	—	—	—
Group-3. (26-50 percent of migrant households remit)	8	Datunia, Canal East Road, Gokhana, Rustamji Parsi Road, Ramlilabagan, D. C. Dey Road, Noongola and Mitra Bagan	36·67	1962	1377
Group-4. (Not-more than 25 percent of migrant households remits)	11	Campbagan, Panchanantala, Darapara, Dighir Par, Narkelbagan, Duttabagan, Tikiapara, Paikpara Sabjibagan, Murari-pukur, Sabjibagan, Belgachia.	15.09	5517	3132
Total	20	—	25	7810	4707

Source :   CMDA's study "Slum-dwellers of Calcutta : Socio-economic-Profile, 1989-90."

The low incideace of remittances perhaps can be explained by the fact that the migrants initially came to the city alone from the rural areas of West Bengal leaving their families behind. Eventually economic compulsions forced them to close down their establishments in their native places and set up permanent homes in Calcutta slums.

The picture does not appear to be the same where Hindi happens to be the predominant language group. The Hindi speaking people constitute more than 50 percent of households in some of the sample slums namely Datunia, Ramlilabagan, Betbagan, Narkel Bagan, Canal East Road, D. C. Dey Road and Gokhana. The total number of households in these clusters constitute about 22.42 percent of the respondent households while total remittance from them is as high as Rs 2.55 millions. i.e. about 31.83 percent of the total annual remittances from the sample. The total number of households in these slums is 1751 out of which 1297 are present generation migrants representing about 74 percent of the total. The large percentage of migrants households in these clusters appears to be directly contributing to larger incidence of remittances. The CMDA study has shown that incidence of remittances is more in case of Hindi-speaking families than those of non-Hindi speaking families. This brings out a new element of distance—remittance linkages. The Hindi speaking slums dwellers in Calcutta originated from different places in Bihar, Uttar Pradesh, etc. which are far away from this city. To meet the family needs in the village they make remittances on regular interval and thus the remittance-linkage takes the lead over visiting native places as visit involves considerable costs and time. Contrarily, the non-Hindi speaking slum dwellers and more particularly Bengali-speaking ones hail from surrounding areas of this city of Calcutta and because of easy accessibility to native place the remittance linkage is not so significant to them.

Although available data precludes a comprehensive analysis, it is quite apparent that predominantly Hindi-speaking slums exhibit higher remittances linkages than non-Hindi speaking slums. To find out the statistical validity of the null hypothesis of equal remittances linkages for both the groups a "T" test has been carried out. The computed value of "t" works out to be 3.09 and the comparing the same with the tabulated value of "t" (t.01=2.552 ; t.05=2.878 available in Biometrika Tables), the null hypothesis is rejected at 0.5 percent level of significance.

The above discussion brings about the fact that the predominant Hindi speaking areas are positively associated with higher incidence of remittances suggesting temporary resident character of the households. But information on duration of stay as indicated in Table-10 makes our understanding of the issue more complex. It reveals that the majority of

households of these slums have been living at the present locations for decades. This brings out an additional aspect to the residence ·patterns of the Hindi speaking people. When members of the Present work-force become old they return home and their sons and nephews replace them in Calcutta Slums. The households thus continue to exist while their

Table-10 PERCENTAGE DISTRIBUTION OF HOUSEHOLDS IN CALCUTTA SLUMS ACCORDING TO THE DURATION OF STAY.

| Linguistic Group | Duration in Years | | | | |
	Upto 5 years	6-15	16-30	30+	Total
Predominantly Hindi speaking slums	4.78	17.88	35.64	41.70	100
Predominantly non-Hindi speaking slums	4.30	17.40	31.25	47.05	100
All Sample Slums	4.41	17.51	32.26	45.82	100

Source : *CMDA's Survey 1990*

compositions might have undergone changes. Similarly information contained in Table-10 controverts the popular belief that poor migrants coming to the city first occupy pavements before moving into slums. In fact, a significant portion of respondents consider pavements as their urban residence.

Visits to native places

The families who have migrated enbloc to Calcutta and have set up permanent homes very rarely visit their native places. But the households who have not severed relationship with their rural homes visit their native places at regular intervals. The CMDA's survey data as presented in Table 11 reveal that 24 percent of the migrant households in Calcutta slums pay visits to their respective native places regularly and the average number of visits ranges from 1 to 1.51 except in one case where the average number of annual visit is found to be 7.

The incidence of visit to native place and proportion of visiting households to migrant households vary from slum to slum. It has been found that 94 percent of households in Betbagan, which is predominantly

Table-11 VISITS TO NATIVE PLACE (ANNUAL)

Sl. No.	Name of Sample Slum	Total No. of households	% share of visiting H. H. over migrant Households	Average No. of visits.	Average duration of each visit (in days)
1.	Mitrabagan	254	34	1.51	32
2.	Datunia	269	38	1.08	20
3.	Ramlilabagan	460	23	1.44	16
4.	Campbagan	515	7	1.00	22
5.	Betbagan	331	94	1.34	29
6.	Panchanantala	80	5	7.00	2
7.	Darapara	431	13	1.17	23
8.	Noongola	234	16	1.35	16
9.	Dighirpar	192	13	1.11	11
10.	Narkelbagan	202	14	1,14	22
11.	Rustamji Parsi Road	236	43	1.36	31
12.	Duttabagan	769	26	1.13	10
13.	Tikiapara	137	38	1.26	9
14.	Paikpara-Sabjibagan	234	1	1.00	3
15.	Canal East	110	46	1.31	25
16.	Muraripukur	593	11	1.04	10
17.	D. C. Dey Road	50	28	1.00	39
18.	Sabjibagan (Dum Dum)	927	19	1.07	15
19.	Belgachhia	1417	14	1.29	31
20.	Gokhana	329	33	2.32	22
	Total	7810	24		

Source : *CMDA's study "Slum Dwellers of Calcutta : Socio-Economic Profile, 1989-90".*

a Hindi speaking bustee, maintains regular contacts with their native places through visits. Similarly, in other Hindi speaking bustees like Datunia, Rustamji Parsi Road, Canal East Road, D. C. Dey Road and Gokhana, the number of visiting households constitute a high percentage share of migrant households indicating strong linkages with their ancestral homes. But the position is different in respect of those slums where the predominant language group is either Bengali or Urdu, except for Tikia Para, Mitrabagan, and Duttabagan. The somewhat high pro-

portion of visiting households to migrant households in these areas can perhaps be attributed to the presence of considerable number of non-Bengali households.

The duration of visits varies from person to person ranging from 2 days to 39 days. The families whose native places are situated far away from Calcutta usually stay longer when they go home since visits involved considerable time and costs. The frequency of such visits is very small except for emergency cases. This is the case in respect of most of the households whose mother tongue is other than Bengali. In case of Bengali speaking households on the otherhand, the average duration of stay at native places is generally small because of physical proximity of the native place to Calcutta.

The rural urban linkages are maintained by adoption of either of the two aforesaid modes of contact or both. Thus, taking into account the three distinct categories of households (one group sending money only, the other paying visits to native places and the third group sending money as well as paying visits) together, 36 percent of households in Calcutta slums are found to be maintaining regular contacts with their native places. Ranking the sample slums according to the modes of linkages (i.e. incidence of remittances and visits) the Spearman's Rank Correlation has been worked out to be 0.727 indicating a reasonably high degree of agreement between the two series of ranks. It means that both the modes of rural-urban linkages are equally effective and that the clusters which exhibit high incidence of remittances also show high incidence of visit to native places and vice-versa.

<div align="center">IV</div>

Emerging Issues and Policy Implications

The foregoing analysis leads us to draw the following inference.

(i) About 60 percent of households in Calcutta slums and 95 percent of pavement dwellers are present generation migrants and hence their linkages with native places are of considerable significance so far future inmigration to this city is concerned. Higher the migration, more demands are generated for physical infrastructural facilities causing concern to the civic administration.

(ii) Various studies have demonstrated that income-shelter relations are infinitely complex and vary across substrata of the urban poor. To talk providing shelter for all the homeless in metropolitan cities of developing countries is rather simplistic. One suggestion put forward by policy makers is to construct inexpensive dormitory-type housing for

pavement dwellers. The difficulty here lies in execution, because of the total lack of availability of land in the areas where pavement dwellers would like these stru. tures to be constructed. The urban poor reside on pavements outside some of the most expensive real estate in the country. Costs of acquisition of land in these areas are, naturally, prohibitively expensive. Thus from the policy makers perspective realistic interventions are possible in four areas. These are sanitation, preventive health care, environmental hygiene, and social care for the destitutes[10].

(iii) Irrespective of language groups, these urban poor by and large are permanent residents of this city. The distinction between low linkages and high linkages groups is of little significance so far the ongoing development work are concerned, but these are positively correlated to future migration pattern of this city. These linkages deserve special consideration in evolving the development strategy to uplift the life style of the urban poor in general and longterm perspective for slum improvements in the city of Calcutta in particular. The linkages appear to be stronger for the Hindi speaking population compared to Bengali speaking and Urdu speaking people. So far as the Bengali speaking and Urdu speaking migrants are concerned their linkages with their native places are declining with time. Many of these households have set up permanent homes in Calcutta. Since the new migrants to the city tend to settle down in areas where people of same language / religious / ethnic groups are already there, the high rural-urban nexus acts as forward linkages to raise population size but it has a backward effect so far as civic amenities are concerned. The findings of this study suggest that further migration from the rural hinterlands of West Bengal and Urdu speaking areas in adjoining states of Bihar and Uttar Pradesh is not likely to step up provided all other factors remain the same. The high linkages in respect of the Hindi-speaking slums, on other hand, tend to indicate the possibility of continuous flow of migration of the people belonging to this linguistic group to the city of Calcutta. The new migrants are likely to lead to redensification of existing slums and emergence of new squater settlements. This is undoubtedly a matter of concern and calls for a long term development strategy for slum improvement.

