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Making the Poor Creditworthy

A Case Study of the Integrated Rural Development Program in India

Robert V. Pulley

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EXECUTIVE SUMMARY

India's Integrated Rural Development Program (IRDP) is among the world's most ambitious efforts at credit-based poverty alleviation. The IRDP was initiated a decade ago and has reached 27 million poor households through commercial banks which provide finance for investment in income generating assets. Credit is matched by capital subsidies of 33-50% on household investment. Government spent Rs 4.7 bln on such subsidies in 1987-88, an amount which may increase in future years. The program has increased the asset holdings of about one quarter of all rural households in India. This paper examines the impact of the IRDP and the long-term viability of credit-led approaches to poverty alleviation. Success is assessed against the program's objectives including productivity of investments, real income gain by households, and credit repayment. Drawing on new data from the first panel survey of beneficiaries over a four-year period, the analysis identifies household characteristics, program features, and economic conditions that contribute to success. The paper also examines the extent to which the IRDP's structural objective of assuring that the poor have continuing access to institutional credit and banking services -- a goal of Indian credit policy since the early 1950s, is being achieved.

The paper shows that providing some poor households with capital to invest in income generating assets can be an effective means of raising their incomes. Nevertheless, even where beneficiaries have succeeded in self-employment and repaid credit according to schedule, the program has not led to their continued access to banking services. With the interest rate on IRDP fixed by government at a rate below the banks' costs and interest rates on all priority lending in rural areas held below market clearing levels, banks choose not to lend additional funds after their obligation to achieve IRDP targets is satisfied. Although the high rates of interest and recovery observed in informal credit markets indicate that poor borrowers do pay for credit at a rate which covers costs, informal markets do not cater to the demand for long term investment capital. Moneylenders are unwilling to accept such risk except in exchange for long term labor contracts (i.e., bonded labor) to assure repayment, a condition prohibited by law.

The paper points out that gains in productivity of investment and credit recovery can be made by altering certain delivery features of IRDP, but argues that the existing structure of incentives facing banks and borrowers are responsible for critical shortcomings. Low interest rates and large capital subsidies, although attractive to the poor in the short-term, are found not to be in their long-term interest since they distort investment scale and choice, preferences for self-employment, encourage misappropriation, and cause banks to limit their future lending to such clients. These facts together with the general environment of financial indiscipline which leads to high overdues (59%) on IRDP loans threaten to marginalize large segments of the rural poor from institutional credit. The paper argues that future access to credit is essential not only to finance new investment to move households toward (and gradually over) the poverty threshold, but also to provide working capital to offset declining yields that occur on most existing IRDP assets.

To overcome these problems, flexible instruments are needed. The paper suggests these should be: a) an interest rate which covers bank transaction costs and risk premia; b) a line of credit extended by commercial banks that guarantees the poor access to increasing finance as long as borrowers demonstrate creditworthiness by timely repayment; and c) interest rebates to protect the poor during their early relations with the banking system. Rebates, which would decline to zero with repeat borrowing over a pre-determined period of time, are a preferred means of subsidizing disadvantaged borrowers over the current system of capital subsidies since they encourage credit repayment and can be phased out gradually as income and asset holdings increase. Subsidies are justified on income distribution grounds, but also to offset market imperfections which would otherwise force the rural poor the pay the price of "smallness" when banks pursue cost recovery as recommended.

The thrust of these changes is to move from the current system where bank actions are driven by the supply of subsidy funds and government enforcement of beneficiary lending targets to one where banks regain authority and responsibility for lending and recovery, borrowers exercise greater discretion over the size and timing of investment decisions, and eventually pay market rates of interest. Such transitions have proved enormously difficult in other developing countries, thus the framework of interest rebates and assured credit for borrowers that repay is designed to provide government with the maximum flexibility in determining the path and speed of adjustment. Although precise estimates of impact depend on the slope of this trajectory, the following generalized results can be expected from adopting the proposed changes.

(i) The profitability of rural branches would improve, particularly for regional rural banks which have a large proportion of outstanding advances in this category.

(ii) Poor borrowers would be protected from the increased interest rate to the extent that they service their debts through periodic (e.g., biannual) rebates of interest.

(iii) Government expenditures on the capital subsidy would be redirected toward the rebate. The fiscal burden of subsidy payments would decline substantially in the medium term and ultimately to a low steady state level which reflects only the entry of new poor borrowers to the institutional credit window through IRDP.

(iv) The marginal transaction costs banks incur in delivering credit to the poor should fall. Although there would be initial and possibly higher set-up costs associated with establishing each line of credit, the approach implies an "automaticity" which would reduce the cost of appraising small loans, overseeing procurement of assets, and intensive investment monitoring required in the current guidelines. This would moderate the required increase in interest rates [see (i)].

(v) The administrative costs incurred by government in managing the program would fall as a result of devolving greater responsibility to the banks for the IRDP and other steps such as improved identification of beneficiaries (on the basis of more transparent selection criteria).

(vi) Recovery of bank capital should improve since incentives to repay would be enhanced through guaranteed access to future credit. Nevertheless, future bank losses would be strictly contained by cancelling lines of credit for those who misuse loans or fail to service debt obligations.

This package of adjustments recognizes that not all poor households are good users of credit or appropriate targets for self-employment approaches to poverty alleviation. For those that can make productive use of such opportunities, efficient use of subsidies and special mechanisms to identify those who would otherwise pay the price of market imperfections may be necessary. By raising income and capital absorption for poor households, the need for directed credit for individuals becomes temporal. As long as there are poor people, however, there will be a need for programs like IRDP which represent a special window to the banking system for first-time borrowers. Adjustments are needed in IRDP to help secure its past successes and take it through the next important stage in its development, that is, making the poor creditworthy. Assuring access to capital for the poor who prove themselves to be responsible borrowers must become an important policy objective not only for government, but also for commercial banks seeking to expand their client base.

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I. INTRODUCTION

1. Significant reductions in relative poverty have been achieved in India during the last 15 years in line with government's strong commitment to growth and equity, but the number of Indians living below the poverty line remains high -- about 300 million. Approximately 40% of India's population were still below this threshold in 1983. The Integrated Rural Development Program (IRDP) was initiated in selected districts during 1978-79 and quickly became the preeminent national program in the Sixth Plan's accelerated attack on rural poverty. The IRDP provides subsidized credit to families below the poverty line to finance productive investment in self-employment ventures. This is expected to yield incremental income sufficient to move households above the poverty threshold. Real expenditures to date are on the order of Rs 77 billion, approximately USD 6 billion.

2. The rich literature on IRDP has produced starkly differing conclusions on its success. Disagreements arise from different conceptions regarding objectives. Most studies have focused on a single or partial indicator of success or failure such as crossing the poverty line, targeting to eligible beneficiaries, productivity of the investment or credit recovery. This study links three critical components of success: distributional impact, productivity of the investment, and credit repayment to banking institutions. In addition, it highlights what framers recognized as the principle structural constraint on rural asset creation and employment for the poor -- sustained access to term credit from institutional sources.

3. Another feature of this study is an emphasis on long-term performance indicators. Past evaluations, based on two-year periods have not established the medium and longer-term viability of the program.1/ This study presents national statistics based on the two-year Concurrent Evaluation,2/ but draws heavily on new panel data with a longer reference period from 12 districts of Uttar Pradesh. The complete data set in U.P. covers 960 beneficiary households from 48 blocks, and 192 villages.

1/ There is a large body of excellent work on IRDP which I have drawn on in carrying out this study. Most of these studies also draw on the results of the national Concurrent Evaluation, but based on a two-year, as opposed to four-year period examined in this study. See, for example, H. Rao, N.J. Kurian, Copestake, Dantwala, Bandyopadhyay in bibliography. Many important studies on IRDP are cited in the bibliography although not all are referred to in the text.

2/ Dept. of Rural Development, Ministry of Agriculture. Concurrent Evaluation of IRDP: Main Findings of the Survey. See reports for October 1985-September 1986 and January-December 1987, New Delhi. The two surveys covered more than 25,000 households in different blocks and the second round also included some who received a second dose of assistance. Only the second round was based on a random sample thus making it useful in obtaining unbiased estimators in multivariate analysis. Some results for U.P. from both rounds are presented in the appendix, but only round 2 will be highlighted in the text and used in the models for this reason.

Surveyors reinterviewed beneficiaries in May 1988 that had received assets 4-5 years earlier and whose investments were still "intact" after the first round of interviews at the two-year point.3/ The follow-up was carried out at the end of one of the worst droughts in recent years in districts that were all affected to varying degrees.

4. With the help of logit analysis, it is possible to test various hypotheses regarding household characteristics, implementation features, and general economic conditions that contribute to productivity, and repayment objectives of IRDP. The factors that contribute to long-term viability in credit-based approaches to poverty alleviation are emphasized. Although model findings are relevant to Uttar Pradesh, results can be tested elsewhere using similar methods.

5. Chapter 2 briefly describes IRDP. Chapter 3 traces the growth of IRDP expenditures and discusses the scope for further increases in the Eighth Plan. Chapter 4 reviews the genesis of credit-based poverty alleviation efforts in India, noting particular features that framers originally had in mind for IRDP and where the program may have diverged from those concepts. Chapter 5 examines measures of success in IRDP and identifies factors that contribute to high impact. Chapter 6 summarizes findings and presents a framework for the program that should result in efficiency gains and assured access to capital for creditworthy poor.

6. Drawing conclusive results from IRDP data suffers from the difficulty of estimating rural household income. Beneficiaries may underestimate their resources to satisfy the income-based selection criteria and when surveyed after two years, sometimes mistrust the investigator or have imperfect recall of pre-IRDP earnings. The Concurrent Evaluation attempts to correct for the former by comparing the income of record at the time of inclusion in the program and the pre-IRDP income as estimated two years later by the investigator. This study utilizes income estimates made by surveyors since incomes reported by beneficiaries at the time of program selection are judged to seriously overstate the impact of the program. This choice, however, may introduce another bias arising from the ex post nature of these estimates since investigators may tend to impute positive change over the period of observation.4/ Income estimates after four years are likely to be seriously affected by the drought.

3/ Annex table A1 traces the sampling system used for the data set in U.P.

4/ Surveyors in this instance estimated the "present household income", which was two years after inclusion in IRDP, and then inputted the pre-IRDP income by questioning the beneficiary further. An attempt to overcome the possible bias this may give toward positive change was made in the follow-up round by asking investigators to assess family income after four to five years without reference to either of their previous estimates. Surveyors returned to the field with only beneficiaries' names, addresses, and the type of investment made under IRDP. The dues position on the loan component was also confirmed for each household with the lending institution to avoid misrepresentation.

II. GUIDELINES AND TARGET APPROACH

7. The essence of IRDP is to provide a capital subsidy and complementary credit at below market interest rates to households below the official poverty line to finance productive investments in income-generating assets. These investments are expected to yield incremental income sufficient to permit repayment of credit and to lift recipient households above the poverty line. In principal, there are few restrictions on what can be financed. In practice, banks and other officials tend to restrict the choice to a list of predetermined options which includes milch animals, bullock pairs, animal-drawn carts, pumpsets for irrigation, retail shops and other micro-enterprises. Moreover, most credit is not disbursed in cash, but in kind thus further restricting borrower discretion. Although the poverty threshold is Rs 6400 p.a. for the Seventh Plan (1985-90), the maximum qualifying family income is Rs 4800 to ensure that the worst-off are given preference. At least 30% of total beneficiaries should belong to SC or ST and 30% should be females. In 1987-88, 43% of assisted beneficiaries were SC/ST, but only 17% were female.5/

8. Selection of beneficiaries is entrusted to block level staff who are instructed to survey households, prepare a list of qualified beneficiaries, and submit it to the traditional "Gram Sabha" or village assembly for approval. Block officials are to assist those selected in choosing viable investments, completing loan applications, and submitting them to the banks who are under pressure to approve them. Interest rates are fixed at 10% and repayment periods, minimum financing, and type of investments are also predetermined by the National Bank for Agriculture and Rural Development (NABARD) though they are sometimes ignored. NABARD provides automatic refinance at 6.5% for all IRDP loans. At loan approval, bank credit is matched by the government capital subsidy, which varies from 25% to 50% depending on households' socio-economic characteristics such as landholding (small farmers receive least subsidy) or tribal status (highest). Despite this preference for the relatively disadvantaged, the largest subsidies often go to better-off beneficiaries as their ability to absorb credit is generally higher. Small farmers, the best-off occupational group in U.P., received an average subsidy of Rs 1640 while casual landless laborers received only Rs 1425. The current system of subsidy allocation thus provides most to those who need it least.

9. Physical and financial targets are determined for each district and block in the country by government administrators. The assumed Incremental Capital Output Ratio for the Seventh Plan is 2.7. Availability of subsidy funds, rather than demand for credit, generally drives the system and measures of performance are input based. For example, releases of government funds are tied to the pace of expenditures and program monitoring is based on the amount of funds expended and numbers/types of beneficiaries reached each year. There is no necessary relationship between these indicators and the desired output of the IRDP, that is, sustained self-employment leading to poverty alleviation and access to credit. A critical flaw in the current approach is the lack of performance or output based indicators on which to base future allocations. Recent

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5/ National Seminar on Poverty Alleviation Programs, Department of Rural Development, New Delhi, February 12, 1988, p. 48.

reforms in the allocative mechanism that increase funds for states with higher incidence of poverty still establish block and beneficiary targets without reference to the capacity of beneficiaries to absorb, and bankers'/administrators' ability to dispense loans and monitor the quality of lending. The target-driven system also fails to fully account for differences in investment opportunities among blocks and districts. Variations in asset-related infrastructure, inputs, services, marketing/sales opportunities all influence the numbers of poor that can be effectively served through IRDP and the average ICOR prevailing in given areas.

10. A major weakness of IRDP is its assumption that poor families' demand for credit and self-employment is primarily a function of their low asset position. The poor are not homogeneous, however, in their ability to utilize credit for investment. A poor household's need for assets and income is distinct from its demand for credit to finance them or the household's suitability for self-employment. Demand for credit for self-employment is a function not only of expected net incremental family income from the investment, but other factors such as previous indebtedness, preferences for current vs. future consumption, skill base, and entrepreneurship.

III. GROWTH OF EXPENDITURES

11. Real expenditure on IRDP has increased 14% per year on average since 1980-81. This exceeded the 8.5% real growth in Central Plan expenditures (Table 3.1). Term credit accounted 62% of investment in 1987/88 with the balance covered in equal shares by central and state government budgets. The bulk of government allocations flow to beneficiaries as a capital subsidy on assets, but 10% of investment is provided to the District Rural Development Agencies (DRDAs) to cover certain non-staff administrative expenses and 10% are discretionary funds for financing small asset-related infrastructure.6/ Between 1980/81-1987/88, real IRDP investment, including bank credit and budgetary outlays, amounted to Rs 77 billion (USD 6 billion). Delivery costs of banks and staff expenses for the estimated 60,000 public employees at the district and block level that have varying levels of responsibility for the program were 8.3% of total investment.

6/ Districts are expected to cover expenses for the Training of Rural Youth in Self-Employment (TRYSEM) program from the IRDP infrastructure funds.

Table 3.1:
Real Investment in IRDP (All-India)
(Blns. Rs)

	1980-81	81-82	82-83	83-84	84-85	85-86	86-87	87-88	Cumulative Total
Credit	2.9	4.3	6	6	6.7	5.4	7.2	6.4	44.9
Government Subsidy 1/	1.6	2.4	3	3.2	3.7	3.3	4.3	4.7	26.2
Bank admin. expenses 2/	.2	.3	.5	.5	.5	.4	.6	.6	3.5
Government personnel expenses 3/	.2	.3	.4	.4	.4	.4	.5	.4	2.9
Total	4.9	7.3	9.8	10	11.3	9.5	12.5	12	77
Central Plan Expenditures	90	94	106	114	126	143	156	159	988

1/ Includes State and Central Government outlays. Excludes personnel-related expenditures. Includes some funds for asset-related infrastructure and non-staff expenses incurred by blocks.
2/ Estimated at 5% of total outlays, based on national statistics of Canara Bank.
3/ Extrapolation. Based on estimates made for 1988 in typical block for U.P. of Rs 86,000 (x5143 blocks) = .44 billion, 4% of outlays in 87-88.

Note: See Annex tables A2-4 for detail, Sixth Plan 1980-85, Seventh Plan 1985-90.

12. The Sixth and Seventh Plan targets were 15 and 20 million households respectively.7/ Although current estimates by the Department of Rural Development indicate that perhaps only 17-18 million will be reached during the Seventh Plan, it is expected that the target will be raised to 30 million households during the Eighth Plan. Such a large increase (75%) raises serious questions as to whether the already strained system can cope without further reductions in the quality of implementation. If the Public Accounts Committee recommendation that average per beneficiary investment increase to Rs 7000 is adopted, the cost escalation implied by such an increase is also significant since outlays averaged only Rs 4470 per beneficiary in 87/88 in current Rp terms. Government contends that despite continuous increases, average investment levels have remained insufficient to move most households over the poverty line (see annex table A2).

13. The expected increase in beneficiaries raise the issue of whether saturation levels are already being reached in some areas. The panel survey in U.P. permits measurement of village saturation. On average, 22% of the village population had benefitted from IRDP in the districts surveyed.8/ This ranged from 3% in one village to 61% in another. High

7/ Coverage now exceeds 27 million rural families, approximately 135 million rural people. This figure includes 5 million families that received a "second dose" of assistance during the Seventh Plan because they failed to cross the poverty line.

8/ Measured as the number of households in the village included in IRDP X average family size (5)/village population.

saturation in certain villages has also led to increasing competition among the small-scale self-employment ventures that IRDP finances. Households in U.P. reported that ten other people on average in their village had received assets similar to their own through IRDP. The average number of similar schemes in the village not financed through IRDP was 21. Thus the program has already become a significant contributor to village production/services in its selected areas of finance. Increases of the magnitude being discussed for the Eighth Plan may be questionable on grounds of administrative feasibility and quality, but also, may exacerbate the low and declining yields for the most common investments.

IV. GENESIS OF CREDIT-BASED POVERTY ALLEVIATION STRATEGIES

14. Programs to promote assured access to banking services for the poor in rural areas have been evolving since the early 1950s. Rural credit and poverty alleviation have thus become inextricably linked in India over the past three decades. IRDP is merely the latest and largest in a long series of programs and institutions established to reduce perceived exploitation of the poor by informal money lenders. The All-India Rural Credit Survey (AIRCS) published by the Committee of Direction in 1954 was the first to reveal the high degree (88%) of rural dependence on higher cost non-institutional credit.9/ Inadequate supply of institutional credit was then identified as a major constraint on increasing productivity in rural India. A primary hindrance at that time was assumed to be the lack of banking infrastructure thus State Bank of India was established in 1955 to increase flows by opening rural branches. Division between urban lending dominated by private commercial banks, and rural lending which was generally the responsibility of cooperatives nevertheless continued until 1969 when banks were nationalized. An important justification given for the nationalization was to force commercial banks to extend their reach to rural areas in general, and rural poor in particular. The number of rural branches of commercial banks grew thereafter from 1,832 in 1969 to over 30,000 at present, 56% of the total branches in the country. The Committee also identified the lack of collateral as a handicap for rural households in obtaining credit and suggested that banks base their creditworthiness appraisal on the expected returns to the investment rather than assets of the household.

15. In 1977, the All India Rural Credit Review Committee (AIRCRC)10/ revealed some improvement in institutional credit from 1951-71 for cultivator households, but the situation for non-cultivators worsened

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9/ Only 12% of rural household debt was owed to institutional sources at that time with the remainder supplied by landlords, moneylenders, traders, relatives and friends. See A.D. Gorwala. Reserve Bank of India (1954), All India Rural Credit Survey, Report of the Committee of Director, Bombay.

10/ Reserve Bank of India (1977), All India Debt and Investment Survey (1971-72), "Indebtedness of Rural Households as of June 30, 1971 and Availability of Institutional Finance", Bombay.

despite the spread of banking infrastructure.11/ Even moneylenders were generally unwilling to provide medium or long-term credit to this group except in exchange for equally long labor contracts and Primary Agricultural Cooperatives (PACs) were tailored to cultivators' demand for short-term crop finance. Other programs such as the Small and Marginal Farmers' Development Agencies (SFDA/MFAL) were launched in the 70s and focused on increasing the supply of term credit as a bureaucratic means to overcome productivity constraints.12/ In general, programs continued to benefit rural households with land or other collateral.

16. There was a marked difference between these agencies, which emphasized facilitating rural growth through credit and technology adoption and a new view, also emerging in the early 70s, of growth with social justice through credit. Adherents of the latter strategy in academia and government began to see banks not simply as profit maximizers channeling investment to the most productive uses, but as underutilized institutions to be activated for affirmative action, social engineering, and redistribution of wealth. This change in perception was first manifested by the Differential Interest Rate (DIR) scheme foisted upon the newly nationalized commercial banks in 1971. Under the DIR, public sector banks were instructed to channel at least 1% of their outstanding advances into productive ventures for families with incomes and landholdings below a certain threshold. Many banks saw DIR lending with its highly subsidized interest rates and overdues generally exceeding 50% as the social cost of doing business and seldom exerted themselves on recovery.13/ The DIR scheme

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11/ Share of debt owed to institutional sources increased from 12% (1951) to 31.5% (1971) for cultivator households, but for non-cultivators the share of debt owed to money lenders, relatives, friends and other informal sources actually increased from 88% to 90% during the period. Forty percent of rural households (78 million) fell into the category of non-cultivators or had assets less than Rs 2500 in 1971. Further analysis demonstrated that the lower a household's asset base, the larger is the share of debt incurred for consumption and the higher the average interest rate.

12/ SFDA/MFAL were centrally-sponsored registered associations with a mandate to channel subsidies and increase the flow of investments to small/marginal farmers and agricultural laborer through banks, PACs and other intermediaries. Farmers Service Societies (FSS) and Large Agricultural Multipurpose Cooperative Societies (LAMPS) were also set up to extend the size and range of services provided by credit cooperatives to areas such as marketing, storage, extension, and input supply.

13/ The interest rate in DIR is set at 4% and banks are expected to cover losses through cross subsidies. Eligibility criteria for DIR operative in 1986 were that family income be below Rs 7200 p.a. in urban/semi-urban areas or Rs 6400 in rural, that the borrowers employ no outside labor, and if SC/ST, operational holding should not exceed 1 acre irrigated or 2.5 acres non-irrigated land. No collateral or third party guarantees are required and assets purchased are hypothecated to the bank.

shattered the traditional view that banks should earn a net positive return on individual loans in favor of cross subsidization to underwrite expected losses on priority rural credit. Although the interest rate on IRDP was higher than DIR (10% vs. 4%), it offered beneficiaries not only below market interest rates, but also capital subsidies -- a new variant on rural credit.

17. Another new institution, the Regional Rural Bank (RRB), was established in 1975 to augment the supply of credit and provide a low-cost alternative to rural branches of commercial banks that would lend exclusively to the poor using simplified procedures.14/ The Banking Commission which recommended their formation in 1972 called for 49% local ownership of RRBs and 51% by sponsoring commercial banks thus combining the ownership-cum-responsibility strengths of cooperativism with the efficiency of commercial banks. The government ignored this critical dimension, allotting 50% ownership of the RRBs to the central government, 35% to sponsor banks, and 15% to state governments. No equity remained for local borrowers/depositors -- a factor that may continue to negatively affect both appraisal standards and repayment ethics in these institutions. Recent directives by the Ministry of Finance are likely to worsen the situation since central government ownership through the National Bank for Agriculture and Rural Development (NABARD) has been increased to 60% and state governments' share to 20%. Although commercial banks are certain to be pleased that the drain on their profitable operations arising from below market interest rates and low recoveries of RRBs may diminish, as a result in this change which reduces their stake from 35% to 20%, financial discipline in lending to the poor can be expected to deteriorate further. RRBs will increasingly be viewed as an arm of government rather than independent institutions which are subject to the consequences of their own decisions.

18. The 1981 report of the Committee to Review Arrangements for Institutional Credit for Agriculture and Rural Development (CRAFICARD) cemented the profound shift in the perception of banks' social role.15/ It argued that in order to foster growth with social justice, credit must be made available to the poor. Appraisal standards for the poor were to shift from emphasis on collateral toward assessment of the viability of the investment itself. Although cooperative credit institutions had been urged to accept this concept more than two decades earlier, institutional credit continued to discriminate against the assetless poor by requiring collateral or third party guarantees for most loans. CRAFICARD traced the

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14/ Datta, B. "Regional Rural Banks," EPW, Sept. 1, 1978. Despite the five-fold rise in the number of rural branches of commercial banks to 36% of their total offices between 1969-77, such branches represented only 9% of deposits and 6% of advances.

15/ Report of the Committee to Review Arrangements for Institutional Credit for Agriculture and Rural Development (CRAFICARD), Reserve Bank of India, Bombay, 1981. For an excellent review of the CRAFICARD study, see S. Tendulkar, Rural Institutional Credit and Rural Development, "Indian Economic Review, Vol. XVIII, No. 1, 1983, pp. 101-137.

basic cause of poverty to the low resource base of the rural poor, their continued heavy dependence on non-institutional credit for consumption finance, and lack of access to medium and long-term finance for productive investment. It postulated that the poor, if given access to credit for investment in productive assets (physical and skills), would increase their incomes through self-employment.

19. CRAFICARD provided the conceptual underpinning for expanding IRDP yet many of its key recommendations were not incorporated into the program. It envisaged a household approach to poverty eradication spearheaded by banks that would classify poor households into three groups: those who could be made viable with loan assistance; those that would need loan plus a capital subsidy to become viable; and the non-viable poor who require special assistance in the form of social security. CRAFICARD's target groups were small and marginal farmers, agricultural laborers, rural artisans, and Scheduled Castes/Tribes (SC/ST). IRDP did adopt an income standard for eligibility, but provided no means to separate out those who could become "viable" through credit. The Committee noted that new delivery mechanisms were necessary to supply the poor with credit because dispersion and small loan size raised transaction costs. Organizing poor households into functional groups would help banks achieve economies of scale thus improving the efficiency of such operations. This dimension was largely forgotten in IRDP. Planners continued to focus on the lack of security and income which constrain the poor in obtaining access to credit rather than devising innovative means to offset the higher costs inherent in delivering banking services to the poor. Given unrealistically low fixed interest rates on priority rural credit, the high costs associated with lending small amounts to large numbers of scattered borrowers were the primary cause of market failure. The committee recognized that an individual, scattered or ad hoc approach to lending which did not take into account an area plan and the demand for credit could result in increasing indebtedness of the poor instead of credit serving as an instrument for poverty alleviation, yet the IRDP emphasis on targets, expenditures and supply of credit for individual households did not foster an integrated or demand-led approach to lending.

20. The special characteristics of the rural poor including illiteracy, unfamiliarity with modern business practices, underemployment and lack of assets required that banks provide a supervised and personal service using rural-oriented, and preferably locally-recruited, staff. Simplifying procedures was essential if the poor were to evolve as future clients for the commercial banks -- a long-term goal. Aside from IRDP, however, which banks see as a special program, other areas of financial services have not been simplified to any great extent and few banks have made attempts to recruit motivated staff for these positions. CRAFICARD admitted that concessional interest rates for the poor and the staff intensive approach to rural lending would mean that banks could not cover costs even with efficiency gains captured through group lending. It therefore suggested cross subsidizing high cost-low interest loans to the rural poor with low cost-high interest bearing loans in urban and industrial areas. For cooperatives or RRBs whose exclusive domain is rural, (thus opportunities for cross subsidizing are limited), it was expected that lower cost structures and growing clientele would allow full cost recovery. If this failed, however, more explicit subsidies would be considered.

21. CRAFICARD stated that assets financed should generate sufficient income for households to repay the loan with interest and leave a surplus for improving their standard of living. This was to be the yardstick by which success would be measured, but IRDP recovery has usually been relegated to secondary importance at best by bureaucrats selecting beneficiaries for the program. Rising overdues in rural cooperatives were viewed by the Committee as a mortal danger for the entire rural institutional credit system as it might choke off liquidity and future refinance. State governments were chastised for encouraging lax recovery by banning coercive action against defaulters, or occasionally writing off debts before elections. Positive and negative incentives were recommended to rectify the situation. First, interest rates should be increased slightly, but cooperative banks should offer a rebate to those who repay on time. Second, it suggested a presumption of willful default with criminal penalties unless a borrower proved otherwise, publishing lists of defaulters, (particularly landholders) and applying criminal sanctions on anyone who incited borrowers to default. Both recommendations were largely ignored and as the Committee predicted, overdues averaging 60% threaten IRDP with extinction. Eligibility criteria based on recovery position that now govern NABARD refinance also threaten to reduce liquidity in rural institutional credit. The most serious consequence of a failure to improve financial discipline in rural lending is that a large and rising proportion of poor will be excluded from the banking system since delinquency on IRDP debts is causing them to be classified as defaulters.

22. Credit schemes operated by the banking system for poverty alleviation have proliferated in recent years. In addition to IRDP which is the largest, banks also provide credit on favorable terms and subsidies to other programs in the government's 20 Point Program for Development.16/ The most recent institutional response to the problem of how to provide integrated credit delivery to the poor with lower transaction costs is the "Service Area Scheme" (SAS) effective for all banks January 1, 1989. This approach is a quantum step beyond the earlier "Lead Bank Scheme", which attempted to coordinate bank activity within a district since it assigns 15-20 villages exclusively to each branch for lending purposes. Banks are expected to survey forward and backward linkages available in their service area and then offer finance for viable investment. This continues the government's preoccupation with supply-driven credit and micro-level planning, but where districts and blocks have apparently failed in the past to ensure adequate linkages, banks have now been given this task.

16/ These include the Self-Employment Programs for Educated Unemployed Youth (SEEUY), Self-Employment Program for Urban poor (SEPUP), Composite Loans to Artisans, Village, and Cottage Industries, credit to beneficiaries under the Drought Prone Areas program, Rehabilitation of Bonded Laborers, loans for welfare institutions and handicapped wishing to invest in income generating activities, the Special Component Plan for SC/ST, housing loan schemes, and the Development of Women and Children in Rural Areas (DWACRA). For each program, there are stipulated interest rates (10-16.5%), margin and security requirements, and target groups.

23. The risks inherent in the SAS must be weighed against potential efficiencies that might be realized. First, in the context of rural India, where bank officials have been known to demand "consideration money" from borrowers for sanctioning loan applications, the scheme creates monopoly lenders. Concentration of financial services in one bank is patently anti-competitive and not in the long-term interests of the poor with their weak bargaining position. Second, the SAS increases exposure of banks to default risk since lending will be limited to particular areas which may be disproportionately affected by unexpected adverse economic shocks such as drought, flood, etc. Banks cannot be held responsible for the results of their lending decisions when unable to cushion themselves against such risks. Third, the SAS is designed to improve banking services by reducing the area coverage, but the impact on efficiency is uncertain since it will likely be necessary for banks to open new offices to achieve the required ratios of villages per branch.

V. EVALUATING IRDP SUCCESS

24. Viewed against the historical backdrop of the development of rural credit in India, it is evident that the original intent of IRDP was to provide access to efficient and non-collateralized sources of institutional credit for the rural poor. Once this access is assured, household demand and absorptive capacity should then govern credit flows. The successful results of such an intervention, are first, an increase in asset holdings of disadvantaged households; second, a viable investment that provides sustained income from self-employment; and third, repayment of credit leading to future access to banking services for the poor. These are the three principal objectives against which IRDP success should be judged.

25. Table 5.1 presents an array of success criteria to emphasize the point that judgment regarding outcome is a function of how many of IRDP's multiple objectives are imposed simultaneously. For example, the targeting or distributional objective of including only households with incomes below Rs 4800 p.a. is satisfied in 69% of cases nationally (Column 1). Retention for at least two years, a proxy for a viable investment whose benefits likely exceed costs, results in a similarly impressive result of 72% success (Column 2). Imposing more difficult conditions of credit repayment and income gain sufficient to raise households above the poverty line within the two-year period triggers a dramatic decline. For example, only 29% of households retained investments for two years and repaid credit on time (Column 3). Applying government's official criteria of raising eligible beneficiaries above the poverty line gives even more dismal results. Although 7% of beneficiaries satisfied this criteria (Column 4), only 1% managed to do so while maintaining a perfect repayment record (Column 5).

Table 5.1
Measures of Success for IRDP[1/]

Major States	% Eligible Benef. [4/]	% Investments Intact [3/]	% Intact and No Credit Overdue	% Eligible and Crossed Poverty Line [5/]	% Eligible and and Crossed Poverty Line and No Credit Overdue
Andhra Pradesh	58%	75%	34%	9%	1%
Arunachal Pradesh	73%	51%	38%	4%	4%
Assam	27%	70%	6%	10%	2%
Bihar	76%	85%	18%	3%	1%
Gujarat	78%	88%	43%	4%	0%
Haryana	71%	46%	15%	0%	0%
Himachal Pradesh	87%	85%	45%	29%	3%
Jammu and Kashmir	97%	80%	50%	19%	0%
Karnataka	85%	64%	28%	4%	1%
Kerala	89%	74%	19%	5%	0%
Madhya Pradesh	81%	73%	27%	6%	0%
Maharashtra	83%	69%	30%	10%	1%
Orissa	83%	68%	19%	7%	2%
Punjab	30%	77%	57%	18%	0%
Rajasthan	72%	48%	15%	9%	1%
Tamil Nadu	83%	63%	28%	3%	1%
Uttar Pradesh	54%	79%	41%	5%	1%
West Bengal	46%	97%	23%	8%	1%
Average Major states	70%	73%	29%	7%	1%
Other States & UTs [2/]	53%	58%	28%	8%	5%
NATIONAL AVERAGE	69%	72%	29%	7%	1%

1/ National Concurrent Evaluation of IRDP, Round 2, 1987, DRD.
2/ Manipur, Megalaya, Nagaland, Tripura, A & N Isl, Chandigarh, Dadra & NH, Delhi, Goa, Lakshwadeep, Mizoram, Pondicherry, Sikkim
3/ Proportion of IRDP investments that remained fully operational after two years
4/ Proportion of beneficiaries with pre-IRDP income <=Rs 4800
5/ Proportion of beneficiaries with pre-IRDP income <=Rs 4800 and income >=Rs 6400 after two years in current price terms

Note: See annex table A5 for additional detail

26. A major weakness in all these measures is that they are based on short-term data (two years) when many of IRDP's objectives are longer term. It is unrealistic to assume that most poor households can propel themselves out of poverty over a short period of time. The effectiveness of IRDP investments in achieving its objectives is a proposition that can only be tested over a longer period. Table 5.2 presents results after four years from the panel survey in U.P. In addition to the longitudinal analysis this permits, the new survey also enables one to develop a new typology of success based on the program's multiple objectives. Each of the three major objectives on reaching the disadvantaged, demonstrated viability of self-employment as revealed by asset retention, and satisfactory repayment are shown as partial success criteria.

Table 5.2:
IRDP Success in U.P.[1/]

----------Partial Criteria----------			
Disadvantaged Households [2/] (4 years)	Retention of Investment	Overdues ≤5% after 4 years	Composite Success criteria [4/]
97% (219)	59% (219)	58% (179)[3/]	44% (179)

1/ Based on panel survey conducted on households included in round 2 of Concurrent Evaluation.
2/ Households with either income below Rs 4800, or casual laborers/ marginal farmers, or illiterate/without formal education, or SC.
3/ Sample is smaller (179) because only households with assets intact after first round of interviews were included in the panel survey.
4/ Simultaneous imposition of partial criteria.

Note: Number of observations in parenthesis

27. These criteria differ in several important respects from those enunciated by the government. First, the eligibility criteria of including only those with income below Rs 4800 has been relaxed on the grounds that using strict income criteria alone lends greater precision to such estimates than justified given the survey methods that were employed. In order to determine what proportion of the 40% official ineligibles in U.P. can be described as non-disadvantaged,17/ one must balance income estimates with other indicators of poverty. Ninety percent of "ineligibles" were, for example, either occupationally or land-disadvantaged casual laborers or marginal farmers, illiterate or without formal education, or were among the scheduled castes. Using this criteria, 96% of beneficiaries were disadvantaged in U.P. thus the short-term welfare objective of IRDP to increase asset holdings of the poor appears to be met.

28. In order to ensure that the initial welfare gains are sustained over the longer term, the second component of success is that IRDP investments be viable, that is, economic and financial benefits exceed costs. If one accepts the notion that poor households behave rationally, then the observation that investments have been retained is a good proxy for their viability and that the asset makes a net positive contribution to household income. Fifty nine percent of the households in U.P. satisfied this criteria.

29. When all three partial criteria are imposed simultaneously in U.P., the composite measure of success, only 44% of households have succeeded. That is, 44% of beneficiaries disadvantaged prior to inclusion

17/ Those with pre-IRDP income >Rs 4800. See table 5.3.

in the program, are engaged in sustained self-employment activities and repaid credit. For at least these households that succeeded on all indicators, one would expect that future institutional credit would be forthcoming yet less than 7% of these households (1% of beneficiaries overall) returned to the bank and were granted additional loans outside of IRDP (Annex Tables A27-28). Thus while the program has succeeded to a certain degree in getting non-collateralized institutional credit to the disadvantaged, it has happened only once. Even the highest standards of performance have not earned these households sustained access to the system. Administrative costs incurred by banks and government on IRDP, earlier estimated at 8% of investment, appear much more expensive when viewed against success in the program's structural challenge of providing assured access to institutional credit.

30. The partial criteria outlined above will be examined separately in order to identify the important explanatory variables that contribute to success for each. This approach underlines the fact that credit-based poverty alleviation is a complex process which requires a simultaneous attack on many different fronts if it is to succeed. The point of the analysis is to identify these factors. The three general criteria: distribution of assets, viability of investments, and recovery/access to credit will be discussed, first for the country as a whole, and second, for U.P. in particular. Because the published national data is too aggregated and short-term to explain these contributing factors satisfactorily, the data from U.P. will be relied on to provide meaningful results that can then be tested in other areas. The official objective of crossing the poverty line will also be examined along with a more realistic variant -- that is, relative improvements in household income.

A. DISTRIBUTION OF BENEFITS

31. A repeated criticism of IRDP is that it is not reaching the genuine poor. Although the situation varies by state, evaluative data indicate that the program on a national basis is achieving its welfare objectives (Table 5.3). GOI classifies rural poor into four categories based on income criteria. Of the estimated 222 million rural poor below the poverty line in 1984-85 on an All-India basis, 2% were considered "destitute", 14% "very very poor", 38% "very poor", and 46% "poor". One-quarter of IRDP beneficiaries nationally fall into the destitute category. The program thus appears to be achieving its affirmative action goal of assisting the poorest first. Only 8% of beneficiaries were judged to be above the income cutoff (Rs 4800) thus officially ineligible (Annex Table A6). If the other criteria on land holdings, education, and social status employed in the U.P. survey to determine disadvantaged status were available for the national sample, this proportion would become negligible (paragraph 27). The conclusion from these results is that the program is currently directed to relatively disadvantaged households in rural India, even in states/territories which show a high degree of official leakage according to overly strict income-based measures.

Table 5.3:
Income Distribution of IRDP Beneficiaries

	Income Range	Rural Population Below Poverty Line (All India)[1/] 1984-85	Beneficiaries of IRDP (All India)[2/]	U.P.[3/]
Destitute	<Rs 2265<	2%	24%	2%
Very very poor	Rs 2266-3500	14%	45%	24%
Very Poor	Rs 3501-4800	38%	21%	34%
Poor	Rs 4801-6400	46%	5%	24%
Above Poverty Line	Rs 6400		3%	16%

1/ Op. Cit. Bandyopadhyay, p. 5.
2/ Second round Concurrent Evaluation, January-December 1987, based on income at time of selection as assessed by investigator.
3/ Data from second round survey in U.P. state.

32. Success on this count does not mean that a certain portion of funds does not leak to middlemen or administrators/banks responsible for IRDP. "Consideration money" is sometimes paid by IRDP beneficiaries to ensure their applications are considered favorably and expeditiously by block or bank officials. The supplier of the asset usually increases the price by a sufficient margin to cover necessary side payments. This is partly a distortion caused by the capital subsidy on investments since many veterinarians, bankers, or low paid government officials now look on such payments as their rightful share of the windfall subsidy reaped by the beneficiary. The possibility of such collusion among those who finance and supply assets is made easier by the system of loan disbursement which in most cases entails direct payment by banks to the vendor. This system reduces the bargaining power of purchaser of the asset (i.e., IRDP beneficiary). It is difficult to estimate the magnitude of this loss directly since beneficiaries are reluctant to reveal such payments. Evaluation data estimates it indirectly by comparing the actual amount of the investment with beneficiaries own valuation of the assets. Own valuation is less in 28% of cases. This is not, however, an exact measure of such leakage since such mark-ups can reflect justifiable inflation, often demand induced. Perhaps just as reliable are impressions gleaned from field investigators who spent considerable time in discussions with beneficiary families. All surveyors in U.P. reported that "consideration money" was commonly paid. The "going rate" in some areas was 10% of the total cost of the investment (including subsidy). Although there are no reliable figures on the absolute size of such leakage in IRDP, there are proxy measures which may capture the impact of differential corruption on IRDP. Administrative misappropriation will be explored in section B(ii).

B. VIABILITY OF INVESTMENTS

i. Direct Productivity

33. The results on whether IRDP investments have increased short-term asset holdings of disadvantaged households are encouraging. The productivity of investments is also an important indicator of success. Half of IRDP investments nationally showed net returns of more than Rs 1000 p.a. in current prices, 27% had positive returns of less than Rs 1000, and 22% showed no returns to the investment. Although it is important to call attention to those states which have performed relatively well (Andhra Pradesh, West Bengal, Tripura, J & K) or poorly (Haryana, Rajasthan) according to this measure (Annex table A7), such comparisons are not meaningful in measuring productivity because data on levels of investment is not available. The possible short-term nature of the gains and the failure to adjust for inflation are additional drawbacks for generating conclusions.

34. The data from U.P. permit longitudinal analysis of variations in the real investment productivity by household and type of asset. The major hypothesis is that although most IRDP investments show declining yields over time, targeting to certain classes of beneficiaries and improving particular implementation features can have a positive impact on productivity even in low income or drought prone rural areas. Utilizing data on net returns to investment as a predictor of IRDP success, however, fails to capture the differential opportunity costs households face in making the decision to continue self-employment. Productivity alone is unlikely to be a good predictor of which beneficiaries or program features are most likely to promote sustained self-employment. Long-term retention of IRDP investments, a proxy for viable investments, will be modeled in section B(ii) to determine what factors increase the probability of sustained self-employment.

35. The average Incremental Capital Output Ratios (ICOR= Investment/ annual net income from the asset) estimated for U.P. years are displayed in table 5.4 longitudinally by income group. The first two columns include all households in the survey while the second two columns remove the impact of attrition by including only beneficiaries that retained investments throughout the four-year period -- 59% of households in the sample for U.P. The lower productivity of destitute households (Column 2) is due to higher attrition.18/ The ICOR is 2.1 for both pre-IRDP destitute and above poverty line beneficiaries when only those that retained investments are considered. Although all groups achieved more favorable results than ICORs of 4.6 found for the Indian economy more generally, investments showed declining yields between the second and fourth years. This may underline beneficiaries' need for continued access to credit and banking services to undertake additional investment if necessary or finance working capital.

18/ Income from the asset in cases where the investment is not retained is zero pushing up average ICORs as a consequence.

Table 5.4:
Productivity of IRDP Assets in U.P.

Income Level in Rs	ICOR[1/] (All Beneficiaries)		ICOR (Beneficiaries that Retained Investment 4 years)	
	After 2 years	After 4 years	After 2 years	After 4 years
Destitute & Very Very Poor (0-3500)	1.6	3.7	1.5	2.1
Very Poor (3501-4800)	1.5	2.5	1.1	1.5
Poor (4801-6400)	1.8	3.7	1.8	2.7
Above Poverty Line (6401-)	1.5	2.3	1.7	2.1
Total	1.6	3	1.5	2

1/ ICOR=Investment/Average annual net income from asset.

Note: Data is from round 2 survey group and includes only beneficiaries that had intact assets both in the second and fourth year. The sample excludes those who died, moved, or were not located.

36. To separate the impact of scheme attrition from declining yields that occur even on investments that are maintained in good condition, table 5.5 and figure 5.1 show productivity by scheme for those that retained investments throughout the four-year period. Only capital intensive investments such as minor irrigation show relatively low productivity. Declining productivity of investments was, however, characteristic of every asset type with the exception of bullocks. Only bullock investments have a negative slope (Figure 5.1) indicating increasing yields. All others suffered declines of 30-50%. Although the decline was slightly more substantial for dairy (-53%), the uniformity of the losses across categories may indicate that the falling income may have been influenced by factors affecting overall aggregate supply or demand in addition to household or scheme characteristics. The drought for example, would be expected to have a negative impact on earnings for virtually all IRDP investments. (See Annex I).