(iv) Until large differentials in earning opportunities between cities and rural areas ate narrowed down the rural poor will continue to migrate into the city. They move to predetermined destinations usually based on information obtained from relations and kinsmen of the village. In a democratic society this rural-urban migration cannot be prevented by any legislative fiat. Prospects of rapid rural development and reduced rural-urban growth differential immediately are not so bright. There is no

reason to expect that the migration of the rural poor to the city of Calcutta would be arrested in foreseable future but land would continue to remain a scare commodity in Calcutta. Thus, there is need for giving more emphasis on better utilisation of land in slum areas and stepping up low cost housing activities in the city of Calcutta.

(v) Emerging issues, such as likelihood of re-densification of existing slums and proliferation of new ones call for reviewing of slum development models. It may be recalled that learning from the failure of implementation of the "Slum-clearance" and "Slum Redevelopment" models it was ultimately decided to go for limited slum improvements with the popular nomenclature of "Sanitization Models". This model has been in operation for long which aims at providing basic infrastructural facilities to slum dwellers without attempting to provide conventional housing to the target group. But the time has come, as indicated by the foregoing analysis and from policy planners' perspective, to review and rethink the slum development strategy a fresh in the changing socio-economic scenario. It would be wise to keep in mind that land is a scare resource in Calcutta but at the same time in this democratic set up future in-migration cannot be ruled out or be prevented by any legislative fiat. Thus we are left with only one alternative of efficient use of that scarce resource, Now that the right, title and interest of the landlords in respect of bustee (slum) lands have vested in the State under the provisions of the Calcutta Thika Tenancy (Acquiaition & Regulation) Act 1981, the possibilities of infusion of some elements of Redevelopment model in the existing Sanitisation Model of Slum Development Programme may be examined. Moreover, under the provision of Calcutta Municipal Corporation Act 1980, development in bustee (slums) is no longer a bar. This will not only take care of shelter needs of the existing dwellers as well as new commers but also generate surplus land from the existing slums which would be utilised for generation of economic activities through self-employment ventures and for other community facilities for the target group.

(vi) For sustained development of slums, an Integrated Slum Improvement Programme containing a package of physical infrastructural facilities, health care and community development components needs to be vigrously pursued. It is worthmentioning that in some of Indian cities namely Visakhapatnam and Indor, Integrated Slum Development Projects are found to be working very well. The experiment has started recently at Calcutta and only future can testify to the efficacy of the integrated approach in operation. In the changed political economy of Calcutta slums it would be dessrable to allow co-operative sector and /

or Non-Governmental organisations to act as co-partner of the corporate sector in slum development programme.

The observed phenomena of rural-urban linkages appeares to raise a serious doubt about the universal application of Todaro (1969)[11] and Harris and Todaro (1970)[12] models of rural-Urban Migration. According to them the rural urban migration takes place because of higher expected income in the urban Modern Sector Jobs i.e. the economic consideration bring about migration phenomenon. But the research studies on urban poor in Calcutta as mentioned above tends to support the hypothesis that the non-economic variable like "rural-urban linkage" is one of the key parameters to determine the extent of future migration from the rural hinterland to the city. The hypothesis is further strengthened from the findings of CMDA's study of 1990[3] (Chapter-9, poverty profile) that about 53 percent of households in Calcutta Slums fall below poverty line as against the official urban poverty estimate of 27·7 percent based on the 38th Round of National Sample Survey Organisation. Thus, the narrower concept of income maximisation to explain rural-urban migration needs to be reviewed and thus the situation calls for reformulation of the Todaro Hypothesis taking into account non-economic variables (rural-urban linkage, glamour of urban living with basic amenities etc.) and utility maximisation behaviour of prospective migrants.

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SOLUTIONS IN NONCOOPERATIVE GAMES—A NOTE

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Abstract. Games are used to model competitive situations. The basic objective of the game theory is to prescribe a solution for every game. Almost all game theorists have accepted that for the noncooperative games the solution should be a Nash equilibrium. But as there may exist more than one Nash equilibrium and as all Nash equilibria are not equally reasonable, several attempts were made to refine Nash equilibrium ; however, most of them can not give satisfactory results. This paper gives a critical review of some of the important attempts and tries to develop a new one to arrive at a *reasonable equilibrium*.

1. Introduction.

Game theory analyses situations of multi-agent conflict in which the payoff of an agent is dependent not only on his own actions but on those of others also. The main purpose of game theory is to derive a solution for every game. The strategy combination prescribed as the solution must be consistent with the rules of the game. In zero-sum games the payoffs of the players always sum to zero and the interest of the players are diametrically opposed. Non-zero-sum games leave scope for cooperation as well as conflict. In cooperative games there exists an institution which makes any agreement among the players binding. In noncooperative games there is no such institution. The meaningful agreements in noncooperative games are those which are self-enforcing. The original game without such agreements / arrangements is modified to a new noncooperative game with any such arrangement.

Consistency of solution with the rules of a noncooperative game primarily requires that no player should have an incentive to deviate from his strategy, or the solutions should be a *Nash equilibrium* (Nash [1951]). Nash equilibrium exists for all games : for some games it exists only in pure strategies, for some games it exists only in mixed strategies and for others both in the pure strategies and mixed strategies. The main problem with the Nash equilibrium concept is that it may not be unique for every game and all Nash equilibria are not equally sensible. Thus to prescribe a solution for every game the game theory should have some other criterion consistent with the rules of the game to refine some Nash equilibria. Different criteria have been put forward by different

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game theorists from time to time. This paper considers some of the important criteria and gives a critical note on them. It also tries to develop a new criterion.

There are two branches of noncooperative games—one branch deals with those played simultaneously and these games are presented in so called normal form, while the second branch deals with the games played sequentially and they are presented in extensive form. Extesiue form games cannot be transformed to normal form games ; they can only be reduced to such and a number of extensive form games may have the same reduced normal form. On the other hand normal form games have trivial transformation in extensive forms (for details see Mondal [1994]). To define criteria for refining Nash equilibria these two forms should be treated separately.

2. Refinement of Nash equilibria for normal form games

A simple refinement called *strict equilibrium* requires that each player actually loses if he deviates unilaterally. For the game of figure-1 below S_1 and S_2 are strategies of player-1, whereas T_1 and T_2 are those of player-2. The first term in each of the payoff vectors shows the payoff of player-1 and the second term is that of player-2. This game has two Nash equilibria, viz, (S_1, T_1) and (S_2, T_2). Of the two equilibria (S_1, T_1) is strict equilibrium and (S_2, T_2) is not. Thus strict equilibrium predicts (S_1, T_1) as the solution of the game. The

	Player-2	
	T_1	T_2
S_1	(10, 10)	(5, 7)
S_2	(7, 5)	(5, 5)

Player-1

Figure—1

rationale behind strict equilibrium is that at the Nash equilibrium (S_2, T_2) the players have no disincentive to deviate unilaterally and so any or both of them may deviate making (S_2, T_2) unreasonable. Moreover they have incentive to deviate if one anticipates the deviation by the other. Similarly for the game of figure-2 below, the strategy combination (S_2, T_2) is a strict equilibrium and (S_1, T_1) is not. But is it reasonable to reject such a good equilibrium as (S_1, T_1) ? Another problem with the idea of strict equilibrium is that for a large class of games it has no cutting power. i. e., like Nash equilibrium strict equilibrium also may not be unique.

	Player-2	
	T_1	T_2
S_1	(10, 10)	(0, 10)
S_2	(10, 0)	(2, 2)

Player-1

Figuer—2

A very popular refinement called *perfectness* was introduced by Selten [1975]. An equilibrium is called perfect, or trembling-hand-perfect in the words of Selten, if it is stable against slight perturbation of the game caused by the mistakes of the players while playing their equilibrium strategies. For example at equilibrium (S_2, T_2) of the game of figure-1, player-1 receives an expected payoff of $7\epsilon + 5(1-\epsilon)$ from S_2 and $10\epsilon + 5(1-\epsilon)$ from S_1 if he thinks that player-2 by mistakes may shift to T_1 with probability ϵ. Clearly the expected payoff from S_1 is greater than that from S_2, however small the value of ϵ is. Similar is the case for player-2. Thus, with this risk consideration both the players will choose their first strategies and equilibrium (S_2, T_2) will be unstable or imperfect and the equilibrium (S_1, T_1) will be perfect. But when this perfectness concept is applied to the game of figure-2, it leads to a problem similar to that obtained in strict equilibrium. As before the good equilibrium (S_1, T_1) is imperfect and (S_2, T_2) is perfect. Perfect equilibrium is also non unique. The third problem with perfectness as was pointed out by Myerson [1978] is that the set of perfect equilibrium increases with the inclusion of dominated strategies and this seems unreasonable. To observe this consider the game of figure-3 below. By including dominated strategies S_3 and T_3 it makes (S_2, T_2) perfect which was not so in the original game. To overcome these difficulties Myerson introduced the concept of *proper equilibrium*. He argued that it is not rational to assume ϵ as the probability of all sorts of mistakes. He

Player-2

		T_1	T_1	T_3
	S_1	(1, 1)	(0, 0)	(−9, −9)
Player-1	S_2	(0, 0)	(0, 0)	(−7, −7)
	S_3	(−9, −9)	(−7, −7)	(−7, −7)

Figure 3

introduced probability ϵ for a less costly mistake and probability ϵ^2 for a more costly mistake and concluded that the equilibrium (S_1, T_1) of the game of figure 3 is the only proper equilibrium. The main problem with proper equilibrium is that all proper equilibria are not equally robust. The problem of non-uniqueness is also there. To overcome the former problem Okada _1981] introduced the concept of strictly perfect equilibrium. According to this criterion an equilibrium should be stable against arbitrary slight perturbations of the game. The main problem with the strictly perfect equilibrium is that it does not exist for all games.