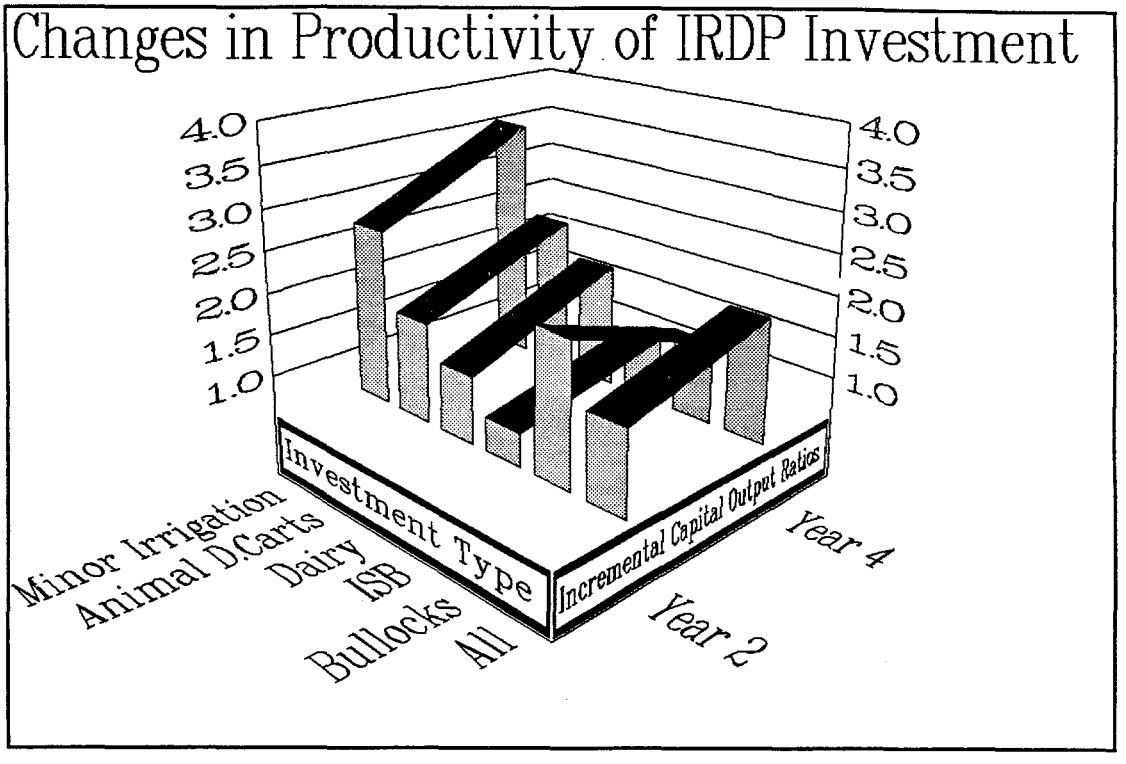
Table 5.5:
Productivity of IRDP Investment

	N	Average Investment	Average Real Annual Income from the asset		ICOR		Ave. Gain/Loss in Productivity
			After 2 yrs.	After 4 yrs.	After 2 yrs.	After 4 yrs.	
Bullocks/Small Animal Husbandry [1/]	13	2603	1164	1755	2.2	1.5	+32%
Minor Irrigation [2/]	21	7976	3032	2248	2.6	3.5	-34%
Animal Drawn Carts	24	5385	3258	2282	1.7	2.4	-41%
Dairy Units	29	3301	2575	1636	1.3	2.0	-53%
Other Primary Agriculture [3/]	1	5000	2157	1910	2.3	2.6	-13%
Other Secondary/Tertiary	46	3068	3266	2326	0.9	1.3	-44%
Total	134	4272	2866	2098	1.5	2.0	-33%

1/ Animal husbandry includes goats, piggery, and fish, however, of the 13 schemes that remained intact over 4-year period in this group, 12 were bullock pairs. The returns thus more accurately reflect increasing returns to bullock pairs, rather than small animal husbandry where attrition was high.
2/ Minor irrigation includes tube-wells, pump-sets, and diesel engines/electric motors.
3/ Only one scheme, horticulture was retained in this category.

Source: Survey # 2. The sample includes old beneficiaries who had intact assets both in the second and fourth year and excludes those who died, moved or were not located during the follow-up.

Figure 5.1



ii. RETENTION OF INVESTMENT

37. Although a model explaining productivity of investments was estimated and showed several variables including drought to be highly significant, the overall results are not very persuasive. This is probably because using a continuous dependent variable may attribute too much precision to estimates of net income from the asset.19/ Beneficiaries often distrust surveyors or may misrepresent their net earnings from IRDP to justify other actions such as non-repayment of credit. Retention of IRDP investments over time is more revealing and easily measurable as an indicator of success. A reasonable proposition is that the "decision" to continue self-employment venture is a proxy for productivity and sustained welfare gain accruing from the investment. While the direct costs and benefits for a given IRDP asset are the same across households similarly endowed with skills and other resources, retention implicitly takes into account other costs which vary by household. For example, a beneficiary may be earning a 20% rate of return on IRDP, but may decide to sell the asset in order to pay for a family wedding, procure agricultural inputs, or finance consumption during periods of distress which might otherwise force him to borrow from non-formal sources at a higher rate of interest. For another less vulnerable household, 20% might be sufficient incentive to continue self-employment. For this reason, direct productivity of an investment at any fixed target level is an insufficient condition to ensure

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19/ The results of the model are presented in Annex I and are generally consistent with stronger results found using logit analysis in this section.

sustained self-employment and models estimated in Annex I may fail to predict success in sustained self-employment very accurately. The retention of an investment in full working condition over several years is easy to observe, does not suffer from difficulties in measuring net income, and indicates that the economic and non-economic benefits produced by the investment exceed costs faced by the household. To improve the rate of retention should thus be a major objective of IRDP and is a critical indicator of success for the program.

38. The major hypothesis of this section is that some poor households want to invest in self-employment ventures to supplement their income and that given this opportunity, make impressive efforts to retain assets, even when facing severe economic hardship. Seventy two percent of IRDP assets have remained fully operational and producing benefits for at least two years after the initial transfer on an all-India basis. Performance among states is, however, widely divergent. (See Annex table A7 for detail). Longer term retention of IRDP investments has not been estimated for the country, but was tested in U.P. The proportion of investments retained in this state dropped from 82-83% after two years to 59% after 4-5 years (Table 5.6). If schemes that were "partially intact" are considered, more than 65% of IRDP schemes had been retained in U.P. thus demonstrating sustained welfare gains from self-employment. If the rate of attrition nationally reflects the situation in U.P., then the proportion of investments retained would be expected to drop from 72% fully intact after two years to just over half after 4-5 years.

Table 5.6:
IRDP Retention in U.P.

	After 2 years	After 4 years
Fully Intact	82%	59%
Partially Intact	4%	7%
Sold	11%	21%
Perished/Died	2%	8%
Other	1%	3%

Source: U.P. Round 2 survey.

39. Examining the U.P. data by type of investment reveals wide variations (Table 5.7). Dairy was the only animal husbandry scheme which showed satisfactory results of 66% retention. Small animal husbandry schemes showed very high attrition, particularly for those households in the lowest income quartile. Overall, only 6% of goats, fish, and piggery schemes were retained while 30% of bullock pairs remained intact. Most small animal husbandry schemes are characterized by high divisibility. Unlike a milch animal which if sold stops producing benefits entirely, the opportunity cost of sale for each goat or other small animal is relatively

low. Many of these investments thus tend to become decapitalized over time as households sell or consume first one, then another during time of need. Divisibility of investment thus appears to be a factor in explaining the likelihood of retention for certain investments. Capital intensive investments such as pumpsets showed lower direct productivity (para. 36), but high rates of retention (88%). Decapitalization is a problem for some secondary and tertiary schemes (ISB) such as retail shops as well, however, this is more likely due to insufficient working capital or inadequate local demand. The ready market for small animals in most rural areas makes it easy for a borrower to partially dispose of such assets.

Table 5.7:
IRDP Retention by Type of Investment in U.P.

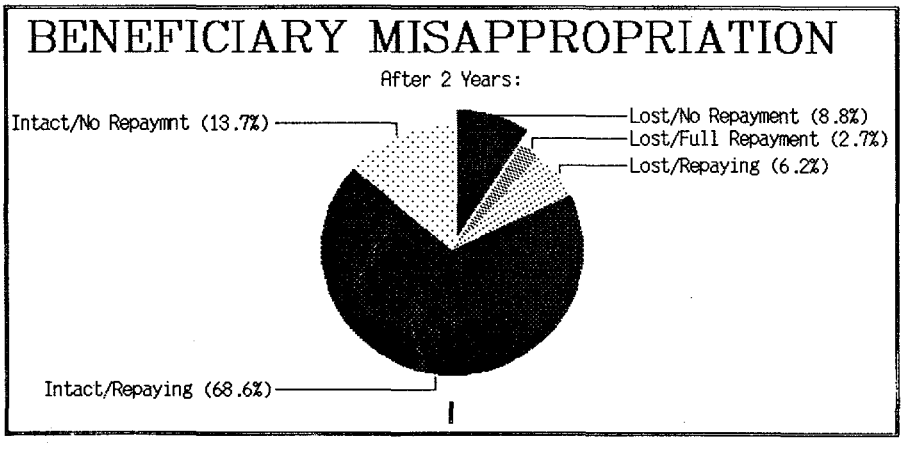
	After 2 years	After 4 years
Industry, Service, Business (ISB)	83%	59%
Animal-drawn carts	91%	69%
Minor Irrigation	100%	88%
Dairy	89%	66%
Bullocks/Small Animal Husbandry	55%	31%
Other Prim.	100%	33%
Average	82%	59%

Source: See Annex table A10.

40. The most frequent explanations provided by beneficiaries for failure to retain investments in U.P. were insufficient income (35%) or "unexpected contingencies" (e.g., illness, social obligations, drought) (20%). Only 11% of respondents attributed poor results to defects in the asset. Inflation of input prices (2%), costly maintenance procedures (5%), or immediate consumption requirements (8%) were infrequently cited as reasons. Nineteen percent of beneficiaries in U.P. and one quarter of respondents nationally offered "other" or in many cases, no reason for the loss of asset. This has led to speculation that this group misappropriated the investment. Beneficiary misappropriation cannot, however, be reliably inferred from this question since few households would admit they liquidated the investment to reap the short term gains of the credit or subsidy. "Inadequate income" may in some cases thus be a convenient excuse for misappropriation. If assets were lost during the first two years, but a good faith effort to repay a portion of credit was observed, or an asset was maintained longer than two years, its loss for whatever reason is likely to reflect rational economic decision-making by the household rather than misappropriation.

41. An indirect means of estimating the upper bound of misappropriation is to count households that lose or dispose of the asset during the first two years and repay all credit, thus pocketing the net subsidy, plus beneficiaries that lose the asset during this period, but repay nothing. The former, 3% of beneficiaries in U.P., are likely to have been motivated primarily by the offer of a capital subsidy (Figure 5.2). The latter type of leakage is more significant and represents 9% of beneficiaries in U.P. This group is most likely to view IRDP as government largesse which carries no repayment obligation. Misappropriation of self-employment opportunities for short-term gain may therefore be of the order of 12% of beneficiaries in the districts surveyed, 8% of investment. Beneficiaries that lost the asset, but were making some demonstrated effort to repay are not likely to have misappropriated the investment. Those who maintained the schemes over the two-year period, but did not repay any credit are defaulters, but they have not misappropriated the investment. The decision to repay credit is motivated by additional factors discussed in Chapter V(D) and non-repayment alone does not necessarily signal a failure to provide the poor with self-employment opportunities or indicate that beneficiaries are not genuinely motivated to pursue them.

Figure 5.2



Source: U.P. Round 2 of Concurrent Evaluation.

42. In addition to misappropriation, much of the blame for attrition of IRDP investment recently has been placed on the inadequacy of asset-related infrastructure, input supply, marketing and services. Household surveys of the type used in the Concurrent Evaluation may provide little insight on this issue if beneficiaries have limited comparative information on availability in other areas. Linkages are also related to particular types of assets thus roads and transport for example will not be critical for all investments. Unless the sample for each type of investment is very large, such relationships may not be detected. For example, more than 90% of beneficiaries in U.P. that lost the asset during the first two years of operation stated that inputs, marketing, as well as repair and maintenance facilities in the area were adequate and thus had no negative impact on their investment. Only 12% of households that lost assets between the

second and fourth years blamed poor results on inadequate repair or veterinary services, 10% on marketing facilities, 7% mentioned transport constraints, 6% processing services, and 2% link roads.

43. Confirming the availability of asset-related infrastructure is obviously critical for banks when appraising the viability of any proposed investment. Beneficiaries are, however, in the best position to assess the availability of local inputs, infrastructure, and services and to determine the household's absorptive capacity for investment credit in light of the opportunity costs they face. If households understand that repayment will be strictly enforced and their demand for credit is not distorted by subsidy inducements, then they are more likely to form their investment plans within the realistic confines of local infrastructure, inputs, and market possibilities.

44. IRDP is designed to provide self-employment opportunities to the poorest rural households, but are they equipped to maintain these investments? Using long-term retention as the proxy for productivity implicitly accounts for differential opportunity costs households face in making the decision to retain investments. The lowest pre-IRDP income group is more likely to sell the assets or see them perish/decapitalize than those who were already above the poverty line before the program. Forty six percent of beneficiaries in lowest income group had fully functioning assets after four years compared to 75% of those households who were above the official poverty line before the transfer (Table 5.8).

Table 5.8:
Retention of IRDP Investment by Income Group in U.P.

Pre-IRDP Income	Investment Intact	
	After 2 years	After 4 years
Destitute/Very very poor (Rs 0-3500)	78%	46%
Very poor (Rs 3501-4800)	77%	59%
Poor (Rs 4801-6400)	87%	64%
Above Poverty Line (Rs 6401+)	94%	75%
Total	82%	59%

Source: See annex table A12 for detail. Results for round 1 in A11.

Note: Retention by occupation and educational status are included in tables A13/A14 for segmented portions of the sample.

45. Although it is probably more difficult for the poorest households to retain assets, almost half have done so despite the drought which is likely to have raised their demand for cash quite substantially. Given that assisting the poorest is a critical objective of government policy, it is important to identify those factors that appear to increase the likelihood that such households will also derive sustained benefits from the self-employment opportunities offered by programs such as IRDP. A logit model was fitted to the data from U.P. in order to determine what factors increase the probability of retention. The model sets up a dichotomous dependent variable with Retention=1 representing schemes that

are fully intact at the end of four years.20/ The variables in the model, their coefficients, and levels of significance are presented in Table 5.9.21/ A negative sign on the coefficient indicates a reduction in the probability of long-term retention. P values give the probability that the variable is insignificant in the regression. Partial r statistics measure the contribution of variables independent of the sample size. Predictive power of the model is demonstrated by fitting the regression to each of the households and calculating their probability of retention. The model predicted the actual outcome (probability of retention >50%) in 77% of cases (Table 5.10).

Table 5.9:
Retention of IRDP Schemes in U.P.
(Logit Regression - Dependent Variable Retention IRDP Investment for 4 Years)

Explanatory Variables	Coeff	Wald Chi-Square Statistic	P	r
Intercept	-3.12	2.3	.12	
Pre-IRDP Occupation	1.17	9	.003	.15
Pre-IRDP Income Group[1/]	.0003	8.5	.003	.15
Divisibility of Investment	-2.4	24	.0000	.28
Passbook issued? (Yes=1)	1.4	13	.0002	.2
87/88 Drought impact	-5.5	10	.001	.17
Incidental Costs of Investment[2/]	-.02	8	.004	.15
Primary School Coverage[3/]	.06	6.7	.009	.13
Village Tendency to Default[4/]	-.84	4.5	.03	.09
Intensity of Market Search(days)	.52	4.3	.04	.09

Model Chi-Square = 78 w/9 df(-2 log L.R.) P =.0000 R =.45

Somers DYX = .67
219 Observations

Retention = 1 (134)
Retention = 0 (85)

1/ Pre-IRDP mean income level estimated for each category of beneficiaries (i.e., Destitute/Very Very Poor, Very Poor, Poor, and Above Poverty Line) as a four-way discrete classification.
2/ Amount expended by beneficiaries on visits to bank, block, other offices in the process of obtaining the asset.
3/ Number of primary schools per 100,000 population in district.
4/ Default villages identified as those where 40% or more of beneficiaries had repaid no credit during the first two years.

20/ Nineteen beneficiaries that were reported to have moved or died during the follow-up survey were dropped from the sample since their status could not be determined. Since the follow-up survey round in U.P. covered beneficiaries that had assets intact after the first round of interviews, only data generated from the first round of interviews could be utilized to construct variables. For future panel surveys, beneficiaries that lost the asset during the first two years should also be covered if possible since this would likely provide additional explanatory power in modeling.

21/ The model calculates maximum likelihood estimates for the parameters associated with each of the explanatory variable. Partial r statistics indicate the contribution of each variable. (r=0 signifies no contribution). (r=((MLE chi sq - 2)/ -2L(0))) 1/2. Pearson correlation coefficients for the variables are calculated and presented in annex table A15 along with their significance levels.

Table 5.10:
Predicted Versus Actual Outcome for IRDP Investment Retention in U.P.

Actual:	Predicted: Not Retained	Predicted: Retained
Not retained for 4 years	52*	33
Retained	18	116*

*Correct Predictions = 168 (77%)
Incorrect = 51

Source: Annex Table A15 for detail.

46. Variables can be classified according to beneficiary characteristics, those specific to the investment and program implementation, and those that capture inter-district variations in economic conditions. Among the beneficiary characteristic variables, the significance of occupation indicates that classification as marginal farmers and agricultural laborers, groups that are less endowed with land and/or skills and experience in self-employment than small farmers, artisans, and non-agricultural self-employed, reduces the likelihood that investments will be retained over the longer term. Closely linked to this is the estimate of pre-IRDP income of the beneficiary household. Higher income prior to inclusion in the program increases the likelihood that the assets will be retained over the longer term. This supports the hypothesis that beneficiaries that have the greatest liabilities in terms of short term vulnerability to unanticipated shocks are less likely to derive long-term welfare gains from IRDP investments.

47. Beneficiaries' motivation to pursue self-employment is also significant in determining the likelihood of retention. Some households are motivated primarily by the capital subsidy and may not be counted on to devote their full efforts to maintaining assets in full working condition. It is impossible to measure this motivation directly, but a proxy, "intensity of market search", was constructed based on the number of days beneficiaries spent on trips to the market prior to procuring the IRDP asset. A longer search increased the probability of long-term retention. Even for those who were forced to spend more time due to supply constraints for assets in the local market, a longer search indicates a degree of household persistence and motivation. The hypothesis is that such beneficiaries are less likely to pursue IRDP for short-term inducement by the capital subsidy. Beneficiaries that undertook a more intensive search may also have succeeded in procuring higher quality assets.

48. Although pre-IRDP income, resource endowment and motivation are important, the type of investment financed is also very influential in the model. A dummy variable contrasts investments that are highly divisible (Divisibility=1) (i.e., bullock pairs, implements, small animal husbandry) with dairy, irrigation, and secondary/tertiary schemes which are not as susceptible to decapitalization. Banks should give more careful attention to appraisal of these types of investments since they are characterized by a high failure rate. Neither the size of the investment, nor its breakdown into credit and subsidy components, had any impact on retention. Raising the level of per beneficiary investment as suggested by some observers is thus not likely to improve the long term success of households in maintaining assets.

49. Corruption in IRDP is also likely to have a negative impact on the probability of retention. A proxy for differential rates of administrative misappropriation was constructed from data reported by households on the costs they incurred on visits to the block, bank and other offices in the process of obtaining the asset. Higher costs reduced the likelihood of investment retention. This may be because beneficiaries that have been forced to pay consideration money feel less obligated to retain investments. Administrators, bankers, or suppliers that have accepted such payments are in a weak position to criticize beneficiaries for their decision to dispose of investments.

50. Other features of program implementation that influence long-term retention are the actions and attitudes of banking intermediaries. Failure to issue a loan passbook, which occurred in 35% of cases in U.P., is a proxy for bank seriousness in loan appraisal and follow-up. This indicates that some banks ignored established standard commercial lending practices and guidelines of the IRDP. Such laxity resulted in lower probability of investment retention. The likelihood of passbook issuance is not systematically related to either the pre-IRDP income level of the beneficiary or the size of loan. Average credit extended was actually somewhat higher for the non-passbook group. Many bankers claimed in informal discussions that the decision to issue a passbook mainly reflects manpower availability at the branch level. They also claim that they are increasingly issuing passbooks despite serious staff constraints. Since data on this question is not tabulated in the two rounds of the Concurrent Evaluation, this trend is difficult to verify. The main point is that better attention to standard lending practices by banks would probably improve the probability of retention.

51. Village tendency to default is a dummy variable which indicates those villages where 40% or more of beneficiaries had made no repayments on IRDP credit during the first two years of observation. The hypothesis that asset retention is influenced by the village propensity to default rests on the assumption that beneficiaries in such villages tend to view subsidized credit as government largess rather than an obligation to earn a positive return on the investment and repay loans through self-employment. This attitude reflects other factors and may, for example, be a manifestation of political interference in rural credit or lax attitudes on the part of some banks. Greater attention to repayment ethics, however, is needed to improve the climate for sustained self-employment.

52. Two district variables are also significant in influencing success. The 87/88 drought variable indicates that such unanticipated economic shocks are likely to have a very negative influence on the probability of asset retention. Beneficiaries will reduce asset holdings when demands for cash rise unexpectedly. One district level variable which is significant in explaining differential success is primary school coverage. This variable is mainly of use as an indicator of social infrastructure more generally, but is difficult to interpret since it is probably associated with other indicators of district development status. The implication, however, is that districts better endowed with social

infrastructure create better environments for success in self-employment.22/

53. In order to determine the strength of different variables in improving sustainability for target beneficiaries, simulations were run in order to calculate the probabilities of retention as explanatory variables take on different series values. Because they require logarithmic transformation, this is the clearest means to understand coefficient estimates in logit models. Table 5.11 presents the assumptions for the "best" and "worst" case scenarios for asset retention based on the estimated equation. Between the extremes of 0% and 99.9% probability calculated in the model for these two cases, it is clear that there are policy levers available to affect the likelihood of retention without compromising the goal of assisting the most disadvantaged rural population.

Table 5.11:
Calculated Probabilities of Retention

Variable	Best Case	Worst Case	Intermediate Case
Occupation	Not Marg Farm/Ag Laborer	Marginal Farmer/Ag. Laborer	MF, AL
Pre-IRDP Income Group	Above Poverty Line	Destitute/VV Poor	Destitute, VVP
Divisibility of asset	Low	High	Low
Passbook Issued	Yes	No	Yes
87/88 Drought	29% shortfall	77% shortfall	59% (mean)
Incidental costs of Investment	0	Rp200	42 (mean)
Primary School Coverage	81	57	68 (mean)
Village Tendency to Default	Low	high	Low
Intensity of Market Search	10 days	0 days	2 days (mean)
Probability of Retention1/	99.9%	0 %	66%

1/ Probabilities are calculated by substituting assumed values of the variables into the following term $\frac{1}{1+e^{-\beta X1\ \beta X2\ \ldots\ \beta nXn}}$ and using the estimated coefficients found in table 5.9. Taking the extreme values in the range for each variable results in probabilities of 99.9 or 0%. Changing the assumptions in this way allows the model to be used to estimate sensitivity of retention to different factors.

54. The intermediate case shown in column three indicates that even for marginal farmers and agricultural laborers in the lowest pre-IRDP income group, the probability of retention can be raised to 66% by changing certain parameters. First, if the program can exclude those who are not really motivated toward self employment (i.e., those attracted by subsidy), it would improve the sustainability of investments. Second, beneficiaries should invest in assets not highly subject to decapitalization (e.g., small animal husbandry). Third, banks should issue passbooks and carry out careful appraisal and follow-up. Finally, the case assumes that costs beneficiaries incur on trips to the bank, block, and other offices prior to

22/ Several variables that were tried in the model were interesting in that they did nothing to improve retention likelihood. The involvement of Gram Sabha in selection of beneficiaries made no contribution. Delays in extending the assistance by the block or bank had no impact except where they resulted in monetary costs to the beneficiary (i.e., administrative misappropriation). The size of the investment, term of the loan and the type of payment schedule (monthly, yearly etc.) were also insignificant. Several district level indicators were introduced to test the hypothesis that infrastructure or development status influences retention. The proportion of irrigated area, value of agricultural GDP, prevalence of pucca roads, were all found to be insignificant. Block or even village level indicators would be more useful for testing such relationships.

procuring the asset, the proxy for administrative misappropriation, can be reduced to the average for the sample. Although it is not easy to affect the susceptibility of district to drought nor their endowments of social infrastructure in the short term, the case assumes that the levels for these variables equal the mean for the sample. The likelihood of asset retention for an IRDP household facing these conditions would increase to 66% for the priority target group.

55. The results of this analysis together suggest that very poorest households are more vulnerable to unanticipated economic shocks and thus more likely to reduce asset holdings during periods of distress. The probability of retention is thus systematically related to pre-IRDP income and resource endowment. IRDP should promote sound investments to raise income and simultaneously reduce the short-term vulnerability of the poorest households. Assuring continuous access to efficient sources of institutional credit to finance investment as well as consumption is an important means of promoting this latter objective since it substitutes for higher cost informal sector lending which probably continues to represent the bulk of credit supplied to the very poor. Banks have an obligation to assess the creditworthiness of borrowers, but the initial decision to invest, the amount of credit demanded, and the type of self-employment sought cannot be micro-managed by planners, administrators or bankers since only households can realistically assess the opportunity costs they face. If steps can be taken to improve the likelihood of retention for such households, they may be in a good position to derive long-term gains in income as shown in the next section.

C. CHANGES IN HOUSEHOLD INCOME

56. A successful poverty intervention should produce consistent real gains in total household income. The main hypothesis of this section is that crossing the poverty line is a flawed measure of success. It is relative, as opposed to absolute increments in income, that are critical for determining success. Hence, successful beneficiaries are those that retain their assets and derive sustained positive net income from self-employment.

i. Crossing the Poverty Line

57. Applying government's official criteria of crossing the poverty line indicates that the program has failed in its objective. On an all-India basis, 13% of beneficiaries had crossed the poverty line of Rs 6400 two years after inclusion in IRDP. For the priority target group (pre-IRDP income <Rs 3500), only 5% managed to cross the poverty line within two years (annex table A7). Dismissing IRDP based on these disappointing findings would, however, be a mistake since the measure itself suffers from two major flaws; first, as an absolute measure it fails to account for differences in pre-IRDP income and second, it substitutes a short term objective (i.e., crossing poverty line) for what is essentially longer term goal of assisting poor households to achieve consistent real income gains. The results from U.P. illustrate these weaknesses. Forty one percent of households were above the poverty line after two years, but most were already near or above the poverty line before the program (Table 5.13). Only 4% of priority target beneficiaries which started with income <Rs 3500 had crossed the poverty line after two years, consistent with the national survey results (annex table A7).

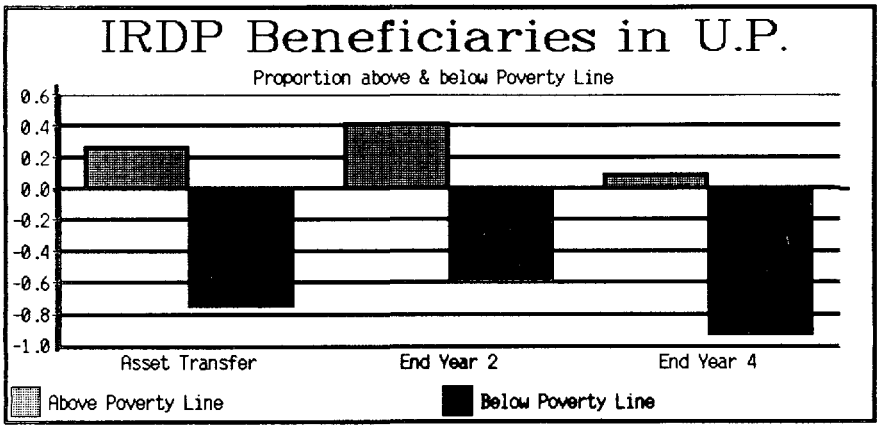
58. The panel data from U.P. confirm that IRDP failed to propel significant numbers over the poverty line. Indeed, many who were already near or above it subsequently fell below. Of the 41% of beneficiaries who were above the poverty line after two years, only 8% remained above it at the end of four years (Table 5.12 and Figure 5.3). These results are probably heavily influenced by the 87/88 drought - one of the most severe this century. The least affected district in the sample had a 30% rain shortfall in June/July 1987 while all other districts were in the range of 43% to 77% shortfall thus severely affected. Although progress toward the poverty line was reversed for every income group in the U.P. sample over the last two years, it cannot be concluded that IRDP had no positive impact since factors exogenous to the IRDP investments are critical determinants of household income changes.23/

Table 5.12:
Beneficiaries' Position Relative to the Poverty Line in U.P.

Pre-IRDP Income Level in Rs		Above Poverty Line	
	N	After 2 years	After 4 years
Destitute & Very Very Poor (0-3500)	45	4%	2%
Very Poor (3501-4800)	55	16%	4%
Poor (4801-6400)	46	70%	13%
Above Poverty Line (6401+)	33	94%	18%
Total	179	41%	8%

Note: Sample from round 2 survey. Includes only beneficiaries who had assets fully intact after two years. Household income was adjusted to reflect changes in the level of prices by using the Agricultural Laborers' Price Index (base year 1984/85).

Figure 5.3



23/ "Before and after" analysis of this type is interesting, but the usefulness of IRDP in this case would depend on whether the changes in income would have been substantially different in the absence of the program. The best way to determine this is with a control group of households not included in IRDP. Unfortunately, such data is not available.

ii. Relative Improvement in Income

59. In examining success of IRDP in meeting its poverty alleviation objectives, change in total household income is an important indicator. Measures of relative income gain are, however, more meaningful than crossing the poverty line for determining whether households are on a growth path that will move them toward, and eventually over, some pre-specified poverty threshold. After two years of IRDP in U.P., relative real income gains were impressive as shown in Table 5.13.

Table 5.13:
Percent Change in Real Household Income
for IRDP Beneficiaries in U.P.

	Percent Gain/Loss:	
	After 2 yrs.	After 4 yrs.
Destitute/Very Very Poor	71%	39%
Very Poor	36%	0
Poor	33%	-18%
Above Poverty Line	25%	-36%
All	42%	-1%

Note: Sample from round 2 survey group. Includes only beneficiaries that had maintained the asset for at least two years. For detail on round 1 results and round 2 including gains/losses by scheme see annex tables A16-18.

60. The average gain in income was 42% for those that had retained investments for at least two years, but gains for the poorest groups were much higher (71%). Unfortunately, most of these gains had evaporated by the fourth year, partly as a result of declining yields on the investments and partly due to reductions in other sources of income. By April 1988, almost the end of the drought, real incomes on average were 1% below the levels estimated for 1984/85 when the original investments were made. Unlike the other groups, however, the destitute and very very poor, managed to hold on to part of their gains.

61. Among households that retained assets for at least two years thus strongly suggesting that benefits of the investments exceeded costs, 86% of beneficiaries suffered real declines in total household income over the last two years of the survey. The sources of this erosion are found in Table 5.14. Total household income is comprised of income from the IRDP investment and income from "other" sources. The upper left quadrant of the table indicates that only 14% of households in the survey retained IRDP assets for the full four-year period and realized gains in total income between the second and fourth years. More than half of this group (13 of 23) had declining yields on IRDP assets, but these were compensated by gains in other sources of income. Only 2% of beneficiaries had gains in both sources of income, while 3% had gains in IRDP income that more than offset losses in other income.

Table 6.14:
Real Gains/Losses in Income for Beneficiaries in U.P. (Years 2-4)

	Total Household Income Gain		Total Household Income Loss		
	"Other" Income Gain+	"Other" Income Loss-	"Other" Income Gain+	"Other" Income Loss-	Total
IRDP Asset Retained:					
IRDP Asset Income Gain+	4	6	0	37	47
IRDP Asset Income Loss-	13	0	25	49	87
Total	17	6	25	86	134
IRDP Asset Disposed:					
IRDP Asset Income Loss-	1	0	22	22	45
Total	1	0	22	22	45

62. The upper right quadrant of the table represents those households that continued self-employment schemes throughout the four years, but suffered real declines in total income. Three quarters of beneficiaries fall into this group. More than one quarter of these households (37/134), however, continued to make real gains in IRDP income despite the drought. For this segment of the beneficiary population, self-employment was an important factor in reducing the losses in total household income as a result of heavy losses on their other sources of income.24/ This group and those in the top lines of the upper left quadrant (N=47) would appear to be the households most likely to continue self-employment over the longer term given that their IRDP assets continue to contribute increasing increments to household income. Combined, this group represents 26% of those that retained investments for at least two years.

63. Households included in row two of the upper right quadrant are problematic, since they suffered declines in total household income not alleviated by gains from IRDP investments.25/ Almost one quarter of all beneficiaries (49/179) reported a decline in IRDP asset and other sources of income between years two and four. In a dynamic sense, these households may be the most likely to eventually dispose of investments during future periods of acute distress thus moving into the bottom half of the table. This hypothesis can only be tested through a further round of survey. An additional 14% of households (25/179) in the upper right quadrant had declining yields on their IRDP investments that were offset by gains in other sources of income. These households too may eventually dispose of their IRDP investments if yields continue to decline, though their increasing income from other sources may allow them to wait to see whether IRDP asset income rebounds after the drought. It may be that if households in these groups (row two of upper right quadrant) had access to additional resources for investment and working capital, they could salvage their investments and self-employment could contribute increasing increments to income.

24/ There may be, of course, cases where taking up self-employment under IRDP led directly to erosion in other sources of income. This might occur, for example, in certain secondary/tertiary schemes where full time attention is necessary to manage the investment and unemployed household labor was insufficient. In such instances, self-employment in IRDP substituted for wage or other type of pre-program income.

25/ Note that those households in the bottom two quadrants have already disposed of their IRDP investments.

64. The main point of this analysis, however, is that for more than a quarter of all beneficiaries, IRDP asset income represents a growing part of total household income despite the overall depressing effect of the drought. For those households where IRDP asset yields are declining, this may only be temporary. The fact that a large proportion (75%) have retained assets, indicates that the return on their investments, at least before debt service, is still positive.

65. Among those households that were most successful in IRDP, that is, those whose asset income increased between years two and four, those who were poorest prior to joining in the program represented 55% as shown in table 5.15. Because it is more difficult for such beneficiaries to retain the investments (Table 5.8), particularly during times of stress, it is difficult to conclude that such households should not be included in the IRDP (i.e., that they should be offered wage employment instead) since they are not suited for self-employment.26/

Table 5.15:
Real Gains in IRDP Income (Years 2-4)
for Households in U.P. by Pre-IRDP Income Group

	Number of Households	
Destitute/Very very poor	8	(17%)
Very poor	18	(38%)
Poor	12	(26%)
Above Poverty Line	9	(19%)
Total	47	

Source: See table 5.14.

D. REPAYMENT AND LONG-TERM ACCESS TO CREDIT

66. As discussed in Chapter IV outlining the genesis of credit-based poverty alleviation efforts in India, IRDP represents an attempt to correct market imperfections which prevented the poor from gaining access to institutional credit. Lack of assets traditionally meant such households had no collateral hence, were not creditworthy. Marginalization from efficient sources of capital in turn contributed to continuing poverty. By providing subsidized and targeted credit to the poor on the basis of expected returns to the investment, households could obtain capital for self-employment ventures and thereby increase their income. Repayment would prove their creditworthiness to banks thereby gaining them assured access to future institutional lending. Although the welfare, productivity, and income effects of the investment explored in earlier

26/ See Rath, N. "Garibi Hitao: Can IRDP Do It?", EPW, February 9, 1985.

chapters are important to success of the program as a poverty alleviation strategy, IRDP must also be viewed as credit program with institutional objectives for banks and the structural goal of facilitating sustained access to financial services for the poor. One way of determining this is to examine whether successful households have been able to obtain further loans from banks.

67. The main hypothesis is that IRDP has provided subsidized loans to large numbers of disadvantaged households in rural India, but the program has done nothing to overcome structural constraints on long-term access to credit. These include the high transaction costs and negative margins that banks face in extending credit to the rural poor. The fact that IRDP is a losing proposition for banks even in the best of circumstances (i.e., full recovery) means that lending institutions will minimize losses by keeping overhead costs low and limiting exposure to beneficiaries that necessitate cross subsidization. The results are poor appraisal standards, low recovery, and continued marginalization of the poor from banking services. Borrowers likewise have insufficient incentives to repay since honoring obligations does not necessarily bring future access to credit. The capital subsidy on assets distorts preferences for self-employment, size of investment, and contributes to leakage as intermediaries have come to feel they deserve a share. As long as this situation continues, IRDP will succeed at best as a one-time transfer that may improve welfare and income for disadvantaged households, but is not likely to open a permanent window of opportunity to commercial banking services for the poor.

68. This chapter examines four areas: (i) what are the trends in credit extension through IRDP and how significant are the overdues incurred by banks on this lending; (ii) what factors increase the likelihood that borrowers will repay; (iii) has IRDP resulted in sustained access to institutional credit for the rural poor as anticipated; and (iv) finally, are incentives currently in place to encourage quality lending/recovery by banks and good repayment ethics by borrowers?

i. Credit Mobilization for IRDP

69. Term credit mobilized for IRDP represents about 60% of total investment in the program. Although slowing down in recent years, the credit component has risen at an average rate of 20% since 1980-81 and currently represents almost one third of total long-term credit disbursed for agriculture by banking institutions. The growth of credit in IRDP and changing patterns in the source of this finance also have implications for apex banking institutions. NABARD offers automatic refinance at an annual interest rate of 6.5% for up to 90% of banks' disbursements for IRDP. Since the cost of mobilizing deposits is approximately 9-10% for banks at present, there is a substantial implicit subsidy thus banks have increasingly turned to refinance as the source of funds for IRDP. NABARD refinance disbursements as a proportion of total term credit mobilized for the program have consequently risen from 4% in 1981-82 to 45% in 1987-88. IRDP presently represents one third of all NABARD disbursements (Table 5.16).

Table 5.16:
Term Credit and Refinance in IRDP and Agriculture

	1980-81	1984-85	1987-88
IRDP Term Credit (Rs bln)	2.9	8.6	9.8
of which:			
NABARD Refinance	4%	41%	45%
IRDP Refinance as % of NABARD Total	3%	33%	30%
IRDP Credit as % of total term credit mobilized in Agriculture[1/]	n/a	36%	30%

1/ Term credit disbursed by NABARD - participating commercial banks, cooperatives, land development banks, and RRBs.

Source: NABARD, See Annex table A19 for detail.

Note: Term credit generally refers to that with amortization $\geq$ 18 months.

70. Disaggregation shows that rapid growth of refinance has been accompanied by a change in both the responsibility and composition of lending within the program. State Land Development Banks (LDBs) and Cooperative Banks together represented one quarter of NABARD disbursements for IRDP as recently as 1983 (Table 5.17). By 1987, their share had dropped to only 11%. Combined with the large increase in disbursements overall, this shift resulted in a significant increase in the responsibility of Regional Rural Banks (RRBs), many of whom have showed increasing financial weakness. The share of RRBs grew from 27% in 1982-83 to 43% in 1986-87 and the absolute level of refinance to these institutions more than tripled. Refinance for commercial bank (CB) lending for IRDP doubled in absolute terms during this period, but their share of refinance remained relatively constant at 45%. Land Development Banks continue to be unenthusiastic about the program due to uneasiness over the no-security strictures imposed for loans less than Rs 10,000. Cooperative Banks have been unenthusiastic as well since their lending has traditionally been geared to short-term crop loans. The reticence of these two actors has left CBs and RRBs as channels for almost 90% of refinance under the program. These trends are particularly troubling for RRBs, many of whom are now in a weak financial position. Their increasing role in IRDP with its attendant overdues is of cours an important cause of this weakness.

Table 5.17:
NABARD Refinance for IRDP by Agency
(Rs Blns)

	1982-83	1986-87
State Land Development Banks	.16 (7%)	.1 (3%)
Cooperative Banks	.3 (17%)	.3 (8%)
Commercial Banks	.9 (47%)	1.72 (45%)
Regional Rural Banks	.5 (27%)	1.65 (43%)
Total	1.85	3.8

Source: NABARD

71. The results of the Concurrent Evaluation show that RRBs' 43% share of NABARD refinance for IRDP may exceed their share of IRDP loans. Commercial banks extended 68% of IRDP loans on an All-India basis, RRBs 26%, and cooperative banks 6%.27/ While RRBs appear disproportionately dependent on NABARD refinance, commercial banks finance the program to a greater extent through internal resources, a factor which yields considerably higher real losses per loan due to the higher cost of these funds given equal recoveries.

72. Rapid shifts in the composition of lending have also taken place during this period. In 1983, more than 90% of refinance was for primary sector schemes such as bullock pairs, minor irrigation, and animal husbandry. Planners have sought to shift the emphasis increasingly to secondary and tertiary sectors in order to promote rural diversification and opportunities for the rural poor who have no access to land to support agriculturally-based investments such as pumpsets for irrigation. This is evident from the statistics in table 5.18 which show refinance for village-based industry, services and business (ISB), rising rapidly from only 8% in 1983 to 45% in 1987. RRBs have taken the leading role in this area currently providing some 60% of all refinance for ISB. In terms of the absolute numbers of schemes, ISB has grown rapidly from 6% in 1980-81 to 59% in 1987-88.

Table 5.18:
NABARD Refinance for IRDP by Sector/Agency
(Rs mlns)

	1982-83		1986-87	
	ISB	Other	ISB	Other
Land Development Banks	-	160	-	100
Cooperative Banks	10 (3%)	300	110 (34%)	210
Commercial Banks	40 (5%)	840	570 (33%)	1150
Regional Rural Banks	100 (20%)	400	990 (60%)	660
Total	150 (8%)	1700	1670 (44%)	2120

Source: NABARD

73. The increase in ISB lending as well as the increasing amount of refinance accounted for by RRBs may partly reflect new regulations governing banks' eligibility for refinance imposed by NABARD in July 1986. Eligibility criteria were expected to improve financial discipline by rewarding institutions with recoveries above 75% with unlimited access to

27/ The shares are not directly comparable since Concurrent Evaluation data RRBs relates to the absolute number of IRDP loans, as opposed to total IRDP credit extended.

refinance and penalizing those with high overdues with reductions. The selective manner in which NABARD has chosen to apply the criteria combined with the sectoral shift in investment under IRDP have, however, reduced their potential impact in this area. Officials in NABARD have argued that the eligibility criteria were intended to discipline agricultural advances, thus recoveries on IRDP investment in secondary and tertiary sectors (ISB) should be excluded when banks compute their overdues position. This distinction is tenuous at best. For example, official guidelines classify investment in bullock pairs as primary agriculture. If a cart is also financed, it becomes a service thus classified as ISB. Others argue that the "newness" of the ISB lending initially warrant a more flexible approach. Regardless of the rationale, exemption of ISB from the eligibility criteria governing refinance distorts lending preferences and reduces financial discipline. Closing this loophole would have a particularly strong influence in choking off liquidity for many RRBs which have been increasingly dependent on both refinance and ISB lending in IRDP.

ii. Overdues and Leakage

74. Obtaining reliable estimates on the level of IRDP overdues is difficult given the many incentives banks and administrators have to minimize this problem.28/ The new NABARD eligibility criteria are one example, but banks were misrepresenting overdues long prior to their introduction. Two major factors have permitted this situation to continue. First, reschedulings have taken place making it difficult to track the original dues position. This may improve banks' balance sheets, but offers uncertain benefits to IRDP borrowers since it raises the cost of the investment. Second, the capital subsidy on IRDP investment not only distorts borrowers demand for credit, it has allowed lenders to underestimate the extent of overdues.

75. The latter is most clearly revealed in a NABARD study conducted for 119 bank branches in 15 states to determine the extent to which banks were distorting overdues. The study found that many banks were considering the full amount of the investment including the subsidy portion as a loan on their books thus boosting priority sector advances, then adjusting the subsidy as recovery on the loan. This gave the favorable illusion of 38% overdues on IRDP lending reported by banks in the sample. Once the government subsidy was removed from the recovery stream, however, overdues rose to 68% (table 5.19). The only states where significant distortions were not uncovered were Rajasthan, W. Bengal, and Kerala. This also helps to explain why overdues positions reported in the Concurrent Evaluation may underestimate the extent of these losses.

28/ Average overdues for round 1 and round 2 survey groups in U.P. by income group and national statistics from Concurrent Evaluation, and reasons given by beneficiaries for overdues are found in Annex tables A20-A23.

Table 5.19:
Statewise Comparison of IRDP Overdues in 1984

	Proportion of Subsidy Counted Against Loan Recovery	Overdues when Grant Subsidy is included in Recovery (Reported Overdues)	Overdues when only repayments by borrowers are considered
Haryana	100%	20%	63%
Tamil Nadu	100%	44%	83%
Bihar	100%	0%	78%
Orissa	97%	35%	73%
Maharashtra	92%	40%	67%
Gujarat	90%	25%	69%
Karnataka	62%	53%	84%
Madhya Pradesh	62%	0%	68%
Punjab	44%	39%	64%
Andhra Pradesh	30%	47%	64%
Uttar Pradesh	30%	40%	63%
Assam	25%	43%	76%
Rajasthan	4%	59%	62%
West Bengal	1%	40%	41%
Kerala	0%	51%	51%
Total		38%	68%

Source: "Study on Overdues in Respect of Loans under the IRDP," Economic Analysis and Publications Department, (mimeo), NABARD.

76. No claim is made that this relatively small sample based on 1984 data represents the present situation for India. The 68% overdues itself represents an upper bound since recovery demand would also be reduced slightly if the subsidy were not included in the amortization schedule. Improvements in IRDP implementation that have taken place since that time have also reduced banks' justification for this practice. Banks claimed that they were pressured to accelerate IRDP disbursements though the subsidy from government had not yet been received in their accounts. In such instances, they considered their bridge finance for the subsidy portion as an advance. Regardless of the justification for the practice, it led to borrower confusion over what was owed and when. The main point is to highlight the difficulty of obtaining reliable estimates on overdues.

77. Most banks report lower recoveries on average from IRDP loans than on other agricultural lending, a factor which affects their lending preferences. Table 5.20 shows that commercial bank overdues for IRDP were 59% of demand at the end of June 1986, higher than the overdues of 46% recorded for agricultural lending. Overdues on both types of lending are, however, extremely high. Some overdues are eventually collected, but this still implies financial costs. Better recoveries would increase the rate of turnover of a given quantum of credit, allowing more borrowers to gain access without necessarily increasing the stock of capital.

Table 5.20:
Bankwise Comparison of Overdues as of June 1986

Name of the Bank	IRDP Overdues %	Overdues in Agricultural Lending % 1/
State Bank of Travancor	45%	44%
Punjab National Bank	46%	42%
Indian Overseas Bank	46%	33%
Punjab & Sind Bank	46%	32%
Canara Bank	47%	31%
Bank of Baroda	49%	50%
State Bank of India (for year ending 30/6/87)	53%	45%
Dena Bank	54%	54%
Indian Bank	55%	49%
Syndicate Bank	55%	36%
State Bank of Saurashtra	55%	52%
Allahabad Bank	59%	61%
Bank of India (for half year ending 30/6/86)	66%	50%
Vijaya Bank	69%	57%
Bank of Maharashtra	69%	57%
State Bank of Mysore	72%	57%
Union Bank of India (for half year ending 30/6/86)	73%	43%
State Bank of Patiala	74%	34%
UCO Bank	75%	64%
Total	59%	46%

1/ Direct finance by public sector banks for agriculture as of June 1985.