A close survey of the above stability criteria reveals that the idea of slight mistakes is not unreasonable but the ways in which it was incorporated in the above equilibrium concepts are not totally satisfactory. For perfectness there is an underspecification error, whereas for proper equilibrium and strictly perfect equilibrium there are overspecification

errors.   One has to find out a proper specifications to the possibilities/
probabilities of mistakes.   Thus, though the concept of Nash equilibrium
is well accepted as a necessary condition for the solution of a game, the
refinements, those were so far developed, neither attain to be necessary
nor to be sufficient.   A correctly developed game theory should be able to
predict a solution for every game (whatever be the payoffs) given a set of
assumptions regarding the rationality of behaviour of the players in terms
of payoff maximisations, risk minimisation, risk diversification etc.   With
the existing gap between Nash equilibrium and other refinement equili-
bria economists willing to apply game theory in competitive situations
have to be satisfied either with Nash equilibrium (it gives complete and
nice results if the situation consists of only one Nash equilibrium) or have
to end up with less satisfactory results while applying the refinement
equilibria.

What follows is a suggestion for a new equilibrium that tries to
refine some nonsensible Nash equilibria in a very simple way.   This
equilibrium is based on the simple behaviour of payoff maximisation and
can be called *reasonable equilibrium.*   In the most simplified set up it is
assumed that the players know the possible strategies and payoffs of all
the players exactly and correctly, or it is a game of complete information.
Secondly, it is assumed that the players do not make mistakes and more
simply the players do not think that their opponents can make mistakes.
This assumption is, however, simplified one and can be easily relaxed.
The third assumption is that each player selects his strategies in such a
way that maximises his payoff given the strategies of the others.   This
actually leads to Nash equilibrium.   This behaviour, however, leaves room
for selection of different strategies against different choices of other
players.   A fourth assumption consistent with the behaviour of payoff
maximisation is made here that each player also selects that strategy
which maximises his expected payoff.   Thus a Nash equilibrium that
includes the above strategy will be the reasonable equilibrium to the
player.   In a two player game a Nash equilibrium which is reasonable to
one player may not be reasonable to the other.   This later player may
have a different reasonable Nash equilibrium.   In this case both the
equilibria will be called reasonable.   But if a single Nash equilibrium is
reasonable to both the players it will be called jointly reasonable.   For
illustrations cosider the game of figure-1 again.   Player-1 planning to
select S_1 assesses the probabilities by which player-2 may choose T_1 and
T_2.   He concludes that player-2 will choose T_1 with probability 1.
Therefore his expected payoff from S_1 is 10.   On the other hand if
player-1 plans to select S_2 his assessment regarding the probabilities of T_1
and T_2 are $\frac{1}{2}$ each and his expected payoff from S_2 is 6.   This predicts

that S_1 is the best choice of player-1 and so the Nash equilibrium (S_1, T_1) involving S_1 is the reasonable equilibrium for player-1. Similarly the best choice of player-2 is T_1 and the same Nash equilibrium (S_1, T_1) is reasonable for player-2, or (S_1, T_1) is the jointly reasonable Nash equilibrium and it is the solution of the game. For the game of figure-2 the expected payoff from S_1 is 5 and from S_2 is 2 for player-1 and those from T_1 is 5 and from T_2 is 2 for player-2. Thus here also (S_1, T_1) is the jointly reasonable equilibrium and the solution of the game. Now consider a game which is otherwise similar to that in figure-2 except the payoffs in (S_2, T_2). Let they are $(6, 6)$. Here (S_2, T_2) is jointly reasonable and it is the solution of the game. Note that the reasonable equilibrium in this case negates the good equilibrium (S_1, T_1) as the strategies S_1 and T_1 involve lower expected payoffs and higher risks. If, however, the payoffs at (S_2, T_2) are $(2, 6)$ the equilibrium (S_1, T_1) is reasonable for player-1 and (S_2, T_2) for player-2 or both these equilibria are to be considered reasonable. Finally if the payoffs at (S_2, T_2) are $(5, 6)$, the equilibrium (S_2, T_2) is jointly reasonable though $(S_1. T_1)$ is also reasonable for player-1. Here the expected payoff both from S_1 and S_2 are 5 but more risk is involved in S_1 and so if risk minimisation is included as a secondary criterion for reasonableness the only reasonable equilibrium is (S_2, T_2). This idea of reasonable equilibrium is also flexible enough to accomodate the possibilities of mistakes or the concept of perfectness. These possibilities here do not act as a refinement of Nash equilibrium but actually adds a new dimension to the concept of reasonableness.

3. Refinement of Nash equilibria for extensive form games

In extensive form games players move sequentially and the sequence of moves are known to all the players. However, while a player moving after the first player (player moving first) may not know what moves his predecessor has selected. Without this informations the games are called the games of imperfect information and with such information those are called the games of perfect information. Following are two simple examples of extensive form games. In both these games of figure-4 and figure-5 two players have similar moves and payoffs, but for the first game of figure-4 player-2 who is moving second has the perfect information, while for the game of figure-5 he has imperfect information about the move of the first player and this imperfect information is presented in the diagram with the help of a dashed line joining the nodes X and Y of player-2 meaning that they are in the same information set or the player has no separate information about these two nodes.

For solving the games of perfect information the concept of backwards induction or dynamic programming is used. Player-1 in the

game of figure-4 observes that if he selects S_1 player-2 will select T_1 and
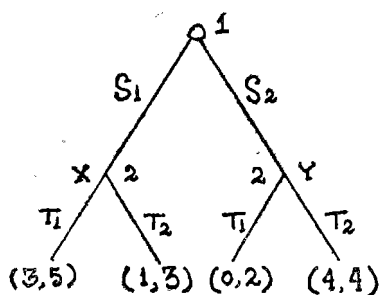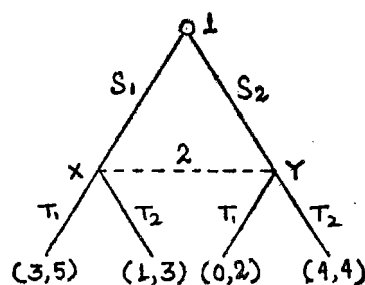

Figure-4

Figure-5

he will have payoff 3 ; on the otherhand if he chooses S_2 player-2 will select T_2 and he will end up with payoff 4. These assessments make him choosing S_2 and it leads to the solution (S_2, T_2). This concept of backwards induction is just like the concept of reasonable equilibrium explained for normal form games. The normal form reduction of the game of figure-4 is like that shown in figure-6. It is observed that this normal form game

Player-3

	T_1	T_2
S_1	(3, 5)	(1, 3)
S_2	(0, 2)	(4, 4)

Player-2

Figure-6

has two Nash equilibria (S_1, T_1) and (S_2, T_2). The principle of backwards induction eliminates the Nash equilibrium (S_1, T_1) from being reasonable. But for the game of figure-7 below whose normal form reduction is given in figure-8, the solution is (S_2, T_2) obtained by backwards induction though the reduced normal form game of figure-8 has no pure strategy
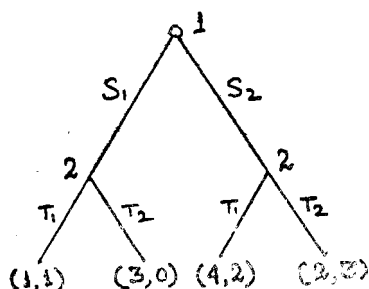

Figure-7

Player-2

	T_1	T_2
	(1, 1)	(3, 0)
Player-1	(4, 2)	(2, 3)

Figure 8

Nash equilibrium. Actually to find the Nash equilibrium in pure strategies of the game of figure-7 one may use the following normal form transformation as shown in figure-9. T_1' and T_2' mean choice of T_1 and T_2 respectively by player-2 whatever is chosen by player-1. T_3' means choice of T_1 if S_1 is observed and that of T_2 if S_2 is observed i.e., $T_3' = T_1/S_1$ & T_2/S_2.

T_4' stands for the choice of T_2 against S_1 and that of T_1 against S_2, i.e.,

Player-2

	T_1'	T_2'	T_3'	T_4'
S_1	(1, 1)	(3, 0)	(1, 1)	(3, 0)
S_2	(4, 2)	(2, 3)	(2, 3)	(4, 2)

Player-1

Figure-9

$T_4' = T_2/S_1$ & T_1/S_2. Now the Nash equilibrium can be obtained as (S_2, T_3'). It is the only Nash equilibrium of this game and it implies the choice of (S_2, T_2) in the original game of figure-7. The principle of backwards induction is based on the assumptions that there is no possibility of mistakes and that the players can make successive rounds of iterations. Rosenthal's [1981] classic example of centepede game explains why players may willingly try not to select the equilibrium obtained by backward induction.

For games of imperfect information three major types of refinements of Nash equilibrium are prescribed. They are sub-game perfection, sequential equilibrium and trembling hand perfectness.

A Nash equilibrium is called subgame perfect if it consists of Nash equilibria of every subgames of the original game. The main problem with this refinement is that there are many games which have no proper subgames and the sub-game perfection has no cutting power. For illustration consider the game of figure-10 below. It has a sub-game starting at node y and for that sub-game the only Nash equilibrium is (R_2, T_2). For the complete game, however, there are six Nash equilibria, viz., (S_1R_1, T_1), (S_1R_2, T_1) (S_2R_2, T_2), $(S_2R_2, T_1/S_1$ & $T_2/S_2)$, $(S_1R_1, T_1/S_2$ & $T_2/S_1)$ and $(S_1R_2, T_1/S_2$ & $T_2/S_1)$ of which the third, fourth and sixth are sub-game perfect involving (R_2, T_2). Now by applying the principle of backwards induction on these Nash equilibria one arrives at either (S_2R_2, T_2) or $(S_2R_2, T_1/S_1$ & $T_2/S_2)$ Both these involve choice of S_2 and R_2 by player-1 and T_2 by player-2. Now consider the game of figure-11 below which is similar in structure to the game of figure-10 with different payoffs. The complete game has as before six Nash