Source: NABARD

Note: For Concurrent Evaluation estimates of overdues by state, see Annex table A25.

78. Poor recoveries stem from the incentives faced by both banks and borrowers. From the banks' perspective, fixed interest rates, inadequate margins, hiring ceilings and strong administrative and political pressure to achieve beneficiary targets, necessitate an emphasis on quantity rather than quality of lending. Government rewards banks and administrators for meeting disbursement and beneficiary targets, not output or performance-based indicators such as asset retention or recovery.

79. Data provided by Canara Bank, one of the largest and most efficient commercial lenders involved in IRDP, demonstrate why this is the case. Banks that meet overall recovery eligibility can obtain NABARD refinance at 6.5% for IRDP. Assuming other commercial bank resources, which represent 55% of IRDP credit disbursement, are raised at a cost of 10%, then the weighted average cost of funds for the program is on the order of 8.5%. The annual cost of servicing an IRDP loan for Canara is 5%. With the interest rate for the borrower fixed by the government at 10%, Canara incurs a 3.5% net loss on covering minimum costs even if all beneficiaries repay. Although Canara has one of the lowest overdues percentages on IRDP in the country, it still reports recent recovery at only 51%. Unlike block and district offices which receive direct central subvention for the additional expenses they incur in administering the program, the bank must underwrite these losses through other earnings and claims from the Deposit Insurance and Credit Guarantee Scheme, which eventually compensate them for 65% of losses due to default. Faced with

these realities and the need to maintain profits, banks will naturally try to minimize their losses on IRDP transactions by cutting costs as well as limiting future advances to such customers. This partly explains their failure to observe such standard practices as issuing passbooks in some instances.29/ These omissions in turn lead to weak appraisal and lower recoveries. Borrowers are sometimes not even fully aware of their repayment obligations.

80. Reasons for low borrower motivation to repay include their lack of felt responsibility for the decision to invest. If they are induced to take on a certain size loan in a particular sector because of the capital subsidy or planners' expectation that it will raise them above the poverty line, they will feel little obligation to repay if returns are not as high as expected. The political climate in which rural credit operates is also sometimes detrimental to good repayment ethics. This is best represented by the notorious "loan melas" or credit jamborees that have been held in some states. Melas are public meetings where thousands of households are provided bank loans under the IRDP and similar schemes at ceremonies presided over by politicians. Political operatives are often involved in selecting beneficiaries and submitting applications to banks. Despite heavy criticism, melas are used as a populist tool to promote a legitimate objective - institutional lending to poor and deserving households. Although the proportion of rural credit distributed through melas is probably small, the wide publicity they receive and the blatant involvement of politicians has encouraged people to believe that government sponsored loans are a "grant" - that is, borrowers believe that their loans will be forgiven if they wait long enough. Bankers correctly claim that they cannot appraise the huge numbers of loans in the short period preceding each mela. Thus, melas are the perfect "no-fault" mechanism for rural credit delivery. By encouraging financial irresponsibility, they ultimately threaten those they are intended to help - the poor, who become defaulters and henceforward debarred from the banking system. Although there are no published figures, bankers claim that recoveries on loans dispensed through melas are as low as 20-25%.

81. Another factor affecting repayment is the expectation of loan forgiveness. Surveyors reported in U.P. that a large number of families with overdues mentioned that promised debt forgiveness during the last election in neighboring Haryana influenced their decision not to repay. Given their expectation that a similar step could be forthcoming in U.P., many felt it would be foolish not to wait. Increasing politicization of rural credit through melas or politically motivated write-offs create rational expectations among borrowers that government-sponsored credit carries little or no repayment obligation. Such interference thus strains the credibility of the banking system generally and has deleterious consequences beyond those loans they directly affect.

29/ It is the staff costs incurred in the process of passbook issuance that is important here--not the cost of the passbook itself.

82. Finally, there are few if any rewards for those borrowers that do exercise responsibility in their decisions to borrow and repay credit. Even where borrowers have repaid on time, survey evidence presented in the next section indicate that few IRDP beneficiaries have independently received subsequent non-IRDP sponsored loans from banks.

83. In addition to the leakage caused by high overdues, the capital subsidy has also been criticized for encouraging beneficiary and administrative misappropriation in IRDP. Beneficiaries who behave rationally would maximize their short-term gains by taking the maximum loan and subsidy for purchase of an asset, and selling it immediately. After repaying the loan, they then pocket the subsidy. If there are no gains to be made from repayment of the credit itself such as assured access to future lending, the borrower may also default on the credit portion. Such misappropriation of self-employment opportunities by wrongly motivated beneficiaries was estimated at 12% in U.P. (Figure 5.2). Government audit reports also point out many cases of collusive lending whereby the same asset such as milch animals were passed from beneficiary-to-beneficiary with bankers, suppliers, and households sharing the repeated capital subsidy and favorable interest rate on loans. These "revolving cows" are estimated to account for 25-30% of all loans given for this purpose. Since procurement of assets are decided by a Purchase Committee in which bankers and block administrators exercise decisive roles and most loans are given in kind, the government itself attributes this leakage directly to "delinquency on the part of these officials."30/ The increased purchase power allowed by the capital subsidy also results in inflation in the price of assets. Some inflation may be justified by local supply conditions, but frequently administrators and suppliers feel they deserve a share of the subsidy and inflate prices to reflect this margin. These factors indicate that the net benefits that IRDP beneficiaries derive from the capital subsidy are considerably less than the actual amounts transferred.

84. The capital subsidy also distorts beneficiaries preferences for self-employment and demand for credit. Beneficiaries are persuaded to take up self-employment when the expected changes in total household income may not warrant such a switch. In addition, they often take on credit proportionate to the maximum allowable subsidy rather than basing the decision on their ability to utilize and repay credit. The availability of the subsidy has not proven to be an important variable in long term retention of IRDP assets or recoveries as shown in the next section. If the government believes that subsidies are nevertheless justified on equity grounds, more efficient means are needed which reduce leakage and preserve the incentives to repay without distorting preferences for self-employment and demand for credit.

85. Government recognizes this and is currently considering two options - the first is to replace the front-end capital subsidy with an equivalent ex post transfer that would be credited to the borrowers' account at the end of the loan amortization. This would amount basically to an accounting change since the beneficiary would still receive the full asset value (including subsidy) at the outset. It would neither discourage

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30/ "Malpractices in the Implementation of Poverty Alleviation Programs," Department of Rural Development, 1988 (mimeo).

selling of the asset to reap short-term gain or encourage better loan repayment since the subsidy could not be effectively repossessed. The second proposed solution is to replace the capital subsidy with a more heavily subsidized interest rate such as the 4% offered under the Differential Interest Rate (DIR) scheme. This may help to reduce leakage, but would increase the disincentives banks face in efficiently managing the program since their margins would be further reduced. Such a step might require large direct subsidies to the banks to cover costs. Adopting cost-plus type subsidies for commercial banks would weaken rather than improve badly needed financial discipline in rural credit. A less distortionary means of subsidizing disadvantaged borrowers would be an interest rebate of the type suggested by CRAFICARD.31/ This will be discussed in Section iv.

iii. Factors that Contribute to Repayment Performance

86. The Concurrent Evaluation queried households as to the cause of the overdues, but like the question on why some households had disposed of assets, the results are likely to be biased. Fifty four percent reported that delays in income generation from the scheme had led to poor repayment, 9% blamed unanticipated household economic shocks, 33% claimed repayment schedules were too tight, and 3% other reasons. The government has blamed banks for poor results for failure to adhere to recommended lending terms and conditions such as adequate finance including working capital or tight repayment schedules. Although three years is the minimum term required for IRDP loans, 12% of beneficiaries nationally had tighter schedules imposed. The U.P. surveys and follow-up offer an opportunity to look further into the factors explain good recovery performance in IRDP. Repayment of debt is critical if poor households are to demonstrate creditworthiness and hence prove themselves deserving of future access to institutional credit. Bad repayment performance on the other hand may permanently jeopardize this access since it proves to banks that such borrowers are poor credit risks. Fifty eight percent of households in U.P. showed no overdues after two years -- a proportion that was virtually unchanged two years later.

87. In order to determine factors that contribute to differential recovery performance among households, a logit model was fitted to the U.P. data set. Logit analysis was used to identify those factors which contribute to overdues $\leq$ 5% after four years in the program for households that had assets intact for at least two years. The sample thus excludes those beneficiaries that misappropriated IRDP by disposing of the asset in order to reap the subsidy. The model predicts success accurately in 73% of cases (success = 1 when overdues $\leq$ 5%). The results are presented in Tables 5.21 and 5.22.

31/ Op. cit. CRAFICARD.

Table 5.21:
Logit Model on Repayment Performance for IRDP in U.P.

Explanatory Variables	Coefficients	Wald Chi-Square Statistic	P	r
Intercept	-.37	.26	.6	
Destitute/Very very poor household	-1.4	6.1	.01	.13
Very poor household	-.8	2.3	.13	.03
Poor household	-.11	.04	.83	0
Casual laborer	-.76	3.6	.05	.08
Traditional family occupation	.67	3	.08	.07
Return on investment	.65	3.6	.05	.08
Mode of Disbursement	2.08	11.6	.0007	.2
Participant in credit camp	1.1	3.3	.06	.07
Marketing Facilities Adequate	.74	3.4	.06	.08

Model Chi Sq = 49 w/ 9 d.f. (-2 log LR) P=0
Somers DYX = .57 R=.36
Good repayment (overdues $\leq$ 5%) = 1 (104)
Bad repayment = 0 (75)

Table 5.22:
Predicted Vs. Actual Outcome for Repayment Performance in U.P.

Predicted	Actual	
	Did not Repay	Did Repay
Would not repay	48*	27
Would repay	21	83*
Total	69	110

*Correct Predictions = 131 (73%)
False Positive Rate = 25%
False Negative Rate = 30%

Note: See Annex table A24 for detail.

88. Variables capturing household characteristics include dummies on pre-IRDP income group and the dummy variable on occupation, that is, whether or not the beneficiary was an agricultural or non-agricultural casual laborer as opposed to other occupation such as small/marginal farmers, artisans, or non-agricultural self-employed casual laborer. Negative signs on the coefficients indicate that classification as destitute or casual laborers reduce the probability of good recovery. The dummy on whether the investment supplemented a traditional family occupation versus a new activity is significant and positive. In 64% of cases in the sample of those that retained investments for at least two years, IRDP self-employment complemented traditional skills.

89. The other variables relate more generally to implementation features. Bank actions and attitudes again play an important role in success. The Mode of Disbursement variable has a strong impact and contrasts IRDP loans which had in-kind components with those disbursed in cash. Seventy nine percent of cases had in-kind components. The fact that cash disbursement significantly improved the probability of recovery is interesting, but somewhat puzzling (annex table A25). The cash disbursement variable may be correlated with those types of investments that yield higher cash flows hence this may have a positive impact on recovery. For example, all bullock pairs, 95% of pumpsets, and the bulk of small animal husbandry schemes were disbursed mostly in-kind (annex table A27). Investments with higher cash components included dairy (24%) and tertiary investments (43%) (e.g., retail shops). The latter also lend themselves more naturally to cash disbursement since they are often mostly working-capital loans. Still the contrast in recovery results between schemes that appear to be comparable except for disbursement (e.g., dairy, tailoring) mode may point to gains from greater use of cash loans. The traditional justification for in-kind loans is that many poor borrowers will finance consumption if not held in check. Treating poor borrowers differently from other bank borrowers by requiring in-kind disbursement could, however, reduce the probability of repayment for several reasons: first, borrower receiving cash have the latitude to invest funds according to his/her preferences thus increasing their bargaining power and the possibility of purchasing a quality asset. Cash disbursement may also imply greater legitimacy of debt obligations. Informal sector lenders generally disburse in cash and trust the borrower to make the right purchase decision when faced with the certainty of strict repayment obligations. Finally, in-kind transfers through Purchase Committees may also permit more leakage in the form of payoffs between suppliers, bankers, and administrators to creep into the program.

90. A study group established by the Reserve Bank recommended that cash disbursement be tried in IRDP to contrast with the predominant pattern of direct payment to vendors. The main rationale for this was to give borrowers greater discretion over the type of investment and a requisite freedom to negotiate price. Asset purchase would still be verified by bank field staff to prevent beneficiary misutilization of funds. Twenty two blocks were selected in January 1986 to experiment with cash disbursement. Information from one evaluation study carried out by Canara Bank six months after the new system was adopted indicated some encouraging results. The most important were that beneficiaries were able to save 10-15% on asset costs on livestock loans as a result of their better bargaining position and somewhat lower, but still positive savings on ISB purchases. Approximately this same amount was classified as leakage in that it went toward consumption. The study, however, considered this as a benefit since households were able to satisfy their urgent consumption needs without resorting to sale of the asset. A second benefit was a dramatic decrease in the lag time on loan disbursement from 35 days on average to 7 days on agricultural loans, 18 to 11 days on ISB, and a reduction in bills and receipts that had to be tracked by bank staff on loans. The decision to dispense with asset provision through Purchase Committees thus appears to have resulted in efficiency gains. Finally, there is supporting evidence for the finding that cash disbursement improved recoveries, particularly for agricultural loans. Recovery on IRDP loans for agriculture was 75% under the new system versus 58% on loans disbursed through Purchase

Committees.32/ Data from other studies are necessary before those results can be generalized, but these findings are encouraging.

91. Household participation in a "credit camp" prior to credit sanctioning increased the likelihood of repayment in U.P. These camps held for small groups are not to be confused with loan melas, which did not take place in the survey districts in U.P., and are widely believed by banks to have a strongly negative impact on loan recovery. Banks and block officials are requested in the program guidelines to hold credit camps to inform beneficiaries of the program's benefits, and discuss the viability of different investment options, repayment obligations and facilitate disbursement. Banks are expected to achieve greater efficiency in rural credit extension by handling applications of numerous and scattered small borrowers simultaneously. The transparency of the camp environment also helps to prevent corruption and leakage from taking place. Only 10% of households in the sample took part in a credit camp. Increasing prevalence of credit camps would contribute to better recovery in the districts surveyed.

92. Other measures of follow up by both bank and block officials were estimated in the follow-up survey, and found to be insignificant. Households were questioned as to whether bank or block officials had ever visited their house subsequent to receiving the IRDP asset and if so, how many times. In 80% of cases, a bank officer visited their home and in 92% of cases, a block official had also visited to follow up on the investment. Most received less than two visits (Annex table A26). Given the wide prevalence of bank and block follow-up for most households and hence the low dispersion of the variable, it is not surprising that the variable is insignificant for the sample. Still, this good performance may account for the better recoveries of the total sample compared to some other states in India. Since this series of questions has not been asked elsewhere, this hypothesis cannot be tested.

93. Finally, the return on the investment itself and existence of adequate marketing facilities increase the probability of repayment. The return on investment reflects real annual net return on the asset after two years/original investment while the marketing variable is a dummy constructed from a question on the survey as to whether beneficiaries considered local marketing facilities adequate (Adequate = 1). This underlines the need for banks and borrowers to exercise greater care in assessing market potential and local demand prior to investing, particularly as local saturation increases through continued IRDP-financed investment.

iv. Sustained Access to Credit

94. There appear to be concrete measures that could be taken by banking institutions to improve recoveries. The major hypothesis of this section is that satisfactory repayment performance, however, does not ensure that individuals will get further credit from banks. If such access is not assured for good performers, IRDP will fail in its structural goal of providing the poor with sustained access to credit and amount to a one-time government-sponsored loan.

32/ Canara Bank. "A Review of Cash Disbursement for Loans under IRDP in Wadakkancherry Block (Kerala)", December 24, 1986.

95. The results of the follow-up survey in U.P. show that sustained access to credit has not been achieved. Households were asked whether they had returned to the bank for another loan through regular bank channels and if so, how many were approved. Although 58% of beneficiaries had no overdues thus proving themselves creditworthy, and 44% had further demonstrated long term viability of self-employment through retention of investment, only 11% of beneficiaries subsequently returned to the bank for additional loans. Worse, only two thirds of this small number of households, 7% overall, received additional credit. This is only 1% of the original sample group (Annex tables A27-28). IRDP planners believed that the primary constraint on extending institutional credit to the poor was lack of assets and assured income to secure the loan. For those that retained assets and repaid debt, IRDP has addressed these issues. Why then are successful households not graduating to the status of regular bank customers?

96. Three explanations are plausible. First, the demand for term credit by poor families may have been significantly overestimated. It may also be that for certain needs such as consumption or emergencies where there is demand, poor households correctly perceive that banks would be unwilling to lend. Second, beneficiaries may still perceive that they lack the collateral and wherewithal to complete applications and obtain approval for standard bank loans. Security has not been dispensed with nor application procedures streamlined in most other areas of bank lending. IRDP may also have perpetuated an unfortunate notion that one must be "selected" in order to receive bank credit. Third, banks may still see IRDP borrowers as a special aberration in their normal lending operations. Once they have given the single required loan, the bank has discharged its obligation. They do not see former IRDP borrowers as part of an expanding and viable rural client base and future lending would again be under duress. The explanation is likely to be a combination of all three factors.

97. The primary explanation for the third factor is the failure of IRDP to solve the market imperfections which marginalize the poor from institutional banking services. This stems from a fundamental misconception about why banks have historically preferred not to lend to the very poor. It is not only their lack of assets and income for collateral, though this has served as an effective and acceptable bank rationale prior to IRDP. Their reticence stems from inadequate fixed margins that make such loans a losing proposition regardless of the recovery performance. The question in rural lending for banks is often not whether, but how much they will lose. With continued pressure to achieve aggregate profits yet bound to lend at negative returns for priority sectors, banks will follow a loss minimizing strategy on their rural business. Even where IRDP has helped poor households to achieve real advances, the smaller loan size which characterize repeat borrowers' demand for credit and locational disadvantages they suffer usually imply that banks will incur higher costs in servicing these accounts. While they are eligible for a one-time loan under IRDP which has relatively attractive subsidized refinance available through NABARD,33/ graduating beneficiaries

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33/ Or sometimes a "second dose" if beneficiaries have not exceeded the maximum subsidy and crossed the poverty line or banks have not followed specified terms and conditions on lending.

would require an increasing mix of other higher cost bank resources. With margins fixed on rural lending generally and given a choice between two borrowers with similar probabilities of repayment, banks will continue to find it less costly to limit their exposure to small borrowers.

98. Although the constraints on interest margins which make IRDP lending unattractive affect the rural credit system generally, the impact is more heavily felt by the poor. Since costs of lending to this group are unavoidably higher, they will be the first ignored. Charging the poor an interest rate sufficient to cover costs incurred might be considered discriminatory since such borrowers cannot easily overcome the handicaps imposed by their "smallness" and locational disadvantage. If banks are expected to take up such lending enthusiastically and provide necessary staff and overhead to achieve quality results, mechanisms must be found to lower costs and banks must be compensated with higher margins. IRDP as presently constituted does nothing to overcome the disincentives banks face in doing business with the poor.

99. Certain banks have implemented innovative pilot schemes which have achieved success in sustained lending to the disadvantaged. Two programs established by Canara Bank, the Rural Change Agent program and the Rural Service Volunteer (RSV) program operate on the principle that bank staff must be sought out which have special motivation to work and live in a rural village. Canara RSVs make loans, mobilize deposits, and organize beneficiaries to press for education and other social services from government. In the RSV villages, Canara makes it clear that it is willing to extend additional credit as long as households repaid previous tranches -- an incentive for borrowers which it feels contributes high recoveries (90%+). Each RSV handles about 120 active accounts underlining the staff intensity required for high quality rural lending to the poor. The costs that would be necessary to achieve this level of staffing for all rural lending would be high. With the fixed margins on agriculture and hiring ceilings that banks face, such a reallocation of staff would be disastrous for profits. Canara itself looks on the program more as a social service rather than an approach which it could replicate throughout the branches given fixed staff resources and inadequate margins available on all rural lending.

100. Clearly, the problems of the IRDP and similar schemes are inextricably linked to the problems of the rural credit system. Continuous access to efficient sources of credit for working capital, new investment, and consumption are essential if the poor who desire to be self-employed are to sustain the initial momentum gained through the IRDP investment and to ultimately cross the poverty line. Encouraging continued lax standards of credit appraisal and recovery represent moral hazards that are not in the interest of the poor since the outcome will tend to confirm the common view that they are not creditworthy. The future costs of excluding from the credit system, on grounds of default, the millions of households in the targeted self-employment programs may be very high.

101. One means of reducing the distortions associated with the capital subsidy and improving bank/borrower incentives to manage and repay credit is to replace the front-end capital subsidy with an interest rebate, payable periodically (say six monthly) to eligible borrowers that maintain a perfect repayment record. This has been tried on a pilot basis with the Small Scale Enterprise Program which provides loans to micro enterprise

loans in Calcutta through commercial banks.34/ The rebate system could operate as follows. First, interest rates would be raised to allow adequate margins for the banks. This is essential to give banks the incentive to improve the quality of lending and continue lending to borrowers that prove creditworthy. Second, the short-term impact of higher interest rates would be offset for disadvantaged small borrowers by refunding a portion of the interest from their debt repayment. A 100% rebate of interest might be paid for example on a borrower's first loan, but this proportion would decline quickly with subsequent loans soon reducing the effective subsidy to zero. Borrowers who do not repay according to schedule would receive no rebate.

102. Coupled with the increase in margins and interest rebate, banks should adopt a line of credit approach that ensures that borrowers who regularly repay loans would be automatically eligible for credit, without collateral, at any time up to their assessed credit limit. The assessed limit could be based on their ability to absorb and repay loans, rather than distance from the poverty line. For first time borrowers, these credit limits could be set rather low, but be raised by a fixed percentage as they demonstrate their creditworthiness through meeting repayment obligations. For those that have already borrowed under IRDP and repaid according to schedule, their line of credit would be set somewhat above the amount previously collected. These changes would reduce the marginal transaction costs of lending to the poor and help create a demand-driven mechanism for extending credit. Lending against a list of restricted options with pre-determined unit costs would be unnecessary. The system of administratively-determined targets for IRDP based on the number of beneficiaries could be replaced with portfolio composition targets for banks.35/ A built-in performance indicator would be the incidence of repeat borrowing. Outlays of subsidy for rebates would also indicate that increasing numbers of new borrowers are being brought into the system, investing and discharging their debts responsibly.

103. Other changes needed to improve the banking services provided to the poor include relaxing the hiring ceilings imposed on banks, or alternatively, encouraging them to use local NGOs to assist them in making and recovering loans. This has been tried very successfully by Bank of Baroda with the micro-enterprise lending in Calcutta. NGOs can also be effective in organizing borrowers into credit groups, but such services should be paid for. This could be done as a proportion of recovery to reinforce financial discipline. Organizing credit and recovery camps can help reduce transaction costs of banks, improve the transparency of lending and recovery, and increase borrower understanding of their obligations and the rewards (i.e., future credit) stemming from responsible credit usage.

104. In addition to banks enforcement of standard operating practices such as loan passbook issuance and adopting cash disbursements to increase borrower discretion, banks should standardize the periodicity of repayments in order to help borrowers better understand their obligations and reduce

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34/ The SSEP is a component of the World Bank sponsored project in Calcutta (CMDA III).

35/ Portfolio composition targets exist for banks for many different schemes. For example, banks are required under the Differential Interest Rate (DIR) Program to maintain 1% of their total advances in such loans.

administrative costs. Evidence from the Bangladesh Grameen Bank, which operates on the basis of small credit groups, suggests that more frequent loan repayment periods are associated with better recovery. Grameen Bank follows the line of credit approach in lending in the sense that borrowers that have repaid can take out an additional loan. The bank itself leaves it up to the borrower to decide on the best use of funds and does not try to appraise investment proposals in the traditional sense. The positive incentive of future access to credit in Grameen Bank is combined with a powerful negative incentive to ensure that borrowers use funds wisely and repay. If any one of five members in the credit group defaults, the entire group becomes ineligible for future loans. This system has helped Grameen achieve remarkable recoveries exceeding 98%.36/

VI. CONCLUSION

105. Although many of the results on longer term viability of IRDP presented in this study relate to a single state, the analytical tools used to test various hypotheses can be employed elsewhere through the Concurrent Evaluation if panel surveys are conducted. The results for U.P. indicate that IRDP has achieved some notable success in increasing the asset holdings of large numbers of disadvantaged rural households. Almost 60% of investments have been retained for 4-5 years indicating their economic viability. Only 44% of disadvantaged beneficiaries, however, have succeeded maintaining assets over this period, and repaying credit to banks. Even for many viable investments, diminishing yields may appear after a few years and income gain is rarely sufficient to move households above the poverty line. General economic conditions and economic shocks such as drought have an important impact on the probability of success in self-employment ventures as with other types of income.

106. Poorer households have more difficulty in maintaining investments, but it cannot be stated with certainty that investments in self-employment are only suitable for certain better off classes of beneficiaries since results are varied. Investments must, however, be tailored to the demands of the households, thus grounded in their own knowledge of the opportunity costs they face. Beneficiaries are in the best position to assess the availability of local inputs, infrastructure, and services, and to determine their capacity to absorb credit and take up self-employment. If they have an a priori understanding that repayment will be strictly enforced and their demand for credit is not distorted by subsidy inducements, then they are more likely to form feasible investment plans.

107. The most important failure of IRDP is its inability to ensure continued access to institutional credit for disadvantaged rural households. This is primarily a function of the prevailing structure of incentives which ensure that even for those who succeed by most criteria, IRDP may be the first and only time such households receive term credit from banks. Unless constraints which continue to block access of the poor to institutional finance are effectively addressed, the window of opportunity to banking services offered by IRDP will remain closed. The

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36/ For a comprehensive review on Grameen Bank, see Mahabub Hossain, "Credit for Alleviation of Rural Poverty: The Grameen Bank in Bangladesh", IFPRI, February 1988.

welfare gains derived thus far by beneficiaries of IRDP are likely to be short-lived without the opportunity to replenish working capital and undertake additional investment using term credit. Gains are likely to diminish on most of the initial IRDP investments after a few years even if properly managed and households will be forced to rely on higher cost informal sector lenders for credit and consumption needs. Longer term credit necessary for investment in assets requiring longer gestation is unlikely to be available even from non-formal sources.

108. In order to promote success in IRDP's major objectives of increasing asset holdings of the most disadvantaged, financing viable employment, providing real income gain and credit recovery to prove borrowers creditworthy, several changes are necessary in the program. The overall thrust of this package is to shift the incentives faced by banks and borrowers, improve the efficiency of expenditures in subsidy and investment, and create a more demand-driven mechanism for credit delivery. Financial discipline would be improved as banks are given margins necessary to operate the program and borrowers are given strong incentives to act responsibly in using and repaying credit. The emphasis of the approach is to stress the quality rather than quantity lent as is currently the case in IRDP.

109. The main changes needed are as follows:

(a) Replace the objective of crossing the poverty line through a single investment with the aim of ensuring that sustained access to credit contributes positive income gains that gradually shift poor households over the poverty line. Long term retention and recovery would be key indicators of success.

(b) Replace the system of centrally determined targets based on the number of beneficiaries, with portfolio composition targets for banks and establish lines of credit for disadvantaged borrowers with simple guidelines. Borrowers who regularly repay loans would be automatically eligible for additional credit, without collateral, at any time up to their assessed limit. The assessed limit for any borrower would be based on their ability to absorb and repay loans, rather than their distance from the poverty line and could be raised automatically as borrowers demonstrate their creditworthiness. Borrowers that default would have their access to credit curtailed. Such negative incentives are necessary to ensure that borrowers invest in productive assets (e.g., group discipline of Grameen Bank). These changes would help to create a demand driven mechanism for lending, sustained access to credit for the poor and hence, lending against a restricted list of options with predetermined unit costs would be unnecessary. This system should also result in lower transaction costs for banks as strict appraisal of individual investment proposals would be unnecessary. As long as borrowers repay, they would be given access to credit.

(c) Replace the existing front-end capital subsidy with an interest rebate periodically payable to eligible borrowers that maintain a perfect repayment record. These rebates would be covered by redirecting the existing subsidies paid by government.

(d) Replace the income eligibility criterion with one based on more transparent criteria, possibly a simple occupational classification (e.g., casual laborers, marginal farmers). The objective would be to reduce the cost of targeting and the distortions associated with preparing lists of below poverty line beneficiaries (i.e., estimating household income) while maintaining a focus on the poorest. There should also be a greater focus on access to credit for women. Better off occupational groups (e.g., small farmers) might be provided a line of credit, but would not be eligible for as high a rebate.

(e) Increase the margins available to banks on loans under IRDP and similar schemes. This is essential to give banks the incentive to improve the quality of lending and continue lending to creditworthy borrowers. This could be done by raising the interest rate from 10% to a more realistic level taking into account the cost reductions that may result from the line of credit approach outlined above. Eligible borrowers, however, would continue to be protected in the short-term through the interest rate rebate.

(f) Improve the quality of banking procedures and loan recovery by:

(i) Relaxing the hiring ceilings imposed on banks and encouraging them to use local NGOs to assist organizing and educating borrowers and in making and recovering loans. Such NGO-provided services should be paid for.

(ii) Banks themselves tightening up operations and requiring branches to observe proper banking practices, such as issuing passbooks. Proper creditworthiness appraisal should be stressed by rewarding managers that achieve high loan recovery and repeat borrowing.

(iii) Reducing banks' transaction costs, improving the transparency of lending contracts and enhancing borrower awareness of debt obligations by organizing camps to promote both lending and repayment.

(g) Replace in-kind disbursement by cash transactions. This might reduce the scope for corrupt practice through procurement, reduce bank transaction costs, increase borrowers choice and bargaining power in dealings with suppliers and increase the probability of repayment.

(h) Make all lending under IRDP (including lending to the secondary and tertiary sectors, i.e., ISB) subject to the eligibility criteria governing NABARD refinance.

(i) Ban loan melas and political interference in the program.

110. The foregoing changes, if accepted for the IRDP, would necessarily have to be introduced in all other similarly designed schemes which involve credit and capital subsidies to finance self-employment (e.g., SEEUY). Indeed, government might find it more efficient to amalgamate many of the

smaller schemes into an enlarged IRDP. Although these changes are predicated on improving efforts to help the poor, the symbiotic relationship of the IRDP and the credit system implies that many of these changes are modifications of that system.

111. The proposed changes in the IRDP and allied schemes would lead to a more efficient use of scarce capital in India by raising the productivity of investments and efficiency of subsidy payments. They would allow poor borrowers increased and sustained access to institutional credit for productive investment. They would also enhance borrowers' freedom to decide on what is a productive investment. In this way, the returns to capital invested through the program would be raised, increasing the output of goods and services and the incomes of poor borrowers. In short, they are consistent with the overall economic objective of growth with equity.

112. At present, the interest rates charged on IRDP loans and rural credit, more generally, are low. Banks cross subsidize rural lending with profits from lending to industry, implying that interest rates to industry are unnecessarily high. Hence, increasing the interest rate for IRDP and similar schemes (the most heavily subsidized rural lending), would result in greater allocative efficiency.37/ Moreover, the higher margins earned by banks on their rural portfolios would raise profitability of rural branches and encourage them to improve the quality of the services they provide thus reinforcing the efficiency with which capital is invested by poor (and other) rural borrowers. This and some of the other proposed changes would encourage greater financial discipline in the formal credit system. Better recoveries (reduced overdues) would also increase the rate of turnover of a given quantum of credit allowing more borrowers to gain access without necessarily increasing the stock of credit.

113. The reduction and eventual elimination of subsidized credit through the replacement of the lump sum capital subsidy with an interest rebate that declines to zero with repeated borrowing, would improve the incentives for borrowers to repay and reduce the subsidy bill to government. Even if recoveries do not respond, the outlay on subsidies (Rs 7.0 billion in 1988-89 on IRDP alone) will fall as the proposed interest rebate ties the subsidy element strictly to timely repayment.38/ To the extent the subsidy bill declines, government resources would be released for investment elsewhere.

37/ This low interest rate policy seems to be founded on the assumption that agriculture needs to be compensated for distortions elsewhere in the economy. However, there is no comprehensive analysis of whether this policy is superior to one based on price incentives. Moreover, low interest rates for the rural economy provide an income transfer to all rural borrowers. This may have a regressive effect on the distribution of income as the largest transfers will go to the largest borrowers - not usually the poorest. Such regressive effects may be reduced by higher interest rates as they would reduce demand for credit by already wealthy borrowers.

38/ Making a second loan dependent on the full repayment of its predecessor has been shown to be an important incentive to repay (e.g., in Bangladesh and Nicaragua).

114. The proposed changes would also allow government to reduce administrative costs as the need for detailed involvement in credit delivery by government officials would diminish. This follows from increasing beneficiary discretion over decisions concerning when, what and why to borrow, the increased responsibility and the more active lending and recovery posture that would be assumed by banks.

115. Quantitatively, these benefits would probably be substantial, but there would also be costs. Increasing the interest rate for borrowers under special schemes such as IRDP would inevitably lead to a general increase in interest rates for agriculture.39/ This would increase the costs of production and would put upward pressure on agricultural output prices. To the extent that prices respond, there would in the short term, be a decline in the consumer surplus which may also affect the poor disproportionately. However, higher output prices and increased rural growth in the longer run should induce a positive supply response which would dampen the negative effects. Moreover, the interest rebate would help to protect the very poor until their incomes rise.

39/ Of course, most rural borrowers already pay much higher rates for informal credit.

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1. An OLS regression was fitted to the data set in U.P. to determine what factors explain differences in the productivity of investments over the longer term. The dependent variable is net income from the asset in year four/cost of investment. The results are found in table 5.6. All variables are significant at 95% or above.1/

Table 1:
Productivity of IRDP Investments in U.P.
(OLS Regression-Dependent Variable Net Income from Asset year 4/Investment Cost)

Explanatory Variables	Parameter	T for HO: Parameter=0	Prob>T
Intercept	.57	2.1	.03
Gender(Male=1) 1/	-.43	-3.5	.0006
Occupation 2/	.22	3	.002
87/88 Drought 3/	-1.0	-2.9	.004
District Agric Prod./per cap 4/	.0005	4	.0001
Incidental acquisition costs 5/	-.003	-2.9	.004
Passbook (Issued=1)	.18	2.3	.02
Beneficiary Organization 6/	.33	2.9	.004
Type of Investment(ISB=1)	.46	5.7	.0001

N=219 Model F =11 /8 df Prob > F .0001 Adj R2 =.27

1/ In addition to the direct beneficiaries in the sample that were classified female (4%), this variable captures those beneficiaries classified as male, but that admitted in the follow up survey that the investment was actually managed by their spouse (6%).
2/ Agricultural Laborers & Marginal Farmers=0, all others =1.
3/ Measured as the deviation in district rainfall for June/July 1987 from normal rainfall during these months.
4/ Gross value of district agricultural production per capita in 1983/84.
5/ Costs other than direct investment costs that were incurred by beneficiaries on visits to the block, bank, and other offices in the process of obtaining the IRDP asset. This is used as a proxy for differential administrative misappropriation that may have occurred.
6/ Whether he/she was member of an organization of beneficiaries (Yes=1).

Note: See Annex table A8 for detail

1/ The Glejser test was used to test the assumption of homoscedasticity of the disturbances. On a priori grounds, it was postulated that the drought variable could be source of heteroscedasticity, that is, drought impact increases, the variation in productivity increases. The result of the test showed that heteroscedasticity does exist and can be overcome by transforming the original model for estimation purposes. This was done by dividing the original relation by the square-root of drought and reestimating the regression. The results of this were that all the transformed variables remained significant and heteroscedasticity was eliminated in the drought variable. Details are given in annex table A9.

2. Variables can be classified according to beneficiary characteristics, those that capture inter-district variations and those specific to the investment and IRDP implementation. Among the beneficiary characteristic variables, the gender dummy (male=1) indicates that females were more productive in managing investments. The occupation variable is also significant. Classification as an agricultural laborer or marginal farmer, generally less endowed with pre-IRDP income and land and/or skills and experience in self-employment, has a negative impact on productivity.

3. In addition to household characteristics, two district variables show significance. The impact of the 1987/88 drought had a strongly negative impact on the productivity of investments in U.P. Weather-related shocks are a factor that beneficiaries in large parts of the country are likely to face during any given 4-5 year period. Their negative impact on the ability of vulnerable households to maintain productive investments in self-employment ventures is thus a factor that should be anticipated and planned for accordingly. The measure of district gross agricultural production per capita is also significant indicating that beneficiaries in generally more prosperous rural areas tend to do better in self-employment. This finding suggests that higher investment in agricultural production leading to improved output and income would enhance the prospects of poor households attempting to increase their incomes through self-employment ventures. Households that live in rural areas which suffer from low agricultural output face great handicaps in deriving sustained benefits from IRDP investments.

4. Several variables that capture the impact of specific implementation features are significant. The amount of money beneficiaries expended on visits to the block, bank, and other offices prior in obtaining the asset, a proxy for administrative misappropriation, had a negative impact on productivity. The actions and attitudes of the financial intermediary are also critically important. Failure to issue a loan passbook, which occurred in 35% of cases in U.P., is a proxy for bank seriousness in loan appraisal and follow-up. This indicates that some banks ignored established commercial lending practices and guidelines of the program resulting in lower productivity of investments. A dummy captures the impact of group formation and support on investments. Where organizations of IRDP beneficiaries were formed to represent their interests, productivity was higher. Only 14% of beneficiaries in the sample were involved in such organizations.

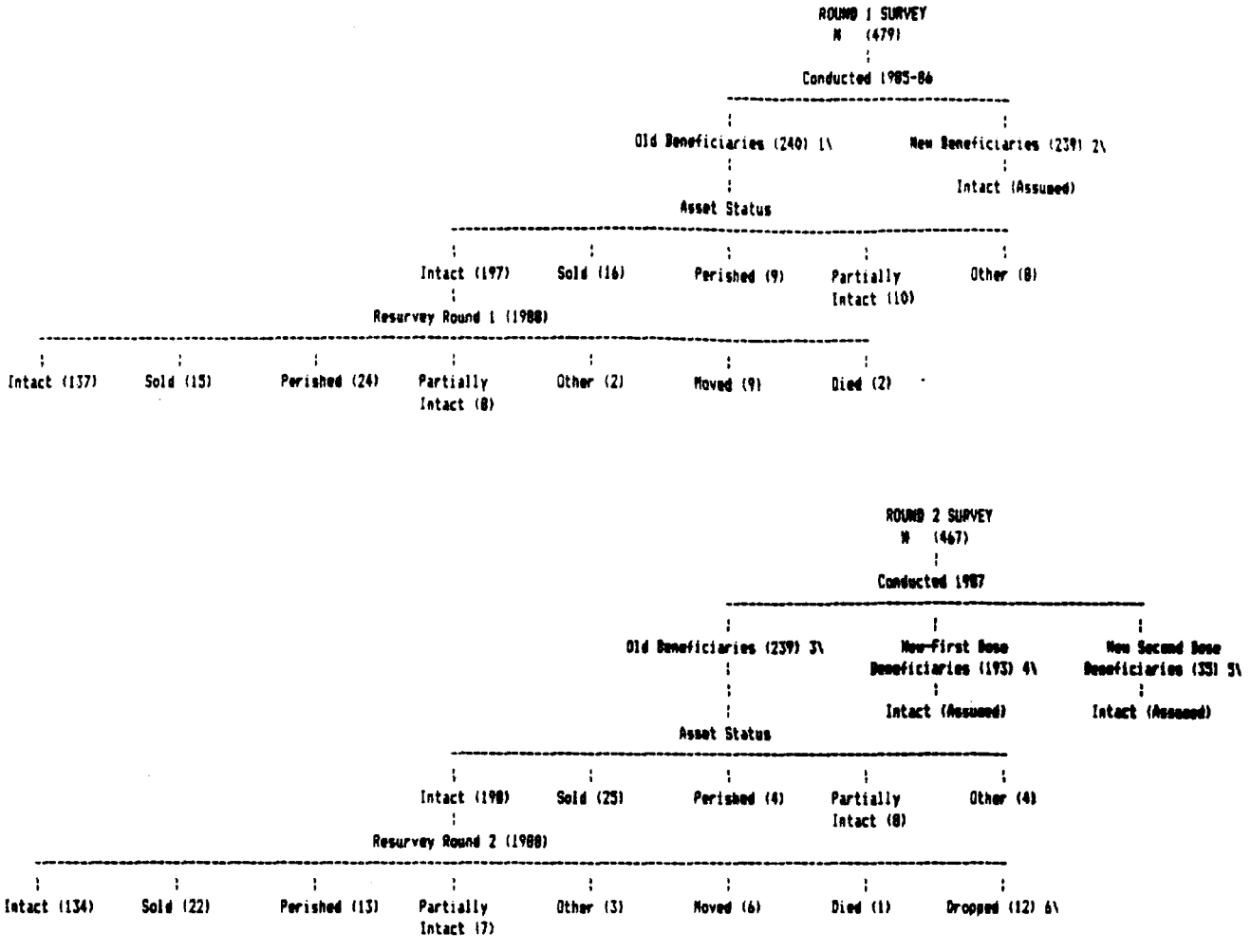
5. The ISB variable distinguishes between primary investments in animal husbandry (including animal-drawn carts) and minor irrigation and secondary and tertiary sector investments, known as ISB or Industry, Services, and Business(ISB=1).2/ These latter schemes tended to produce higher income per Rp investment. Evidence presented later in section C(ii), however, appears to indicate that less income from these schemes may accrue as an increment to the household.

2/ Bullock pairs with cart (BBC) are considered a primary, rather than a tertiary sector investment.

STATISTICAL ANNEX

Table of Contents

Annex A1



1\ "Old" beneficiaries received assets July 83-Sep 84, two years prior to survey date.
In the statistical analyses one of the observations was dropped.

2\ "New" beneficiaries received assets three months prior to survey date.

3\ "Old" beneficiaries received assets July-September 1985, two years prior to survey date.
In the statistical analyses one of the observations was dropped.

4\ "New" beneficiaries received assets May-July 1987, three months prior to survey.

5\ These were beneficiaries that received a second dose because they did not cross the poverty line during the Sixth Plan.

6\ Several observations were dropped due to the fact that the beneficiaries did not receive the standard IRDP package.
These households received twin subsidies under IRDP and TRYSEM, but no credit was extended by the banks.

Annex A2

DIRECT COSTS AND PHYSICAL ACHIEVEMENTS OF IRDP
(BILLIONS OF RUPEES)

	80/1	81/2	82/3	83/4	84/5	85/6	86/7	87/8	Target 88/9	Total
1) Allocation 1\	3	2.5	4	4.07	4.07	4.07	5.43	6.13	6.92	40.19
: of which Central	1.27	1.53	2.04	2.07	2.07	2.87	4.28	3.1	3.46	22.69
Growth in Allocation		-17%	60%	2%	-0%	-0%	33%	13%	13%	
2) Central Release	0.82	1.28	1.76	1.94	2.06	N/A	N/A	3		
3) Total Central Plan Expenditures 2\	89.94	102.5	119.13	140.38	166.15	199.14	229.4	249.3	257.14	1553
4) Actual State & Central Expenditures	1.58	2.64	3.59	4.06	4.72	4.41	6.13	7.19		34.32
Growth of Expenditures		67%	36%	13%	16%	-7%	39%	17%		
5) Term Credit Mobilized	2.89	4.67	7.13	7.73	8.57	7.3	10.14	11.59		60.02
Growth of Term Credit Mobilized		62%	53%	8%	11%	-15%	39%	14%		
Average Annual Growth of Term Credit Mob.										22%
6) Total Investment (Actual Expenditures+Term Credit Mobilized)	4.47	7.31	10.72	11.79	13.29	11.71	16.27	18.78		94.34
Growth of Total Investment		64%	47%	10%	13%	-12%	39%	15%		
7) No. of Beneficiaries Covered (million)3\	2.7	2.7	3.5	3.7	4	3.1	3.7	4.2		27.6
Growth of # of Beneficiaries Covered		0%	30%	6%	8%	-22%	19%	14%		
No. of SC/ST Beneficiaries Covered (million)	0.8	1	1.4	1.5	1.7	N/A	N/A	1.9		
Growth of # of SC/ST Beneficiaries Covered		25%	40%	7%	13%	N/A	N/A	N/A		
8) Per Beneficiary Subsidy (Rs)	585	978	1026	1097	1180	1423	1657	1712		
Per Beneficiary Credit (Rs)	1070	1730	2037	2089	2143	2855	2741	2760		
Per Beneficiary Investment (Rs)	1656	2707	3063	3186	3323	3777	4397	4471		
9) Sectorwise Coverage (%) 4\										
(a) Primary Sector	94%	83%	69%	59%	55%	42%	46%	41%		
(b) Secondary Sector	2%	5%	16%	13%	16%	16%	16%	19%		
(c) Tertiary Sector	4%	16%	16%	28%	30%	42%	36%	40%		
Secondary+Tertiary Sector	6%	17%	32%	41%	46%	58%	54%	59%		

1\ Report of the Committee to Review the Existing Administrative Arrangement for Rural Development and Poverty Alleviation Programme (CAARD), Dept. of Rural Devt., Ministry of Agriculture: Dec. 1985, Annexure III-A.

2\ Source: Expenditure Budget: 1988-89, Vol.I, Annexure III-A.

3\ Report of the Committee to Review the Existing Administrative Arrangement for Rural Development and Poverty Alleviation Programme (CAARD), Dept. of Rural Devt., Ministry of Agriculture: Dec. 1985, Annexure III-A.

4\ Sources: Seventh Five Year Plan: 1985-90,Vol.II, Planning Commission, GOI, pp.52-53.
National Seminar on Poverty Alleviation Programmes,A Theme Paper,GOI (Dept. of Rural Devt.) Ministry of Agriculture, New Delhi, Feb. 12, 1988.