Figure-10   Figure-11
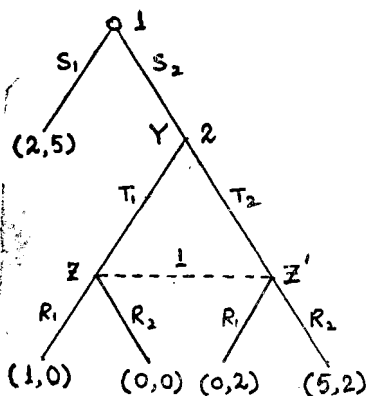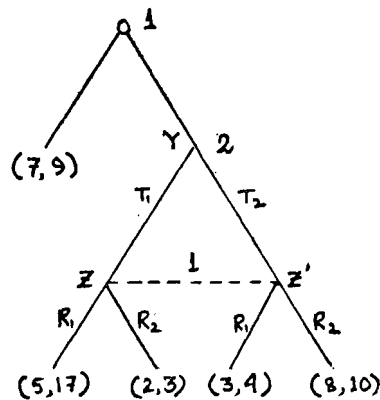
equilibria, viz, (S_1R_1, T_1), (S_1R_2, T_1), (S_2R_2, T_2), $(S_2R_2, T_1/S_1$ & $T_2S_2)$, $(S_1R_1, T_1/S_2$ & $T_2/S_1)$ and $(S_1R_2, T_1/S_2$ & $T_2/S_1)$ of which the second and the fifth are not subgame perfect because the Nash equilibria of the sub-game starting at node y are (R_1, T_1) and (R_2, T_2). This means that the subgame perfect equilibria will induce

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either the play of S_1R_1 supported by T_1 or that of S_1R_2 supported by T_2 or that of S_2R_2 supported by T_2 Now by applying the principle of backwards induction as before player-1 will be observed to choose S_2. But will it be sensible to prescribe (S_2R_2, T_2) as the solution when the equilibrium (R_1, T_1) seems more robust than (R_2, T_2) for the subgame starting at node y ? Actually if the node y is reached player-2 will intend to choose T_1 making player-1 choosing R_1 and thereby reaching (R_1, T_1). This idea in turn applies the principle of backwards induction on the games of imperfect information also and induction is performed only over the Nash equilibria. Thus imperfect backwards induction after node y gives the equilibrium (R_1, T_1) and perfect backwards inductions at the initial node chooses S_1 leading to the solutions (S_1R_1, T_1).

The concept of sequential equilibrium was introduced by Kneps and Wilson [1982] to incorporate the logic of subgame perfection in those games where there is no proper subgame. By definition a sequential equilibrium is that strategy combination for which there exist some (consistent) beliefs such that each player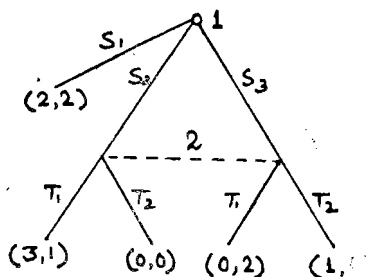's strategy prescribes at every information set a choice which is optimal with respect to these beliefs. Note that for an equilibrium to be sequential it is only necessary that it is optimal with respect to some beliefs and not with respect to all beliefs or even with respect to most plausible ones and this has the consequence that not every sequential equilibrium is sensible. For illustrations consider

Figure-12

the game of figure-12 below. This game has no proper subgame. Therefore all Nash equilibria of the game are subgame perfect. The game has actually 4 Nash equilibria, viz, (S_1, T_2) (S_2, T_1) $(S_1, T_1/S_1$ and $T_2/S_1)$ and $(S_2, T_2/S_1$ & $T_1/S_1')$ where S_1' is the complement of S_1 meaning S_2 or S_3. Of these four equilibria (S_1, T_2) and $(S_1, T_1/S_1$ & $T_2/S_1')$ are not sequentially rational because player-2's choice of T_2 is not justified whatever be his belief regarding player-1's move.

Therefore S_2 and T_1 are only the sequentially rational strategies and so (S_2, T_1) is the solution of the game. However, all sequential equilibria are not equally sensible. To observe this just change the payoff player-2 at the S_3-T_1 terminal from 2 to 0. This new game has also 4 equilibria as before and all of them are subgame perfect and sequential. Here player-2's choice of T_2 is justified by the belief that player-1 has chosen S_3. But if one examines the three strategies of player-1 very

minutely he will find that the strategy S_3 is dominated by S_1 and therefore this belief seems inplausible. Thus the sequential equilibria (S_1, T_2) and $(S_1, T_1/S_1 \& T_2/S_1')$ and nonsensible. By applying the idea of imperfect backwards induction the only reasonable equilibrium obtained is (S_2, T_1) both for the game of figure-12 and its modified form.

This concept of imperfect backwards induction is just the extensive form counterpart of reasonable equilibrium defined for normal form games. Trembling hand perfectness criterion can also be applied for extensive form games in a way similar to that for normal form games to arrive at the reasonable equilibrium if the players are expected to tremble and if their opponents have the fear of those trembles.

4. Concluding remarks :

In non cooperative game theory several attempts were made to refine Nash equilibria by explaining/specifying the rationality of behaviour of the players in different ways. This paper has attempted to show that those rationalities are best captured in the newly introduced concepts of reasonable equilibrium for normal form games, perfect backwards induction for extensive form games of perfect informations and inperfect backwards induction for those of imperfect informations. The idea of perfectness of Selten which is based on the possibilities of mistakes can also be used together with the above concepts if the players really think of these possibilities, otherwise the reasonable equilibrium or backwards induction will be the unique ways in two forms for refining Nash equilibrium.

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AVAILABILITY OF INSTITUTIONAL FINANCE AND CHANGES IN CROPPING PATTERN : A PRELIMINARY STUDY

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I

Introduction

In the context of massive liberalisation and globalisation policy of India for economic reforms since 1991 the vital role of agriculture is being emphasized to achieve rapid economic growth and increasing earning of necessary foreign exchange. The yield per hectare in Indian agriculture has remained much less than that in the developed countries. For raising agricultural productivity and thus accelerating agricultural growth in the context of declining land-man ratio rapid diversification of agriculture through change in cropping pattern (C.P.) is being stressed. Again, in view of the changing composition of demand due to faster industrialisation and urbanisation, ecological imbalances, resource chrunch, chronic unemployment problem and crisis in foreign exchange reserves, change in C. P. is being considered one of the crucial rural diversification measures. Thus it is said that a desirable C. P. would be one which favours crops which are labour-intensive and have greater second round employment generating effects along with their role in agricultural and overall aconomic growth. Simultaneously, it should favour crops which are either efficient impoit substitutes or exportables to save (earn foreign exchange in balance. Again, given water as the binding constraint the C. P. should have the objective to maximise returns to this input and favour crops that are ecologically sustainable. Thus, it is held that the change in C, P. can accelerate the agricultural productivity which may assist the process of globalisation of Indian agriculture and, in this way, the change in C.P. can contribute largely to the process of economic reforms of India.

The question that may arise in this context are : What are the Important factors that influence changes in C.P. ? What role can institutional credit (I. C.) play in this context ? The present study makes a preliminary attempt to examine how far the change in C. P. is influenced by availability of I. C. in India. The need for such a study arises out of the inadequacy of the existing literature to give sufficient answers to our research questions.

Review of Existing Literature :

No doubt, there are several studies relating to the impact of changes in C. P. on (i) agricultural growth (e.g. Minhas and Vaidyanathan (1965), Dharam Narain (1977), P. Devasena Naidu (1989), (ii) the income and employment (e. g. Joshi and Alshi (1985), Chand, Sidhu and Kaul (1985), Singh, Singh and Sharma (1991), Singh, Gupta, Kaidan and Singh (1991), (iii) ecology (viz. Hussain (1991), Toor and Singh (1991). Joshi and Tyagi (1991), Again, there are studies on the factors influencing the change in C. P./farming practices (viz., Majid (1963), Shah (1963), Malya (1963), Jasdanwalla (1966), Sridharan and Radhakrishna (1978) Sinha (1978), Madalia (1985), Besides, one can mention the studies that tried to focus on the optimum C. P. plan (viz. Mehta, Sharma and Singh (1982). The study on the requirement, supply, problems and repayment of I. C. has been done by many researchers (viz. Ray and Sau (1992), Kahlar (1991), Banerjee and Ghosh (1988). Gupta (1990), Rana (1988). There is only one study made by Upendra Kunwar (1987) that tries to focus on the impact of credit provided by Land Development Bank on overall agricultural growth. A study of inter-crop price parities conducted by the Ministry of Food and Agriculture shows how price variations exert an important influence on acreage shifts.

From this brief review of existing literature it is evident that no study has yet been undertaken to pursue the relationship between the I. C. and the change in C. P. The present note makes an attempt to examine the impact of I. C. on changes in C. P. in All-India and all-West Bengal (W. B.) perspective. It is argued here that both C. P. and the volume of I. C. have changed over years in India and that they are significantly correlated.

Data and Methodology :

Secondary data have been used to establish the above theme. Simple statistical techniques like average, regression, index number have been applied. The formula used for C. P. index (C. P. I.) is as follows :

$$C. P. I. = \frac{C_{ij} \, Y_{io} \, P_{io}}{C_{io} \, Y_{io} \, P_{io}}$$

where, C_{io} = Proportion of area under i-th crop in the base period

C_{ij} = Proportion of area under the i-th crop in j-th year.

Y_{io} = Yield per hectare of the i-th crop in the base period.

P_{io} = Price per unit of the i-th crop in the base period.

Plan of the work :

The plan of the rest of the work is as follows :

Section II discusses the changes in C. P. across the States of India and the districts of W. B. Section III examines the changing volume of I. C. over years. Section IV examines the relationship between changes in C. P. and availability of I. C. Section V summarises the findings made earlier and makes some concluding observations.

II

Changes in Cropping Pattern : State and District Level Comparison

To focus on changes in C P. we first concentrate on state level analysis in all-India perspective and then on district level study in all-W. B. perspective.

The percentage share of total foodgrains to gross cropped area (G.C.A.) in India has declined from 74.82 in 1972—73 to 72.10 in 1985—86. However, within foodgrains category, the area under cultivation of rice, wheat, tur (arhar) has shown almost an increasing trend over time while that of jowar, bazra, ragi, gram, barley. maize has moved into the opposite direction. On the other hand, the percentage share of sugarcane, rape and mustard, coconut, coffee, tea, fooder crops, seasamum, jute, indigo to G. C. A. has shown a rising trend during this period and the area under cultivation of lineseed, cotton, tobacco, opium has shown a falling trend (Table 1).