REAL DIRECT COSTS AND ACHIEVEMENTS OF IRDP

Annex A3

	80/1	81/2	82/3	83/4	84/5	85/6	86/7	87/8	Total	
1) Allocation 1\	3	2.28	3.40	3.19	3.17	3.00	3.84	3.97	25.85	
: of which Central	1.27	1.40	1.78	1.62	1.61	2.11	3.08	2.01	14.79	
Growth in Allocation		-24%	49%	-6%	-1%	-5%	28%	3%		
2) Central Release 2\	0.82	1.17	1.57	1.58	1.57	N/A	N/A	1.91		
3) Total Central Plan Expenditures 3\	89.94	93.75	106.18	114.31	126.33	143.25	156.52	158.74	989.02	
Central Release as a % of Total Central Plan Expenditures	1%	1%	1%	1%	1%	N/A	N/A	1%		
4) Actual State & Central Expenditures 4\	1.58	2.41	3.05	3.18	3.68	3.25	4.34	4.65	26.14	
Growth of State & Central Expenditurres		53%	27%	4%	16%	-12%	34%	7%		
Average Annual Growth in Actual Expenditures										16%
5) Term Credit Mobilized 5\	2.89	4.26	6.06	6.06	6.68	5.38	7.18	7.5	46.01	
Growth of Term Credit Mobilized		47%	42%	0%	10%	-19%	33%	4%		
Average Annual Growth of Term Credit Mob.										15%
6) Total Investment 6\	4.47	6.67	9.12	9.24	10.35	8.63	11.51	12.15	72.14	
Growth of Investment		49%	37%	1%	12%	-17%	33%	6%		
Average Annual Growth of Total Investment										15%
Term Credit Mob. as a % of Total Inv.	65%	64%	66%	66%	65%	62%	62%	62%		
Average Annual Growth of Term Credit Mobilized as a % of Total Inv.										-1%
7) No. of Beneficiaries Covered (million)7\	2.7	2.7	3.5	3.7	4	3.1	3.7	4.2	27.6	
No. of SC/ST Beneficiaries Covered (million)	0.8	1	1.4	1.5	1.7	N/A	N/A	1.9		
8) Per Beneficiary Subsidy (Rs)	585	893	871	859	920	1048	1173	1107		
Per Beneficiary Credit (Rs)	1070	1578	1731	1638	1670	1735	1941	1786		
Per Beneficiary Investment (Rs)	1656	2470	2606	2497	2588	2784	3111	2893		

1\ The values are deflated by the Agricultural Laborers General Index with 1980/81 base prices.
2\ The values are deflated by the Wholesale Price Index with 1980/81 base prices.
3\ The expenditures are deflated by the wholesale price index with 1980/81 base prices.
4\ The expenditures are deflated by the Agricultural Laborers General Index with 1980/81 base prices.
5\ The values are deflated by the Agricultural Laborers General Index with 1980/81 base prices.
6\ The values are deflated by the Agricultural Laborers General Index with 1980/81 base prices.
7\ Report of the Committee to Review the Existing Administrative Arrangements for Rural Development and Poverty Alleviation Programme (CAARD), Dept. of Rural Development, Ministry of Agriculture; Dec. 1985, Annexure III-A.

Annex A4

GOVERNMENT PERSONNEL COSTS OF IRDP DELIVERY IN U.P.

District Level	Ave time spent on IRDP (hrs/day)	Proportion	Annual Salary (Rs)	Annual Cost of IRDP Delivery (Rs)
District Magistrate	negligible			
Chief Development Officer	0.25	4%	45,000	1,607
Project Director	1	14%	36,000	5,143
Block Level				
Block Development Officer	2	29%	36,000	10,286
VDO/VLW	2.5	36%	17,000	6,071
ADO (ISB)	7	100%	20,400	20,400
ADO (Agriculture)	1	14%	20,400	2,914
ADO (Cooperatives)	1	14%	20,400	2,914
ADO (Panchayats)	0.5	7%	20,400	1,457
ADO (Statistics)	1	14%	20,400	2,914
ADO (Harijan Kalyan)	2	29%	20,400	5,829
IRDP Clerk	7	100%	14,000	14,000
Jr.Engineer (Minor Irrigatio	0.5	7%	36,000	2,571
Veterinary Officer	2	29%	36,000	10,286
Total			342,400	86,393

Source: Discussions with officials involved in implementation.

MEASURES OF SUCCESS FOR IRDP 1/

Major States	% Eligible Benef. 4/	% Investments Intact 3/	% Intact and Some Repayment of Credit	% Intact and No Credit Overdue	% Elig. and Crossed Pov. Line 5/	% Elig. and Crossed P.Line and Repaid Some Credit	% Elig. and Crossed P.Line and No Credit Overdue
Andrah Pradesh	58%	76%	65%	34%	9%	7%	1%
Arunachal Pradesh	73%	51%	N/A	38%	4%	0%	4%
Assam	27%	70%	41%	6%	10%	7%	2%
Bihar	76%	86%	63%	18%	3%	2%	1%
Gujarat	78%	88%	79%	43%	4%	4%	0%
Haryana	71%	46%	40%	15%	0%	0%	0%
Himachal Pradesh	87%	86%	73%	45%	29%	27%	3%
Jammu & Kashmir	97%	80%	75%	50%	19%	19%	0%
Karnataka	85%	64%	48%	26%	4%	3%	1%
Kerala	89%	74%	69%	19%	5%	5%	0%
Madhya Pradesh	81%	73%	60%	27%	6%	6%	0%
Maharashtra	83%	69%	59%	30%	10%	9%	1%
Orissa	83%	68%	43%	19%	7%	5%	2%
Punjab	30%	77%	74%	57%	18%	18%	0%
Rajasthan	72%	48%	35%	15%	9%	8%	1%
Tamil Nadu	83%	63%	49%	28%	3%	3%	1%
Uttar Pradesh	54%	79%	63%	41%	5%	4%	1%
West Bengal	46%	97%	75%	23%	8%	6%	1%
AVERAGE MAJOR STATES	70%	73%	58%	29%	7%	6%	1%
Other States & UTs 2/	53%	58%	25%	28%	8%	8%	6%
NATIONAL AVERAGE	69%	72%	56%	29%	7%	6%	1%

1/ National Concurrent Evaluation of IRDP, Round two, 1987, DRD.
2/ Manipur, Megalaya, Nagaland, Tripura, A & N Isl, Chandigarh, Dadra & NH, Delhi, Goa, Lakshwadeep, Mizoram, Pondicherry, Sikkim
3/ Proportion of IRDP investments that remained fully operational after two years
4/ Proportion of Beneficiaries with pre-IRDP income <=Rs 4800
5/ Proportion of Beneficiaries with pre-IRDP income <=Rs 4800 and income >=Rs 6400 after 2 years in current price terms

Annex A6

Statewise Distribution of Beneficiaries
by Pre-IRDP Income Groups

Region/State	% in Target Range (<=Rs 4800)	% Above Target Range (>Rs 4800)
NORTH		
Jammu and Kashmir	99%	0%
Himachal Pradesh	94%	3%
Punjab	90%	8%
Haryana	94%	5%
NORTH CENTRAL		
Uttar Pradesh	88%	9%
Bihar	87%	11%
Madhya Pradesh	94%	4%
EAST		
West Bengal	89%	9%
Orissa	94%	4%
NORTHEAST		
Assam	62%	35%
Nagaland	82%	17%
Sikkim	100%	0%
Meghalaya	98%	0%
Tripura	85%	13%
Manipur	76%	21%
WEST		
Maharastra	93%	4%
Rajasthan	89%	8%
Gujarat	97%	1%
SOUTH		
Andhra Pradesh	86%	12%
Tamil Nadu	95%	3%
Karnataka	93%	5%
Kerala	97%	0%
UNION TERRITORY		
Andaman & Nicobar Islands	61%	38%
Arunachal Pradesh	93%	5%
Chandigarh	69%	30%
Dadra & Nagar Haveli	100%	0%
Delhi	12%	87%
Goa	96%	2%
Lakshadweep	90%	9%
Mizoram	67%	30%
Pondicherry	82%	17%
TOTAL	90%	8%

Source: Concur. Eval. of IRDP: The Main Findings of the Survey for Jan. 87-Sep. 87, Dept. of Rural Devt., Feb. 1988.

Annex A7

Concurrent Evaluation of IRDP: Main Findings of the Survey

Region/State	% of Intact Assets	% Crossing the Poverty Line 1\	Income from the Asset in Current Prices				
			0 Rs.	1-500 Rs.	501-1000	1001-2000	>2000 Rs.
NORTH							
Jammu and Kashmir	80%	19%	15%	1%	8%	27%	49%
Himachal Pradesh	85%	28%	25%	8%	8%	19%	40%
Punjab	77%	13%	23%	0%	6%	31%	41%
Haryana	46%	1%	49%	2%	18%	17%	14%
NORTH CENTRAL							
Uttar Pradesh	79%	5%	12%	4%	19%	39%	26%
Bihar	86%	2%	17%	14%	35%	24%	11%
Madhya Pradesh	73%	3%	22%	6%	14%	26%	33%
EAST							
West Bengal	97%	8%	3%	6%	10%	19%	62%
Orissa	68%	6%	28%	9%	10%	18%	35%
NORTHEAST							
Assam	70%	9%	37%	15%	18%	9%	20%
Nagaland	69%	8%	55%	15%	10%	10%	10%
Sikkim	100%	0%	0%	0%	15%	80%	5%
Meghalaya	33%	5%	47%	14%	16%	8%	15%
Tripura	100%	0%	0%	0%	8%	7%	85%
Manipur	33%	4%	57%	21%	11%	7%	4%
WEST							
Maharastra	69%	6%	16%	11%	18%	20%	34%
Rajasthan	48%	5%	46%	13%	13%	17%	11%
Gujarat	88%	2%	5%	6%	28%	44%	17%
SOUTH							
Andhra Pradesh	75%	5%	13%	4%	10%	23%	49%
Tamil Nadu	63%	2%	33%	6%	14%	22%	26%
Karnataka	64%	4%	18%	25%	22%	22%	14%
Kerala	74%	4%	15%	25%	29%	24%	7%
UNION TERRITORY							
Andaman & Nicobar Islands	73%	0%	30%	10%	3%	17%	40%
Arunachal Pradesh	51%	2%	40%	29%	20%	6%	5%
Chandigarh	100%	0%	0%	0%	10%	80%	10%
Dadra & Nagar Haveli	100%	0%	0%	0%	30%	60%	10%
Delhi	58%	0%	40%	10%	10%	10%	30%
Goa	100%	19%	6%	25%	6%	6%	58%
Lakshadweep	50%	0%	33%	0%	8%	50%	8%
Mizoram	54%	12%	32%	7%	14%	20%	27%
Pondicherry	70%	0%	25%	10%	30%	15%	20%
TOTAL	72%	5%	22%	10%	17%	24%	26%

Source: Concur. Eval. of IRDP: The Main Findings of the Survey for Jan. 87-Sep. 87, Dept. of Rural Devt., Feb. 1988.
1\ Percentage of persons with initial income less than Rs. 3500 crossing the poverty line of Rs. 6400.

Regression on Productivity of Investment

SAS

DEP VARIABLE: NEW

ANALYSIS OF VARIANCE

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PROB>F
MODEL	8	23.03229871	2.87903734	11.128	0.0001
ERROR	210	54.33130791	0.25872051		
C TOTAL	218	77.36360662			

ROOT MSE	0.5086458	R-SQUARE	0.2977
DEP MEAN	0.423147	ADJ R-SQ	0.2710
C.V.	120.2054		

PARAMETER ESTIMATES

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=0	PROB > |T|
INTERCEP	1	0.57143723	0.26580185	2.150	0.0327
DROUGHT2	1	-0.99900160	0.34356843	-2.908	0.0040
ISB	1	0.46003196	0.08034883	5.725	0.0001
OCC1	1	0.22515445	0.07416734	3.036	0.0027
I5_10	1	0.17863415	0.07815914	2.286	0.0233
GENDER	1	-0.43142159	0.12294408	-3.509	0.0006
I11_5	1	0.33109617	0.11552114	2.866	0.0046
AGDP	1	0.000520742	0.000130252	3.998	0.0001
I3_7	1	-0.003731763	0.001286250	-2.901	0.0041

Legend

Drought2 - 87/88 Drought (deviation from normal district rainfall for June/July 1987)

ISB - Type of Investment (Industry, Services and Business = 1)

OCC1 - Occupation of Beneficiary (Agricultural Laborers and Marginal Farmers = 0)

I5_10 - Passbook Issued (=1)

Gender - (Male = 1)

I11_5 - Beneficiary Organization (whether there was an organization of beneficiaries - Yes=1)

AGDP - District Gross Agricultural Production Per Capita 83/84

I3_7 - Incidental Acquisition Costs

SAS

VARIABLE	N	MEAN	STD DEV	SUM	MINIMUM	MAXIMUM
NEW	219	0.42314704	0.59571716	92.6692010	0.00000000	4.78320000
DROUGHT2	219	0.59146119	0.11712011	129.5300000	0.29000000	0.77000000
ISB	219	0.33333333	0.47248449	73.0000000	0.00000000	1.00000000
OCC1	219	0.42465753	0.49542332	93.0000000	0.00000000	1.00000000
I5_10	219	0.64840183	0.47856312	142.0000000	0.00000000	1.00000000
GENDER	219	0.90867580	0.28872955	199.0000000	0.00000000	1.00000000
I11_5	219	0.13698630	0.34462059	30.0000000	0.00000000	1.00000000
AGDP	219	1110.63013699	288.28882244	243228.0000000	663.00000000	1706.00000000
I3_7	219	41.23744292	28.96974481	9031.0000000	0.00000000	200.00000000

PEARSON CORRELATION COEFFICIENTS / PROB > |R| UNDER HO:RHO=0 / N = 219

	NEW	DROUGHT2	ISB	OCC1	I5_10	GENDER	I11_5	AGDP	I3_7
NEW	1.00000 0.0000	0.03254 0.6320	0.29828 0.0001	0.19109 0.0045	0.16946 0.0120	-0.25973 0.0001	0.19085 0.0046	0.08882 0.1904	-0.12084 0.0743
DROUGHT2	0.03254 0.6320	1.00000 0.0000	0.23652 0.0004	-0.08585 0.2057	0.13852 0.0406	-0.09777 0.1493	0.41666 0.0001	0.08501 0.2102	-0.09463 0.1628
ISB	0.29828 0.0001	0.23652 0.0004	1.00000 0.0000	0.17637 0.0089	-0.02705 0.6906	-0.04483 0.5092	-0.02817 0.6784	-0.22179 0.0010	-0.01452 0.8308
OCC1	0.19109 0.0045	-0.08585 0.2057	0.17637 0.0089	1.00000 0.0000	-0.16061 0.0174	0.01581 0.8160	-0.07361 0.2781	0.03624 0.5937	0.25375 0.0001
I5_10	0.16946 0.0120	0.13852 0.0406	-0.02705 0.6906	-0.16061 0.0174	1.00000 0.0000	-0.20025 0.0029	0.29338 0.0001	-0.13494 0.0461	-0.16005 0.0178
GENDER	-0.25973 0.0001	-0.09777 0.1493	-0.04483 0.5092	0.01581 0.8160	-0.20025 0.0029	1.00000 0.0000	-0.15030 0.0261	0.07531 0.2671	0.09858 0.1459
I11_5	0.19085 0.0046	0.41666 0.0001	-0.02817 0.6784	-0.07361 0.2781	0.29338 0.0001	-0.15030 0.0261	1.00000 0.0000	0.04724 0.4868	-0.10895 0.1079
AGDP	0.08882 0.1904	0.08501 0.2102	-0.22179 0.0010	0.03624 0.5937	-0.13494 0.0461	0.07531 0.2671	0.04724 0.4868	1.00000 0.0000	0.25507 0.0001
I3_7	-0.12084 0.0743	-0.09463 0.1628	-0.01452 0.8308	0.25375 0.0001	-0.16005 0.0178	0.09858 0.1459	-0.10895 0.1079	0.25507 0.0001	1.00000 0.0000

SAS

DEP VARIABLE: ARES

ANALYSIS OF VARIANCE

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PROB>F
MODEL	1	0.81362015	0.81362015	6.350	0.0125
ERROR	217	27.80371742	0.12812773		
C TOTAL	218	28.61733757			

ROOT MSE	0.3579493	R-SQUARE	0.0284
DEP MEAN	0.3426593	ADJ R-SQ	0.0240
C.V.	104.4622		

PARAMETER ESTIMATES

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=0	PROB > |T|
INTERCEP	1	0.03414352	0.12479655	0.274	0.7847
DROUGHT2	1	0.52161625	0.20699594	2.520	0.0125

Regression on Productivity of Investment
(Corrected for Heteroskedasticity)

SAS

DEP VARIABLE: NNEW

ANALYSIS OF VARIANCE

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PROB>F
MODEL	8	105.99236	13.24904461	30.302	0.0001
ERROR	211	92.25652945	0.43723474		
U TOTAL	219	198.24889			

ROOT MSE	0.6612373	R-SQUARE	0.5346
DEP MEAN	0.5614657	ADJ R-SQ	0.5170
C.V.	117.7699		

NOTE: NO INTERCEPT TERM IS USED. R-SQUARE IS REDEFINED.

PARAMETER ESTIMATES

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=0	PROB > |T|
NDROUGHT	1	-0.65214081	0.24937460	-2.615	0.0096
NISB	1	0.51968251	0.07803331	6.660	0.0001
NOCC1	1	0.23442543	0.07153472	3.277	0.0012
NI5_10	1	0.23756110	0.07042427	3.373	0.0009
NGENDER	1	-0.21992666	0.10605212	-2.074	0.0393
NI11_5	1	0.27167617	0.11961715	2.271	0.0241
NAGDP	1	0.000609683	0.000118878	5.129	0.0001
NI3_7	1	-0.003212048	0.001222688	-2.627	0.0092

Annex A10

Sustainability According to Scheme

Scheme	Intact After		Partially Intact After		Sold After		Perished After		Other After		Moved/Died/No Answer After	
	2 Years	4 Years	2 Years	4 Years	2 Years	4 Years	2 Years	4 Years	2 Years	4 Years	4 Years	NOB
Bullocks/Small Animal Husbandry 1\	55%	31%	12%	19%	29%	36%	0%	7%	5%	7%	0%	42
Minor Irrigation 2\	100%	88%	0%	0%	0%	13%	0%	0%	0%	0%	0%	24
Animal Drawn Carts	91%	69%	6%	12%	3%	12%	0%	3%	0%	0%	6%	35
Dairy Units	89%	66%	0%	0%	5%	23%	7%	12%	0%	0%	0%	44
Other Primary Agriculture 3\	100%	33%	0%	33%	0%	33%	0%	0%	0%	0%	0%	3
Other Secondary/Tertiary	83%	59%	1%	2%	13%	18%	1%	10%	1%	4%	6%	78
Total (%)	82%	59%	4%	7%	11%	21%	2%	8%	1%	2%	3%	226

Note: Only old beneficiaries who were located both in the second and fourth year are included (226).
Sample: UP Survey Round 2.
1\ Animal Husbandry includes goat, fishery, and piggery units.
2\ Minor Irrigation includes tube-wells, pump-sets, diesel engines/electric motors, and others.
3\ Other primary agriculture includes horticulture, implements and others.

Sustainability According to Income Group

Annex A11

Pre-IRDP Income	Intact After		Partially Intact After		Sold After		Perished After		Other After		Moved/Died/ Other After	NOB
	2 Years	5 Years	2 Years	5 Years	2 Years	5 Years	2 Years	5 Years	2 Years	5 Years	5 Years	
Destitute (1-2265)	73%	36%	3%	4%	16%	19%	7%	28%	6%	6%	6%	67
Very Very Poor (2265-3560)	85%	65%	6%	10%	3%	8%	2%	9%	3%	4%	3%	115
Very Poor (3561-4860)	88%	69%	2%	4%	7%	14%	2%	7%	0%	2%	2%	42
Poor (4861-6460)	88%	63%	0%	13%	13%	26%	0%	0%	0%	0%	0%	8
Above Poverty Line (6461-)	71%	43%	0%	0%	14%	14%	14%	14%	0%	0%	29%	7
Total (%)	82%	57%	4%	7%	7%	13%	4%	14%	3%	4%	4%	239

Note: Only old beneficiaries are included (239).
Sample: UP Survey Round 1.

Annex A12

Sustainability According to Income Group

Pre-IRDP Income	Intact After		Partially Intact After		Sold After		Perished After		Other After		Moved/Died/No Answer After	NOB
	2 Years	4 Years	2 Years	4 Years	2 Years	4 Years	2 Years	4 Years	2 Years	4 Years	4 Years	
Destitute & Very Very Poor (0-	78%	46%	5%	8%	13%	26%	3%	13%	2%	2%	6%	63
Very Poor (3501-4800)	77%	59%	5%	6%	15%	20%	1%	8%	1%	2%	3%	74
Poor (4801-6400)	87%	64%	2%	6%	9%	22%	2%	6%	0%	2%	0%	53
Above Poverty Line (6401-)	94%	75%	0%	6%	3%	11%	0%	0%	3%	6%	3%	36
Total (%)	82%	59%	4%	7%	11%	21%	2%	8%	1%	2%	3%	226

Note: Only old beneficiaries who were located in both the second and the fourth year are included (226).
Sample: UP Survey Round 2.

Annex A13

Sustainability According to Occupation

Occupation	Intact After		Partially Intact After		Sold After		Perished After		Other After		Moved/Died/No Answer After	NOB
	2 Years	4 Years	2 Years	4 Years	2 Years	4 Years	2 Years	4 Years	2 Years	4 Years	4 Years	
Small Farmer	98%	75%	0%	3%	0%	15%	0%	5%	3%	3%	0%	40
Marginal Farmer	77%	59%	3%	7%	19%	25%	0%	4%	1%	2%	1%	69
Agricultural Labour	78%	47%	7%	10%	10%	23%	5%	13%	0%	3%	3%	60
Non-Agricultural Casual Labour	79%	46%	8%	12%	8%	16%	0%	8%	4%	4%	13%	24
Non-Agricultural Self Employed	82%	73%	0%	0%	18%	23%	0%	0%	0%	0%	5%	22
Artisan	100%	75%	0%	0%	0%	0%	0%	25%	0%	0%	0%	4
Other	86%	71%	0%	0%	0%	14%	14%	14%	0%	0%	0%	7
Total (%)	82%	59%	4%	7%	11%	21%	2%	8%	1%	2%	3%	226

Note: Only old beneficiaries who were located in the second and fourth year are included (226).
Sample: UP Survey Round 2.

Sustainability According to Educational Status

Annex A14

Educational Status	Intact After 4 Years	Partially Intact After 4 Years	Sold After 4 Years	Perished After 4 Years	Other After 4 Years	NOB
Illiterate	70%	6%	14%	7%	3%	106
Literate without formal education	79%	2%	12%	7%	0%	43
Literate with formal education	87%	0%	7%	7%	0%	30
Average	75%	4%	12%	7%	2%	179

Note: Only old benefeficiaries are included.Of these beneficiaries, 179 had intact assets after 2 years and were resurveyed after 4 years.
Source: UP Survey Round 2.