To discuss the change in C. P. at the state level we have selected three States, viz. Haryana, Punjab and W. B. In case of Haryana it is observed that the percentage area under cultivation of rice, wheat, tur (Arhar), sugarcane, seasamum, cotton has increased and that of jowar, lineseed has moved in the opposite direction. On the other hand, the percentage area under cultivation of maize, bazra, tobacco, barley, gram, ground-nut has has declined overtime with some fluctuations, while that of rapeseed and mustard has increased with few exceptions. As a whole. the percentage share of total foodgrains to G. C. A. though fluctuated over time has declined in recent times (during 1974—75 − 1987−88) (Table 1).

Table 1

CHANGES IN PERCENTAGE OF FOODGRAINS AREA
IN HARYANA, PUNJUB, WEST-BENGAL & ALL INDIA

	All-India	West Bengal	Punjab	Haryana
1974-75	74·17	85·80	67·02	74·44
1975-76	75·03	86·14	69·25	77·26
1976-77	74·75	84 56	71·00	78·53
1977-78	74·15	83·49	70·07	78·35
1978-79	73·94	80 60	71·70	77·39
1979-80	74 06	82·00	72·90	76·05
1980-81	73·92	80 03	71·61	73·57
1981-82	73·35	80·32	71·13	74·53
1982-83	72·40	77·76	72·34	71·68
1983-84	73·20	78 70	74·57	73·12
1984 85	71·97	76·68	76·36	72·03
1985-86	72·10	73 90	75·32	71·84
1986-87	73·83	76·18	78·77	73·92
1987-88	72·78	74·98	76·04	68·58

Source : (i) Area & Production of Principal crops in India, Govt
of India.

(ii) Indian Agricultural Statistics, Govt. of India.

(iii) Statistical Abstract, Govt. of West Bengal.

In case of Punjab, the   percentage area under cultivation of rice, wheat, tur (arhar), cotton has risen during 1972—78 to 1987—88, while that of jowar, maize, sugarcane, ground-nut. lineseed, tobacco has declined during the same period. However, in case of barley, bazra, gram, seasamum the percentage share to G. C. A. has decreased over time with some fluctuations. Again, the percentage share of rape and mustard has risen over time with some fluctuations. In sum, the percentage share of total foodgrains area to G. C. A. in Punjab has almost increased over years (Table I).

In case of W. B., the percentage area under cultivation of ragi, seasamum, rape and mustard, coconut, dry chillies, small millets, til, tobacco; potato has shown a rising trend during 1972—73 to 1988 —89, while that of rice, bazra, maize, wheat, barley, gram, sugarcane, lineseed, cotton, jute, tea, jowar, tur (arhar), mesta has moved on the reverse directions during the same period. In case of ground-nut and ginger the percentage share to G. C. A. has risen over time.   As a whole, it is observed that the percentage

share of total goodgrains to G. C. A. has shown a declining trend during 1972—73 to 1989—90. That is, the change in C. P. has moved towards more cultivation of non-foodgrains (Table I).

In sum, the percentage share of total foodgrains to G. C. A. has shown an increasing trend for Punjab but a declining trend for Haryana and W. B.

Let as now focus on the district level analysis of change in C. P. in W. B. The districts selected for discussion are Midnapore, Burdwan, Murshidabad and Nadia. In Midnapore, the percentage area under cultivation of rice, maize, other kharif pulses, rape and mustard, til, potato, dry chillies, ginger has fluctuated over years and finally increased in 1988—89 in comparison with 1972—73. In case of cultivation of wheat, small millets, gram, arhar (tur), other rabi pulses, lineseed, jute, mesta, sunhemp, sugarcane, the percentage area has moved up and down and eventually declined in 1988 89 as compared to 1972—73. On the other side, the percentage share of tobacco to G.C.A. has remained stable during 1972—73 to 1988—89. As a whole, the percentage share of total foodgrains to G. C. A. has shown a declining trend over time (Table 2).

In case of Burdwan, the percentage area under cultivation of jawar, rape and mustard, til, jute, potato, dry chillies has shown an increasing trend over years, while that of rico, wheat, barley, bazra, gram, arhar, other rabi pulses, other kharif pulses, lineseed, mesta, sunhemp, sugarcane has fluctuated with a declining trend during 1972—73 to 1988—89. On the other hand, the percentage share of maize to G. C. A. has fluctuated during 1972—73 to 1986—87. At a glance, the percentage share of total foodgrains to G. C. A. has declined over time (Table 2).

In case of Murshidabad, the percentage area under cultivation of rice, arhar, other kharif pulses, rape and mustard, till, other oilseeds, jute, potato, dry chillies has almost shown a rising trend, while in case of wheat, barley, maize, gram, other rabi pulses, mesta, sugarcane, lineseed, the opposite trend has been observed. As a whole, the percentage share of total foodgrains to G. C. A. has declined overtime during 1972— 3 to 1988—89 (Table 2).

In case of Nadia, the area under cultivation of maize, small millets, other rabi pulse, rape and mustard, til, other oilseeds, jute, dry chillies, potato has increased over years during 1972-73 to 1988-89, while that of rice, wheat, barley, gram, sugarcane, arhar (tur), other kharif pulses, lineseed, mesta has moved in opposite direction. Again, the percentage share of tobacoo and ginger to G C A has almost remained stable during the same period. At a glance, the percentage share of total foodgrains to G C A has almost declined over years during 1972-73 to 1988-89 (Table 2).

Table 2

CHANGES IN PERCENTAGE OF FOODGRAINS AREA IN MIDNAPORE, BURDWAN, MURSHIDABAD, NADIA, WEST BENGAL.

	West Bengal	Midnapore	Burdwan	Murshidabad	Nadia
1972-73	86·13	93·34	91 22	83·87	77·25
1973-74	84 94	93·38	91 66	79·13	73·76
1974-75	85·80	93·79	91 73	82·38	77·77
1975-76	86·14	93·01	91·13	84·16	78·32
1976-77	84·56	92 43	89·39	80·89	77·41
1977-78	83·49	95·41	91·34	81 50	73·22
1978-79	80 60	94 08	87·84	77 00	68·19
1979-80	82·00	94·85	88 25	82·32	74·20
1980-81	80 03	93 50	87·07	78·25	69·10
1981-82	80 32	93·80	83·87	78·76	51·81
1982-83	77·76	95 01	84 13	78·76	68·78
1983-84	78 70	90 19	87·60	78 29	62·72
1984-85	76·68	93·99	80 49	70·69	39·06
1985-86	73·90	85·54	79·52	66·23	53·92
1986-87	76·18	91 75	86·67	74 09	73·07
1987-88	74·98	90 98	83·08	76·49	73 12
1988-89	75 81	91·22	83·56	77·39	69·66

Source : Statistical Abstract, Govt. of West Bengal.

From the above analysis, it can be concluded that the change in C. P. has moved in favour of cultivation of non-foodgrains for all the selected districts of W. B and also for W. B. as a whole. On the otherside, the same phenomenon regarding change in C. P. has been found for all-India and Haryana while in case of Punjab the opposite has happened.

III

Trend of Institutional Credit : A State and District level analysis

This change in C. P. is influenced by several natural, technological, economic and institutional factors including availability of credit. But credit must be accessible, cheap, safe and productive. In this respect the provision of sufficient amount of I. C. to the farmers is an appropriate one for changing C. P. in the desired direction. "The most important consideration affecting cropping pattern is the economic consideration. ··· The real difficulty in adopting a better cropping pattern is that the farmer may not have the requisite capital to invest now or possess the knowhow that may be necessary for changing the crops. It is here that the Govern-

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ment may come to his help."[1]   It is to be noted that the nationalisation of banks in India has made a structural change in the banking oparations—a change from private banking into mass banking. In this regard, the priority sectors, in particular agriculture, have been given a special emphasis with a provision of larger amount of I. C. to the farmers. This fact is evident from All-India Debt and Investment Survey (AIDIS) conducted decennially since 1951-52. From the four Surveys conducted so far it is observed that the institutional sources of rural credit have increased their participation considerably. From a meagre 7.2% in 1951, the share of institutional sources increased to 61.2% in 1981—a commendable performance by all means. The steep decline in the importance of non-institutional sources in rural credit from 70.8% in 1971 to 38.8% in 1981 (and of money lenders from 36.9% to 16.9%) was mainly due to steep rise in the participation of banks in rural credit. An indications of the rising participation of institutional agencies in rural credit is provided by the fact that the total direct institutional finance to agriculture which amounted to Rs 1,798 crores in 1970-71 increased to Rs 2,928 crores in 1979-80 (by 162%) and in 1992-93 to Rs 13,000 crores (by 4.43·99%).

In India as a whole, it is observed that the I. C. per hectare has increased over years during June 1975—June 1988 (Table 3). In case of Punjab, the I. C. per hectare has shown a declining trend over the period June 1975 to June 1977 and then started increasing upto the year June 1985 and then fluctuated during June 1986 to June 1988. In case of Haryana, the I. C. per hectare has fluctuated during June 1975 to June 1977 and then reflected a rising trend from June 1978 to June 1984 but declined to Rs 1659.36 in June 1985 and then again shown a rising trend upto June 1988. In case of W. B., a rising trend of I C. per hectare has been found during June 1975 to June 1979 but it declined to Rs 379.95 in June 1980 and thereafter an increasing trend has been observed upto the year June 1987 but again declined in June 1988 (Table 3).

Let us concentrate on the district level study of W. B. for analysing the trend of institutional finance for agriculture. In case of Burdwan, the I C. per hectare has risen over time during June 1973 to June 1980 and then started fluctuations for the period June 1981 to June 1985 and then revealed a rising trend upto the year June 1989 (Table-4). In case of Midnapore district, it is observed that the I. C. per hectare has increased over years during June 1973 to June 1985 and then started fluctuations. In case of Murshidabad, the I. C. per hectare has shown a rising trend during June 1973 to June 1979 and then fluctuated over years upto June 1984 but again revealed an increasing trend upto June 1989. The I. C. per hectare, in case of Nadia, has declined from Rs 27.46 in June 1973 to Rs 15.78 in

Table 3 INSTITUTIONAL CREDIT PER HECTARE IN INDIA BY STATES (Rs/HA.)

	June 1975	June 1976	June 1977	June 1978	June 1979	June 1980	June 1981	June 1982	June 1983	June 1984	June 1985	June 1986	June 1987	June 1988
West Bengal	137·55	155·58	249·63	265·64	395·91	379·95	388·76	492·79	491·33	572·23	598·09	677·84	1002 37	887·58
Haryana	217·74	235·87	213·02	386·32	496·91	685·88	717·71	826·96	953·79	1724·39	1659 36	2249·42	2296·49	2853·82
Punjab	374·21	366·89	245·30	429·81	497·13	650·00	859·82	981·59	1134·48	2393·23	2888·81	2348·61	2074·88	2334·36
All India	103·73	110·15	122·29	148·22	202·45	243·80	262·41	286·46	320·73	391·27	363·39	471·35	524·51	603·63

Notes : The figures on I- C- include only the credit provided by Commercial Banks and Co-operatives.

Source : Banking statistics. Banking Statistical Returns Reserve Bank of India.

Table 4 INSTITUTIONAL CREDIT PER HECTARE IN WEST-BENGAL BY DISTRICT (RS/HA.)

	June 1973	June 1974	June 1975	June 1976	June 1977	June 1978	June 1979	June 1980	June 1981	June 1982	June 1983	June 1984	June 1985	June 1986	June 1987	June 1988	June 1989
Midnapore	9·79	15·00	16·54	17·98	31·74	41·80	47·31	53·16	67·14	74·72	98·85	106·61	504·11	536·22	348·34	449·07	1620·67
Burdwan	19 34	26·21	47·37	53·44	81·40	117·05	142·09	195·56	190 77	223·39	267·49	276·74	262·66	414·30	572·76	600·31	691 52
Murshidabad	7·49	9·08	11·79	19·66	36·16	62·66	113·84	112·08	183·85	157·95	176·62	175·98	189·66	218·55	269·46	385·66	420·26
Nadia	27·46	15·78	46·27	60·77	88·13	121·06	161·57	204·14	158·55	263·91	298·11	202·40	283·98	387·96	434·29	501·57	482·99
West-Bengal	107·69	96·76	137·55	155 58	249·63	265·64	395·91	379·95	388·76	492·79	491·33	572·23	598 09	677·84	1002·37	887·58	142415

Notes :   The datas on Institutional Credit (I. C.) include only the credit provided by Commercial Banks.

Source :   Banking statistics,Banking Statistical Returns" Reserve Bank of India.

June 1974 and then started rising upto the year June 1980, but fluctuated over years upto June 1984 and again revealed a rising trend upto June 1988 and declined to Rs 482.99 in June 1989.

In sum, it can be concluded that the I. C. per hectare has shown a rising trend for both the selected states and the selected districts.

IV

Institutional Finance and Changes in Cropping Pattern : An Inter-Relationship

Let us examine the impact of I. C. on changes in C. P. in the studied regions. For this purpose the hypothesis can be stated as follows :

The larger the availability of I. C. for agriculture, the more diversified the C. P.

To test this hypothesis a simple linear regression model of the following form has been constructed :

$$Y = a + bx + u$$

where, Y = Index of C. P., x = Index of I. C. for agriculture per hectare, u = Random disturbance term,

Let us discuss the results obtained in this respect. Focusing on the results obtained at all-India level, it can be said that the I. C. per hectare as explanatory variable explains 48% variation in the C. P. and the value of t-ratio indicates a significant relationship between I. C. and changes in C. P. (Table 5). Similarly, from the state level study it is found that the

Table 5   ESTIMATED REGRESSION EQUATION CONCERNING I.C. AND C.P. IN SAMPLE STATES IN INDIA

States/India	Period	Explanatory Variables		R^2
		Constant	I.C.	
All India	1973-74 to 1985-86	98.203	0.07 (3.15)	0.48
West-Bengal	1973-74 to 1987-88	100.49	0.05 (3.85)	0.54
Haryana	1973-74 to 1987-88	105.42	0.018 (4.5)	0.57
Punjab	1974-75 to 1987-88	100.23	0.009 (4.5)	0.60

Notes :   (i)   The figures in parentheses indicate t-ratios.
          (ii) The figures of I.C. per hectare have been changed from current prices into constant prices and then used for regression analysis.

I. C. per hectare as explanatory variable explains 54%, 57% and 60% varia-
tion in the C. P. for W. B., Haryana and Punjab respectively and the values
of t-ratio of these three states also reveal a significant relationship between
I. C. and changes in C. P. On the other side, the district level study
manifests that the I C. per hectare as explanatory variable explains 2 %,
33%, 67% and 41% variation in the C. P. for Burdwan, Midnapore, Murshida-
bad and Nadia respectively and the values of t-ratio in case of these districts
again establish a significant relationship between I. C. and changes in C. P.
(Table 6).

Table 6   ESTIMATED REGRESSION EQUATION CONCERNING I.C.
AND C P. IN DISTRICTS IN WEST BENGAL

| Districts | Period | Explanatory Variables | | |
		Constant	I.C.	R^2
Burdwan	1972-73 to 1987-88	109.03	0.009 (2.41)	0.29
Midnapore	1972-73 to 1987-88	108.89	0.09 (2 63)	0.33
Murshidabad	.972-73 to 1987-88	112.14	0.29 (5.30)	0.67
Nadia	1972-73 to 1987-88	103.67	0.23 (3.15)	0.41

Notes :   (i)   The figures in parentheses indicate t-ratios.
          (ii) The figures of I.C. per hectare have been changed from current
                prices into constant prices and then used for regression
                analysis.

From the above analysis it can be concluded that there exists a signifi-
cant relationship between the availability of I. C. for agriculture and the
changes in C. P.

V

Conclusions

In this concluding section, let us first summarise the main observations.
First, the I. C. per hectare has increased over years for both the selected
states and the selected districts of W. B. Second, the percentage share of
total foodgrains to G C A has shown a rising trend for Punjab but declining
trend for Haryana, W. B. and India as a whole. The C P. has moved
in favour of non-foodgrains for all the selected districts of W. B. Third,

the availability of I. C. for agriculture can positively and significantly influence the changes in C. P.

From the above observations, the following policy prescriptions can be made.

First, the Government of India (G O I) must accelerate the priority sector lending to agriculture since the increasing availability of I. C will help the farmers change the C. P. in the desired direction.

Second, in the context of rapid industrialisation, urbanisation and population growth the G. O. I. should encourage the change in C. P. towards high-yielding varities :HYVs' and other crops (which can satisfy the diversified demand) through the greater provision of I. C. to the farm households. If this is done then the country will experience not only the higher rate of agricultural growth but also a remarkable acceleration in the pace of industrialisation.

To conclude, the present study has considered only I. C. and excluded other factors influencing change in C. P. A further investigation considering other factors influencing change in C. P. is, however, needed to test our hypothesis with more reasonable accuracy.

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SURVIVAL AND GROWTH OF TRADITIONAL HANDLOOM INDUSTRY IN WEST BENGAL : A PRELIMINARY STUDY

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I

Introduction

Two different viewpoints are available on the status of traditional industries. One school of thought is of the opinion that as an impact of industrialisation of the economy modern capital-intensive industry would prevail and the household-based traditional industry would face continuous shrinkage and ultimately evaporate. Hymer and Resnick (1969) and Resnick (1970) observed a pattern of continuous shrinkage of the z-good (i.e., rural industries) sector in the Philippines, Burma and Thailand, Extinction of this sector is, according to them, logically inevitable since z-goods sector turns out to be inferior. Little, Majumdar and Page (1987) observe, "household manufacturing has declined relatively in all the economies" (India, Indonesia, Philippines and most African countries). There is, however, another school which holds that far from disappearing the traditional industry survives and even expands in some sectors in some countries. Cook (1984), Bottomley (1965), HO and Huddle, Mies (1981), Ray (1991), Krishnaraj (1992) hold that labour-intensive traditional forms of production are not disappearing but are persisting, or even expanding as capitalist industrialisation intensified. In India, we observe that the traditional handloom industry still survives withstanding the onslaught from the giant textile machines and even expands in some sectors. The questions that may arise are : what factors account for the present status of this industry ? What is the role of production organization in determining its economics ? The present study is a modest attempt to seek answers to these and other related questions.

The importance of such study arises out of two considerations : (1) the importance of the industry in the regional economy of India and (2) the inadequacy of existing literature to give answers to some of the issues stated above.

Importance of the Industry

The handloom industry is one of India's very traditional industries which have escaped unscathed annihilation. It plays a very important role in the national ecnomy in India in generation of employment and income and foreign exchange earning. It occupies an important place in the decentralised sector, located in rural and semi-urban areas. The share of employment provided by the handloom industry in the decentralised sector is about 5·5 per cent, when in India almost 90 per cent of the total jobs are provided by the decentralised sector and other rest by the organised sector.[1]   Reserving all ancient traditions in weaving and carrying out improvements to the tools and accessories, Indian weavers are not only producing enough cloth to meet internal demand, but also exporting numerous artistic varieties to the highly industrialised countries of the world.[2]

The industry has an export oriented component. Products have won acclaim outside India for their unique colour combinations and attractive designs. Industries of this type are necessary for the expansion of international trade, for securing favourable balance of payments and strengthening the socio-economic ties with other countries. In the competitive textile world market of today exports of handloom textile have been able to survive. Not only that, it is noteworthy that exports of handloom goods have increased thirty one times during 1970-71 to 1989-90.[3]

The handloom industry by virtue of its decentralised nature and employment potential has a significant place in its contribution to the Gross National Product. The G. N. P. (at 1980-81 prices) increased from Rs. 89,465 crores in 1970-71 to Rs. 2,09,794 crores in 1991-92 showing 134 per cent increase. The value of production from handloom industry increased from Rs. 534 crores in 1970-71 to Rs. 829 crores in 1991-92 (at 1970-71 prices) recording and increase of 55 percent.[4]

The percentage contribution of handloom industry to G. N. P. varied narrowly in between 0·89 per cent and 1·34 per cent during the period 1970-71 to 1991-92. This contribution from a decentralised sector with limited capital investment from the Government is of very much significance.

Review of Existing Literature

The existing literature which covers different aspects of the handloom industry can be classified into two broad groups. The first group contains the literature which deals with different policies taken for handloom industries in different periods and the second group deals with the problems faced by the handloom industry. The problems faced by this industry relate to production, finance, organisation and marketing.

(a) Policy Issues

One may note that the National Institute of Rural Development (1977) made a critical study on handloom industry and concluded that new development plan for handloom sector is in the preliminary stages of implementation. Angadi (1976) pointed out the violation of restrictions by the powerlooms and suggested proper implementation of the govt. policy of reservation of certain varieties of cloth production exclusively for handlooms. Chitnis (1985) discussed employment and exports and policy perspectives for handloom and other industries. Jain (1985) discussed the policy issue concerning the handloom industry. Eapen (1977) discussed the different policies taken for the decentralised sector in textile industry. Nasir (1989) analysed the small industries policy in India. Kukreja (1984) evaluated various schemes of financing weavers' societies.

(b) Organisational problems

Pai (1976) in his study pointed out the problems in organising the co-operatives and suggested some remedies. Mathur (1974) observed that a large number of industrial co-operatives are lying defunct and emphasized to run them in accordance with the principles of co-operation and management. Pathak (1980) analysed the structure and potential of some rural industries including handloom. David (1955-60) pointed out the inherent problems of handloom weaving and suggested for various co-operativisation of handlooms.

Hajela (1980) considered that the reason for weavers not coming forward to join the co-operative societies is that they will not be benefited much by it. Rao (1971) stressed upon the co-operative form of organisation for the development of handloom industry.

(c) Marketing problem

Pragada (1982) made a detailed objective evaluation of handloom industry and considered that the raw material is the basic problem facing the inbustry. Rayudu (1982) identified that the sick and dolldrum marketing situation in the handloom co-operatives should be redressed by formulating modern scientific marketing practices. Balram dealt with problem of marketing for handloom textiles.

(d) Financial problem

Krishnamurthy (1970) discussed that decentralised handloom weaving was beset with the crucial problem of finding adequate finance. Subbaiyan (1979) stressed on liberal financial assistance to handloom weavers.

Thus, the brief review of the existing literature on handloom would indicate its inadequacy to give sufficient answers to our research questions. Our present study is a preliminary attempt to remedy some of the gaps that exist in the existing literature.

objects of the study

The present study sets the following objectives for itself :

(i) To examine the status of the industry ;

(ii) To analyse the economics of the industry with special emphasis on its production organisation ;

(iii) To analyse the factors that may explain the survival and growth of the industry.

Outline of the study :

Section II provides the data base for and the methodology used in the study. Section III presents the status of the industry at the national, state and district level. Section IV discusses economics of the industry. Section V analyses the causes of survival of the industry and finally Section VI summarises the points made earlier, analyses the prospect of the industry and makes concluding observations.

II

Data Base and Methodology

Both primary and secondary data have been used. Secondary data relate to production, employment, capital, value added and export of handloom products.

The Annual Survey of Industries (ASI) covers the industrial units registered under the Factory Act 1948. From this source data on output, employment and capital could be known but these data are available on regular interval of five years and the latest figures related to 1983-84.

Decennial population census maintain detailed data on industrial workers engaged at the household and non-household sector. But there are certain problems relating to the comparability of Census data. Though Census of India gives a time series data on the level and structure of the workforce, frequent changes in the definitions and concept have made the data non-comparable over time [Unni (1991)]. The 1961 Census used the 1958 Indian Standard industrial classification, while the 1971 and 1981 Census used National Industrial classification (NIC) 1970. Since these classifications are not directly comparable, 1961 data are not comparable with 1971 and 1981 data. However, 1971 and 1981 data are comparable within themselves [Krishnaraj and Deshmukh (1990)]. Census data relate to industry group, not to any particular industry. In 1971 and 1981,

the NIC minor group code no. 235 gives information on workers in hand-loom, minor group code no. 236 in powerloom and code no. 231 in mill cloth.

Given the limitations of secondary data to serve our purpose we also depend on the primary survey for detailed data for our study.

Primary data are collected from the randomly selected 82 artisan households through personal interview, and by questionnaires.

The sampling design for the purpose of collection of primary data consists of a multistage random sampling with districts forming the first stage units within the state of West Bengal, while villages form the second stage units and individual industrial units are the units of sampling.

The main purpose of survey was to enquire about the production orga-nisation and economics of handloom products. The data collected, related to the year 1993-94.

The collected primary and secondary data have been analysed using various statistical techniques including coefficient of variation.

III

Industry at the National, State and District Level

Handloom industry, with its wide ramifications into the socio-economic fabric of the society, has shown fluctuations in persons employed, output produced etc. over years not only in West Bengal but also throughout the rest of India. This section discusses the status of this industry at the national state and district level

Table 1 shows the status of handloom industry in factory sector in West Bengal vis-a-vis the whole of India for the period 1978-79 and 1983-84.

From the above table we see that nnmber of factories in the handloom industry in both West Bengal and the whole of India have decreased. But while average number of working days, average number of persons engaged and direct employment of men have decreased in the former, those have increased in the latter. In case of direct employment percentage share of women workers, however, increased in both West Bengal and the whole of India.

While there has been an absolute as well as relative decline of persons directly employed in the factory sector of handloom industry in West

Bengal during the period of 1978-7 9 and 1983-84, total main wprkers in the industry of the state increased substantially as per decennial Census.

Table 1 STATUS OF HANDLOOM INDUSTRY IN FACTORY SECTOR

IN WEST BENGAL AND INDIA, 1978-79 AND 1983-84.

Sl. No.	Some Aspects of the Industry	1978-79 W. B.	India	1983-84 W. B.	India
1.	No. of factories	6	222	4	209
2.	Average no. of working days	299	292	298	295
3.	Average no. of persons engaged	951	9143	875	11520
4.	Directly Employed No.	786(100)	7652(100)	742(100)	9867(100)
	No. of men	186(23·7)	5268(68·8)	140(18·9)	6565(66·5)
	No. of women	600(78·3)	2378(31·1)	602(81·1)	3274(33·2)
	No. of children	—	6(0·1)	—	28(0·3)

Source : Annual Survey of Industries.

Note : Figures in the parentheses represent percentage share of workers.

During the period 1971-1981 percentage shares of handloom main workers increased in the states, namely, Bihar, Orissa, Uttarpradesh and West Bengal while in the other states those have decreased. Number of main workers in this industry increased in the states—Bihar, Tamilnadu, Orissa, Uttarpradesh and West Bengal by 35·29%, 17·80%, 30·91%, 49% and 152% respectively. On the other hand, number of workers decreased in the state's namely, Andhrapradesh, Kerala, Madhyapradesh, Maharastra and Karnataka by 7·31%, 2·9%, 16·86%, 18·80% and 33·1% respectively. In West Bengal rural handloom workers increased by more than 158% during this period. The share of this state in total rural handloom workers of India increased from 7·41% in 1971 to 15·96% in 1981. On the whole, West Bengal's share in total handloom workers of India increased from 5·85 per cent to 12·36 per cent during the period and the rank of the state improved from 6th in 1971 to 4th in 1981 (Table 2).

Table 2   NUMBER OF MAIN WORKERS IN THE HANDLOOM INDUSTRY IN SOME MAJOR STATES OF INDIA FROM 1971 TO 1981

Sl. No.	Name of the State	1971		1981		% Change from '71—'81	
		Rural	Total	Rural	Total	Rurl	Total
1.	Andhrapradesa	1,77,029 (25·28)	2,34,279 (19·29)	1,50 293 (17·91)	2,17.153 (15 00)	−15·10	−7·31
2.	Bihar	25,358 (3·62)	32,560 (2 68)	37,837 (4·51)	44,020 (3·04)	49·21	35·20
3.	Kerala	41,164 (5·88)	48,401 (3·68)	31,219 (3 72)	47,007 (3·25)	−24·16	−2·9
4.	Madhyapradesh	14,181 (2·03)	24,704 (2·03)	14,129 (1·69)	20,538 (1·42)	−0·36	−16·86
5.	Madras	1,48,503 (21 21)	3,59,898 (29.64)	1,89,659 (22·61)	4,23,942 (29·3)	27·71	17·80
6.	Maharastra	16,549 (2·36)	74,685 (6·16)	11,991 (1·43)	60,641 (4 19)	−27·54	−18·80
7.	Karnataka	33,723 (4·82)	81,231 (6·69)	19 800 (2·36)	54,350 (3 76)	−41·30	−33·10
8.	Orissa	42,173 [6·02]	45.581 (3·75)	55,686 (6·64)	59,669 (4·12)	32·04	30·91
9.	Uttarpradesh	95,192 (13·60)	1,64,034 (13·51)	1,39,347 (16·61)	2,44,412 (16·89)	46·39	49·00
10.	West Bengal	51,894 (7·41)	71,083 (5·85)	1,33,911 (15·96)	1,78,817 (12·36)	158·05	152·00
	All India	7,00,173 (100 00)	1214,155 (100·00)	8,38,817 (100·00)	1446,766 (100 00)	19·8	16 07

Source :   Census of India, 1971 and 1981.

Note :   Figures in the parentheses represent percentage shares.

Table 3   NUMBER OF MAIN WORKERS IN THE HANDLOOM INDUSTRIES IN INDIA AND WEST BENGAL FROM 1971—1981

| | | URBAN | | Total Urban | RURAL | | Total | | | |
		M	F	Workers	M	F	Rural Workers	M	F	Grand Total
India	1971	(75 80)	(24·20)	(100 00)	(79 07)	(20·93)	(100 00)			
		3,89,591	1,24,391	5,18,982	5,53 6 8	1,46,555	7,00,173	9,43,209	2,70,946	12,14,155
		(32·09)	(10·25]	(42·34)	(15·60)	(12·07)	(57·67)	(77·69)	(22·31)	(100 00)
	1981	(75·58)	(24·20)	(100·00)	(79 36)	(20·64)	(100·00)			
		4,59,496	1,48,453	6,07949	6,65,648		8,38,817	11,25,144	3,1,622	14,46,766
		(31·76)	(10·26)	(42·02)	(46·02)	(11·96)	(57·98)	(77·77)	(22·23)	(100·00)
West Bengal	1971	(93·97)	(6·07)	(100·00)	(93·37)	(6 63)	(100·.0)			
		18,031	1,158	19,189	48,549	3,445	51,994	66,580	4,503	71,083
		(25·37)	(01·63)	(27·00)	(68·30)	(04 85)	(73·15)	(93 67)	(6·33)	(100·00)
	1981	(89·56)	(10·41)	(100·00)	(85 45)	(14 55)	(110·00)			
		40,215	4,691	44,908	1,05,888	18,023	1,23,911	1,46,103	22,714	1,68,817
		(23·82)	(02·78)	(26·60)	(62·72)	(10·68)	(73·40)	(86·55)	(13·45)	(100·00)

Source :   Census Reports 1971, 1981.

Note :   The figures, given in the parenthesis, above and below the main figures, represent the percentage shares of main workers in respect of sub and grand total respectively.

in India as a whole percentage shares of total male and female, total rural and urban, urban male and female and rural male and female workers more or less remained unchanged while in West Bengal percentage share of rural and urban male workers decreased but that of female increased margi- nally during this period (See Table 3, P. 72).

, Thus, we observe from Table 2 and Table 3 that in West Bengal per- centage share of rural and female handloom workers increased and within this state there has been the increasing share of female handloom workers and the marginal ruralisation of this industry.

In recent years, however, increase in direct employment in this industry of this state has been insignificant, only 12 per cent in 14 years from 1980-81 to 1993-94. The increase in the unorganised sector of this industry is seen to be significant by per cent during 1985-86 to 1993-94 (Table 4). This indicates the growing importance of the unorganised sector in the handloom industry of the State.

Economics of the industry in the organised and the unorganised sectors of the industry is discussed in Section IV.

Table 4   GROWTH OF EMPLOYMENT IN HANDLOOM
INDUSTRY OF WEST BENGAL FROM
1980-81 TO 1993-94.

| Year | Employment (lakh) | |
	Total	Under organised sector
1980-81	6·36 (100)	—
1985-86	6·42$^+$	2·39
1989-90	7·11$^+$	3·20
1992-93	7·11$^+$	3·64
1993-94	7·11$^+$	3·65

Source :   Directorate of Handloom and
Textile, West Bengal.

Note :   '+' indicates direct.

IV

Economics of the Industry

It is argued in this section that the type of production organisation has much to do with productivity, profitability of the industrial units and earnings of artisans. Four types of production organisation have been considered here. The results are based on data from field survey.

10

Productivity of labour has been measured in terms of value of output per labour hour. Profitability has been defined to be a ratio of net profit to total capital investment.

We observe that value of productivity is the highest in the units run by Co-operative Society, followed by independent units and tied units under Mahajans and Master Artisans. This was largely explained by their respective capital-output ratios. However, profitability and hourly wage rate are estimated to be higher in independent units (Table 5).

Table 5 PRODUCTIVITY, PROFITABILITY AND WAGE RATE
BY NATURE OF PRODUCTION ORGANISATION

Nature of Production Organisation	Productivity (Rs.)	Capital output ratio (Rs.)	Rate of profit (%)	Hourly wage (Rs.)
Co-operative	5·82	5.271	15	1·73
Independent	4·76	2,850	33	2 00
Tied :				
(i) Under Mahajan	4·94	2,292	10	1·15
(ii) Under Master Artisan	4·58	2,915	12	1·48

Source : Field Survey.

The coefficient of variation in profitability is also the highest in co-perative, followed by independent units and tied units under Mahajans and Master Artisans. The phenomena may be explained by the degree of diversification of products. The coefficient of variation in hourly wage is the highest in independent units, followed by tied units under Mahajans and ccoperative (Table 6). The phenomena may also be explained by the nature and range of products.

Table 6 COEFFICIENT OF VARIATION (%) IN PROFITABILITY AND
HOURLY WAGE BY NATURE OF PRODUCTIVE ORGANISATION

Nature of production organisation	Coefficient of variation in	
	Profit rate	Hourly wage
Cooperative	65·58	20·76
Independent	57·24	42·95
Tied :		
(i) Under Mahajan	42·23	25·41
(ii) Under Master Artisan	14·82	10·91

Source : Field Survey

Our analysis concerning economics of handloom industry thus reveals that while co-operative and independent units present large potential for capital accumulation and growth, the tied units under Mahajans and Master Artisans suffer from major structural constraints and their development is often precluded from the perspectives of both owner and labour artisans.

V

Survival of the Handloom Industry

Handloom industry with its variety of production organisation persists and even expands in some sectors. It is argued here that this phemenon may be explained to a large extent in terms of economic factors such as earning of subsistence wage, reasonable returns to independent artisans and diversification of products in conformity with the needs and tastes of the consumer.

For the sake of our convenience and clarity we may discuss the factors for survival of the industry by classifying them into several categories : economic, social, technological, Government policies, etc.

(1) *Economic factors* :   This traditional industry survives because it offers subsistence to thousands of poor artisans and gives good returns to capitalists.   In the labour surplus economy of India, the labourers who are fully unemployed have zero opportunity cost, which leads them to be employed in the subsistence production process.   Subsistence production is a major part of total production in rural Asia (White 1980).   Subsistence production in rural Asia takes the form of household and kin-based production (Krishnaraj, 1992 : WS—8). Demand for the traditional handloom products is also a function of population growth which sustains the industry. Besides these, though powerloom produces some products which are close substitutes of handloom products but there are some special products of handloom which cannot be produced in powerloom. Due to special features of such products, these have high demand and in these sectors the handloom industry expands. Exports of handloom products are also increasing substantially (more than doubled) in recent years (Table 7).

Table 7 : EXPORTS OF HANDLOOM FABRICS DURING VII
PLAN PERIOD

Year	Cotton			Silk item	Other non-cotton items	Total
	Fabrics	Made-ups	Garments			
1985-86	87·97	73·36	31·38	156·17	12·71	361·59
1986-87	83·50	82·16	18·74	194·94	12·46	391·81
1987-88	100·57	137·07	18·71	244·83	15·03	516·21
1988-89	114·51	168·86	19·01	319·85	8·56	630·79
1989-90	112·16	229·70	31·13	383·51	51·17	807·67

Source : Ministry of Textiles, Annual Report 1989-90.

(2) *Technological factors* : Technology is a very important factor
related to the production process of an industry. It is well known that for
a given technology, variation of other factors combination gives different
levels of output. But if technology is changed then we can find different
levels of output for a fixed factor combination. Technology being used in
an industry is very much related to the form of production, of which
production relation is the main constituent. This form of production has
undergone transformation, especially through its contact with capitalism.
As a result of this changing form, true pre-capitalist practices, especially
with the traditional sector, has distorted. There has been an increasing
tendency towards employment at hired labour, use of machinery and
electricity power. The increasing financial assistance provided by the
Government and financial institutions has enabled some artisans to have
more command over raw materials and has ensured independence to a large
extent in regard to the choice of the source(s) for selling the final product.
Technology has improved in response to expanding market for the variety
of products. The independent units which have used improved technology
and diversified their products are persisting or even expanding. From
our field survey, we have observed that the cooperative society at
Purbakola (Tamluk zone), the master artisan at Bainchard (Tamluk zone)
and the self-dependent units, specially in Tamluk zone, are producing
differentiated products using improved technology.

(3) *Social factors* : Crafts production traditionally organised in
family units bound markers and users in a complex mix to rights and
obligations hallowed by custom (Krishnaraj 1992 ; WS-7). Though the
handloom industry faces stiff competition from the factory sector, the
former still survives because social customs regulate their markets. For

instance, the demand for the handloom rises during seasons of social ceremonies like puja, marriage, etc. and the industry expands.

(4) *Product diversification* :   Unlike the factory production where the design and colour cannot be changed easily, it is very easy task to the handloom weavers to change these according to the taste and preference of the consumer.   In most of the cases the weavers face directly the consumer and can observe the market condition.   Generally, they adjust themselves with their looms so as to meet the preference of customers.   Therefore, diversified products can attract the consumers.   Thus, product diversification in production leads the industry to persist, even to expand.

(5) *Government Policies* :   Product reservation for handloom industry, restrictions imposed on mill sector to expand capacity, assistance given to the weavers to use improved technology and safe-guard of the Cooperative Societies can explain largely why handloom industry persists and even expands.   The government helps the cooperative in various ways.   The apex societies help the primary societies to sell products and supply raw materials.   Janata sharee and dhuti made from 40 count yarn are specially produced as per order of the apex society.

VI

Conclusions

Handloom industry under our study demonstrates that its factory sector in West Bengal has decayed while the unorganised sector has expanded. In this state the growth rate of workers during the period of 1971 and 1981 has been higher than that in many other states of India and the relative position of the state has improved.   The industry has absorved higher percentage of female workers in West Bengal.   It has also expanded in the unorganised sector.

Cooperatives and independent units are seen to have fared better than the tied units in West Bengal.   The main problems in this state is how to enable the tied units to accumulate capital and wage-earners to earn a decent living.   The Government may take up the development of service organisations to provide raw materials, finance and marketing of the products for all units, particularly the tied units.   Better and effective organisation of the artisans is pre-requisite for development of the industry.

Notes :

1. State Bank of India (1982 : 267)

2. Anjaneyula (1990 : 7)

3. See Desai (1988)

4. R. B. I. Bulletins, Eighth Five Year Plan (1992-97) and Economic Survey 1994-95.

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