Logit Regression on Investment Retention

SAS

LOGISTIC REGRESSION PROCEDURE

DEPENDENT VARIABLE: INTACT4 RETENTION AFTER 4 YEARS

219 OBSERVATIONS
85 INTACT4 = 0
134 INTACT4 = 1
0 OBSERVATIONS DELETED DUE TO MISSING VALUES

VARIABLE	MEAN	MINIMUM	MAXIMUM	S. D.
XSCHE	0.200913	0	1	0.401601
I5_10	0.648402	0	1	0.478563
DROUGHT2	0.591461	0.29	0.77	0.11712
OCC1	0.424658	0	1	0.495423
INCM	4789.07	2967	7948	1669.89
I3_7	41.2374	0	200	28.9697
SCH	68.5708	57	81	6.82671
DEF	0.273973	0	1	0.447017
I3_6D	1.86758	0	10	0.896373

-2 LOG LIKELIHOOD FOR MODEL CONTAINING INTERCEPT ONLY= 292.54

MODEL CHI-SQUARE= 65.27 WITH 9 D.F. (SCORE STAT.) P=0.0 .
CONVERGENCE IN 6 ITERATIONS WITH 0 STEP HALVINGS R= 0.451.
MAX ABSOLUTE DERIVATIVE=0.1537D-04. -2 LOG L= 215.00.
MODEL CHI-SQUARE= 77.55 WITH 9 D.F. (-2 LOG L.R.) P=0.0 .

VARIABLE	BETA	STD. ERROR	CHI-SQUARE	P	R
INTERCEPT	-3.12398203	2.03681550	2.35	0.1251	
XSCHE	-2.39782933	0.48801453	24.14	0.0000	-0.275
I5_10	1.39430765	0.38030455	13.44	0.0002	0.198
DROUGHT2	-5.46591981	1.73402202	9.94	0.0016	-0.165
OCC1	1.17866576	0.39824167	8.76	0.0031	0.152
INCM	0.00033291	0.00011394	8.54	0.0035	0.149
I3_7	-0.01937043	0.00679101	8.14	0.0043	-0.145
SCH	0.06587325	0.02542613	6.71	0.0096	0.127
DEF	-0.84021422	0.39784670	4.46	0.0347	-0.092
I3_6D	0.52085171	0.25072349	4.32	0.0378	0.089

Legend

- Xsche - Type of Investment (highly divisible assets such as bullock pairs, small animal husbandry, and agricultural implements = 1)
- I5_10 - Passbook Issued (Yes=1)
- Drought2 - 87/88 Drought (Deviation from normal district rainfall for June/July 1987)
- OCC1 - Beneficiary Occupation (Agricultural Laborers and Marginal Farmers = 0)
- Incm - Pre-IRDP Income Group of Beneficiaries as estimated by Surveyor (i.e., Destitute/Very very poor, Very poor, Poor, Above Poverty Line)
- I3_7 - Incidental Acquisition Costs
- Sch - District Primary School Coverage (No. of primary schools per 100,000 population)
- DEF - Village tendency to default (where 40% or more beneficiaries had repaid no credit during first two years of program).
- I3 6D - Intensity of Market Search (No. of days)

SAS

LOGISTIC REGRESSION PROCEDURE

DEPENDENT VARIABLE: INTACT4 RETENTION AFTER 4 YEARS

CLASSIFICATION TABLE

		PREDICTED		
		NEGATIVE	POSITIVE	TOTAL
TRUE	NEGATIVE	52	33	85
	POSITIVE	18	116	134
	TOTAL	70	149	219

SENSITIVITY: 86.6% SPECIFICITY: 61.2% CORRECT: 76.7%
FALSE POSITIVE RATE: 22.1% FALSE NEGATIVE RATE: 25.7%

C=0.838 SOMER DYX=0.675 GAMMA=0.676 TAU-A=0.322

SAS

VARIABLE	N	MEAN	STD DEV	SUM	MINIMUM	MAXIMUM
INTACT4	219	0.61187215	0.48844038	134.000000	0.00000000	1.00000000
XSCHE	219	0.20091324	0.40160125	44.000000	0.00000000	1.00000000
I5_10	219	0.64840183	0.47856312	142.000000	0.00000000	1.00000000
DROUGHT2	219	0.59146119	0.11712011	129.530000	0.29000000	0.77000000
OCC1	219	0.42465753	0.49542332	93.000000	0.00000000	1.00000000
INCM	219	4789.07305936	1669.88926023	1048807.000000	2967.00000000	7948.00000000
I3_7	219	41.23744292	28.96974481	9031.000000	0.00000000	200.00000000
SCH	219	68.57077626	6.82670585	15017.000000	57.00000000	81.00000000
DEF	219	0.27397260	0.44701684	60.000000	0.00000000	1.00000000
I3_6D	219	1.86757991	0.89637347	409.000000	0.00000000	10.00000000

PEARSON CORRELATION COEFFICIENTS / PROB > |R| UNDER HO:RHO=0 / N = 219

	INTACT4	XSCHE	I5_10	DROUGHT2	OCC1	INCM	I3_7	SCH	DEF	I3_6D
INTACT4	1.00000	-0.32557	0.19848	-0.06381	0.15347	0.17924	-0.11438	0.12039	-0.16203	0.11257
RETENTION AFTER 4 YEARS	0.0000	0.0001	0.0032	0.3473	0.0231	0.0078	0.0913	0.0754	0.0164	0.0966
XSCHE	-0.32557	1.00000	0.10670	-0.19254	-0.13107	0.02237	0.04911	0.01152	0.12636	-0.07867
DIVISIBILITY OF INVESTMENT	0.0001	0.0000	0.1154	0.0042	0.0528	0.7420	0.4697	0.8654	0.0619	0.2463
I5_10	0.19848	0.10670	1.00000	0.13852	-0.16061	0.05688	-0.16005	0.11647	-0.04083	0.02998
BANK PASSBOOK ISSUED	0.0032	0.1154	0.0000	0.0406	0.0174	0.4023	0.0178	0.0855	0.5478	0.6590
DROUGHT2	-0.06381	-0.19254	0.13852	1.00000	-0.08585	-0.00804	-0.09463	0.11456	-0.13473	0.03943
DROUGHT 87	0.3473	0.0042	0.0406	0.0000	0.2057	0.9058	0.1628	0.0908	0.0464	0.5617
OCC1	0.15347	-0.13107	-0.16061	-0.08585	1.00000	0.11628	0.25375	0.02430	0.19720	-0.16202
	0.0231	0.0528	0.0174	0.2057	0.0000	0.0860	0.0001	0.7206	0.0034	0.0164
INCM	0.17924	0.02237	0.05688	-0.00804	0.11628	1.00000	0.14800	-0.05501	-0.04054	0.09655
PRE-IRDP INCOME	0.0078	0.7420	0.4023	0.9058	0.0860	0.0000	0.0285	0.4179	0.5507	0.1544
I3_7	-0.11438	0.04911	-0.16005	-0.09463	0.25375	0.14800	1.00000	0.15543	0.10937	0.00705
ADMINISTRATIVE MISAPPROPRIATION	0.0913	0.4697	0.0178	0.1628	0.0001	0.0285	0.0000	0.0214	0.1065	0.9174
SCH	0.12039	0.01152	0.11647	0.11456	0.02430	-0.05501	0.15543	1.00000	-0.01390	-0.11203
NO OF PRIMARY SCHOOLS PER LAKH OF POP.	0.0754	0.8654	0.0855	0.0908	0.7206	0.4179	0.0214	0.0000	0.8379	0.0982
DEF	-0.16203	0.12636	-0.04083	-0.13473	0.19720	-0.04054	0.10937	-0.01390	1.00000	-0.13800
	0.0164	0.0619	0.5478	0.0464	0.0034	0.5507	0.1065	0.8379	0.0000	0.0413
I3_6D	0.11257	-0.07867	0.02998	0.03943	-0.16202	0.09655	0.00705	-0.11203	-0.13800	1.00000
	0.0966	0.2463	0.6590	0.5617	0.0164	0.1544	0.9174	0.0982	0.0413	0.0000

Annex A16

Changes in Income and Productivity of Investment for Beneficiaries that Retained IRDP Assets for 2 Years

Income Level in Rs.	N[1]	Average Inv. (Rs)	Average Real Household Income Gain Per Anuum: After 2 Years	Ave. % Change	After 5 Years	Ave. % Change	Average Real Income from the Asset Per Anuum: After 2 Years	After 5 Years	ICOR 1\: After 2 Years	After 5 Years
Destitute & Very Very Poor (0-3500)	139	2929	1678	72%	1454	61%	2435	1711	1.2	1.7
Very Poor (3501-4800)	36	3052	2289	58%	226	7%	3791	1769	0.8	1.7
Poor (4801-6400)	7	4404	2503	43%	-319	-50%	3613	2604	1.2	1.7
Above Poverty Line (6401-)	3	3333	460	6%	-2850	-37%	2872	2841	1.2	1.2
Total	185	3015	1808	67%	1078	46%	2750	1775	2750	1775

Sample: UP Survey Round 1. The sample includes old beneficiaries who had intact assets in the second year and who were resurveyed after five years.It excludes those who moved, died, or were not located.

1\ Average Investment/ Average Real Income from the Asset

Annex A17

Changes in Income and Productivity of Investment for Beneficiaries that Retained IRDP Assets for 2 Years

Income Level in Rs.	N	Average Inv. (Rs)	Average Real Household Income Gain Per Anuum				Average Real Income from the Asset Per Anuum		ICOR 1\	
			After 2 Years	Ave. % Change	After 4 Years	Ave. % Change	After 2 Years	After 4 Years	After 2 Years	After 4 Years
Destitute & Very Very Poor (0-3500)	45	3942	2007	71%	1064	39%	2683	1294	1.5	3
Very Poor (3501-4800)	55	3576	1453	36%	-66	0%	2748	1787	1.3	2
Poor (4801-6400)	46	5073	1821	33%	-1078	-18%	3150	1500	1.6	3.4
Above Poverty Line (6401-)	33	4553	1967	26%	-2882	-36%	2940	2030	1.5	2.2
Total	179	4233	1781	42%	-561	-1%	2870	1634	1.5	2.6

Sample: UP Survey Round 2. The sample includes old beneficiaries who had intact assets in the second year and who were resueyed after four years. It excludes those who moved, died, or were not located.

1\ Average Investment/ Average Real Income from the Asset

Annex A18

Changes in Real Income and Productivity of Investment by Scheme for Those Beneficiaries that Retained IRDP Assets for at Least 2 Years

Scheme	N	Average Inv. (Rs)	Average Real Income from the Asset Per Anuum		Average Real Household Income Gain Per Anuum		Average Real Total Income		ICOR 4\	
			After 2 Years	After 4 Years	After 2 Years	After 4 Years	After 2 Years	After 4 Years	After 2 Years	After 4 Years
Bullocks/Small Animal Husbandry 1\	23	2523	1006	1102	1037	-1873	6590	3679	2.5	2.3
Minor Irrigation 2\	24	9041	3212	1967	2287	414	7688	5816	2.5	4.1
Animal Drawn Carts	30	5435	3439	1978	1930	-405	6937	4601	1.6	2.7
Dairy Units	39	3294	2529	1217	2125	-163	6710	4421	1.3	2.7
Other Primary Agriculture 3\	3	4666	4321	769	1573	-2165	7140	3401	1.1	6.1
Other Secondary/Tertiary	60	3352	3313	1847	1578	-705	6177	3894	1.0	1.8
Total	179	4233	2870	1634	1781	-561	6692	4349	1.5	2.6

Sample: UP Survey Round 2. The sample includes old beneficiaries who had intact assets in the second year and were resurveyed in the fourth year. It excudes those who moved, died, or were not located.

1\ Animal Husbandry includes goat, fishery, and piggery units.

2\ Minor Irrigation includes tube wells, pump-sets, diesel engines/electric motors, and others.

3\ Other Primary Agriculture includes horticulture, implements and others.

4\ Average Investment/ Average Real Income from the Asset Per Anuum.

TERM CREDIT MOBILIZATION FOR IRDP

(Rs Bln)

	1979/80	80/81	81/82	82/83	83/84	84/85	85/86	86/87	87/88	88/89	89/90
Total Term Credit Mobil. for IRDP		2.89	4.67	7.13	7.78	8.57	7.3	10.1	9.81		
of Which:											
Bank Deposits		2.76	3.7	5.28	5.43	5.03	3.54	6.35	5.34		
% of Term Credit Mobilized		96%	79%	74%	70%	59%	48%	63%	54%		
Refinance from NABARD 1\	0.04	0.13	0.97	1.85	2.3	3.54	3.76	3.79	4.47		
% of Term Credit Mobilized		4%	21%	26%	30%	41%	52%	37%	45%		
Total NABARD Refinance Disbursements		4.9	6	6.8	8.9	10.6	11.8	13.5	14.82		
IRDP Refinance as % of Total NABARD Refinance		3%	16%	27%	26%	33%	32%	28%	30%		
Total Bank Credit Mobil. for Agriculture				15.9	19	24.3	25.8	29.1	33.6	2\ 39.3	45.3
of Which:											
Schematic Refinance from NABARD				44%	47%	44%	46%	46%	44%	43%	42%
IRDP as % of Bank Credit Mobil. for Ag.(LT)				45%	40%	36%	28%	35%	30%		

Source: NABARD Annual Reports, IBRD Staff Appraisal Report for NABARD Credit Project, Jan. 24, 1986,p.72.

1\ The National Bank for Agriculture and Rural Development (NABARD) was established in 1982. Until that time, refinance for IRDP was provided by the Agricultural Refinance and Development Corporation (ARDC)

2\ 87-88 and beyond are NABARD projections.

Annex A20

IRDP OVERDUES

Income Level in Rs.	N	Average Overdues for All Beneficiaries 1\		Average Overdues for Beneficiaries with Overdues>0				Average Level of Overdues in Rs for Beneficiaries with Overdues>0			
		After 2 Years	After 5 Years	NOB	After 2 Years	NOB	After 5 Years	NOB	After 2 Years	NOB	After 5 Years
Destitute & Very Very Poor (0-3500)	139	32%	19%	66	67%	44	60%	66	1125	44	1657
Very Poor (3501-4800)	36	26%	19%	13	71%	12	58%	13	1260	12	1911
Poor (4801-6400)	7	19%	8%	2	68%	1	53%	2	1891	1	4483
Above Poverty Line (6401-)	3	27%	0%	1	81%	0	0%	1	2174	0	0
Total	185	30%	18%	82	68%	57	60%	82	1178	57	1760

Sample: UP Survey Round 1. It includes old beneficiaries who had intact assets in the second year and who were resurveyed after five years, excluding those who had moved, died, or were not located.

1\ Overdues as a proportion of credit repayment demand

Annex A21

IRDP OVERDUES

Income Level in Rs.	N	Average Overdues for All Beneficiaries 1\		Average Overdues for Beneficiaries with Overdues>0				Average Level of Overdues in Rs for Beneficiaries with Overdues>0			
		After 2 Years	After 4 Years	NOB	After 2 Years	NOB	After 4 Years	NOB	After 2 Years	NOB	After 4 Years
Destitute & Very Very Poor (0-3500)	45	39%	33%	27	65%	25	59%	27	1093	25	1496
Very Poor (3501-4800)	55	31%	26%	24	70%	26	54%	24	1023	26	1201
Poor (4801-6400)	46	23%	17%	16	65%	15	51%	16	1076	15	1635
Above Poverty Line (6401-)	33	14%	15%	9	53%	11	45%	9	789	11	983
Total	179	28%	23%	76	65%	77	54%	76	1031	77	1350

Sample: UP Survey Round 2. It includes old beneficiaries who had intact assets in the second year and who were resurveyed after four years, excluding those who had moved, died, or were not located.

1\ Overdues as a proportion of credit repayment demand

Annex A22

REASONS GIVEN BY IRDP BENEFICIARIES FOR OVERDUES

Reasons for Overdues	After 2 Years
1)Delay in Income Generation from the Scheme	22 (20%)
2)Return from the Scheme not Adequate to Enable Regular Payment	39 (35%)
3)Lack of Marketing Facilities	6 (5%)
4)Income from the Scheme Spent on Unforseen Circumstances (i.e. Illness of Family Members, Death, etc.)	41 (36%)
5)Had to Repay Old Dues Out of the Earnings from the Scheme	3 (3%)
6)The Repayment Schedule Was Not in Tune with the Income Generation of the Scheme	1 (1%)
No Answer	1 (1%)
Total	113 (100%)

Sample: UP Survey Round 2.The sample includes old beneficiaries.
Note: Figures in parentheses represent percentages of the total number of beneficiaries in each category.

Annex A23

LEVEL OF OVERDUES

Region/State	Overdues=0	Overdues>1 & <=250 Rs.	Overdues>251 & <=1000 Rs.	Overdues>1001 & <=2000 Rs.	Overdues>2000 Rs.
NORTH					
Jammu and Kashmir	59%	10%	14%	8%	10%
Himachal Pradesh	59%	6%	22%	10%	3%
Punjab	71%	2%	9%	14%	5%
Haryana	27%	2%	20%	27%	23%
NORTH CENTRAL					
Uttar Pradesh	51%	4%	18%	17%	10%
Bihar	24%	5%	30%	26%	15%
Madhya Pradesh	31%	7%	30%	25%	7%
EAST					
West Bengal	26%	13%	39%	13%	10%
Orissa	32%	13%	37%	16%	2%
NORTHEAST					
Assam	8%	6%	35%	32%	19%
Nagaland	100%	0%	0%	0%	0%
Sikkim	30%	0%	20%	25%	25%
Meghalaya	100%	0%	0%	0%	0%
Tripura	15%	15%	46%	17%	7%
Manipur	74%	0%	2%	21%	4%
WEST					
Maharastra	43%	8%	25%	16%	8%
Rajasthan	33%	9%	33%	19%	7%
Gujarat	50%	5%	28%	14%	3%
SOUTH					
Andhra Pradesh	42%	12%	27%	13%	6%
Tamil Nadu	44%	10%	20%	17%	10%
Karnataka	36%	5%	26%	26%	8%
Kerala	27%	17%	32%	17%	8%
UNION TERRITORY					
Andaman & Nicobar Islands	33%	3%	20%	27%	17%
Arunachal Pradesh	97%	1%	1%	1%	0%
Chandigarh	35%	0%	10%	40%	15%
Dadra & Nagar Haveli	60%	10%	10%	10%	10%
Delhi	55%	0%	10%	25%	10%
Goa	63%	13%	13%	0%	13%
Lakshadweep	58%	8%	25%	0%	8%
Mizoram	100%	0%	0%	0%	0%
Pondicherry	30%	15%	20%	20%	15%
TOTAL	42%	7%	25%	18%	9%

Source: Concur. Eval. of IRDP: The Main Findings of the Survey for Jan. 87-Sep. 87, Dept. of Rural Devt., Feb. 1988.

Logit Regression on Overdues

SAS

LOGISTIC REGRESSION PROCEDURE

DEPENDENT VARIABLE: OVE

CLASSIFICATION TABLE

		PREDICTED		
		NEGATIVE	POSITIVE	TOTAL
TRUE	NEGATIVE	48	27	75
	POSITIVE	21	83	104
	TOTAL	69	110	179

SENSITIVITY: 79.8% SPECIFICITY: 64.0% CORRECT: 73.2%
FALSE POSITIVE RATE: 24.5% FALSE NEGATIVE RATE: 30.4%

C=0.785 SOMER DYX=0.571 GAMMA=0.572 TAU-A=0.279

SAS

LOGISTIC REGRESSION PROCEDURE

DEPENDENT VARIABLE: OVE

179 OBSERVATIONS
75 OVE = 0
104 OVE = 1
0 OBSERVATIONS DELETED DUE TO MISSING VALUES

VARIABLE	MEAN	MINIMUM	MAXIMUM	S. D.
FAMOCC	0.636872	0	1	0.48225
CAMP	0.0949721	0	1	0.293999
ICOR	0.85657	0.0998944	5.03468	0.734979
OCC	0.659218	0	1	0.475302
MKT	0.731844	0	1	0.444242
HAND	0.212291	0	1	0.410076
INC1	0.251397	0	1	0.435033
INC2	0.307263	0	1	0.462653
INC3	0.256983	0	1	0.438196

-2 LOG LIKELIHOOD FOR MODEL CONTAINING INTERCEPT ONLY= 243.43

MODEL CHI-SQUARE= 39.91 WITH 9 D.F. (SCORE STAT.) P=0.0000.
CONVERGENCE IN 6 ITERATIONS WITH 0 STEP HALVINGS R= 0.357.
MAX ABSOLUTE DERIVATIVE=0.5069D-07. -2 LOG L= 194.49.
MODEL CHI-SQUARE= 48.94 WITH 9 D.F. (-2 LOG L.R.) P=0.0000.

VARIABLE	BETA	STD. ERROR	CHI-SQUARE	P	R
INTERCEPT	-0.37258512	0.72380087	0.26	0.6067	
FAMOCC	0.67240471	0.38414294	3.06	0.0800	0.066
CAMP	1.09957786	0.60147130	3.34	0.0675	0.074
ICOR	0.65455812	0.34341153	3.63	0.0566	0.082
OCC	-0.76379854	0.40140198	3.62	0.0571	-0.082
MKT	0.73943587	0.39988655	3.42	0.0644	0.076
HAND	2.08890527	0.61288597	11.62	0.0007	0.199
INC1	-1.42836823	0.57677508	6.13	0.0133	-0.130
INC2	-0.82359389	0.54605751	2.27	0.1315	-0.034
INC3	-0.11593017	0.55439521	0.04	0.8344	0.000

Legend

FAMOCC - Whether the investment was in line with a traditional family occupation (Yes = 1)
CAMP - Whether the beneficiary participated in a credit camp (Yes = 1)
ICOR - Real Return on Investment Year 4
OCC - Casual Laborers = 1 (Agricultural and Non-Agricultural)
MKT - Whether marketing facilities in area are adequate (Yes = 1)
HAND - Whether the loan/subsidy were disbursed to the beneficiary in cash (partly or fully = 1) or had an in-kind component
INC1 - Pre-IRDP Income estimated by surveyor, destitute or very very poor
INC2 - Pre-IRDP Income, Very poor
INC3 - Pre-IRDP Income, Poor

SAS

VARIABLE	N	MEAN	STD DEV	SUM	MINIMUM	MAXIMUM
OVE	179	0.58100559	0.49477846	104.00000000	0.00000000	1.00000000
FAMOCC	179	0.63687151	0.48225039	114.00000000	0.00000000	1.00000000
CAMP	179	0.09497207	0.29399873	17.00000000	0.00000000	1.00000000
ICOR	179	0.85657039	0.73497883	153.32609911	0.09989444	5.03468000
OCC	179	0.65921788	0.47530174	118.00000000	0.00000000	1.00000000
MKT	179	0.73184358	0.44424214	131.00000000	0.00000000	1.00000000
HAND	179	0.21229050	0.41007646	38.00000000	0.00000000	1.00000000
INC1	179	0.25139665	0.43503294	45.00000000	0.00000000	1.00000000
INC2	179	0.30726257	0.46265331	55.00000000	0.00000000	1.00000000
INC3	179	0.25698324	0.43819581	46.00000000	0.00000000	1.00000000

PEARSON CORRELATION COEFFICIENTS / PROB > |R| UNDER HO:RHO=0 / N = 179

	OVE	FAMOCC	CAMP	ICOR	OCC	MKT	HAND	INC1	INC2	INC3
OVE	1.00000 0.0000	0.11220 0.1348	0.08199 0.2752	0.23127 0.0018	-0.20446 0.0060	0.15050 0.0443	0.33010 0.0001	-0.16039 0.0320	-0.04799 0.5235	0.11074 0.1400
FAMOCC	0.11220 0.1348	1.00000 0.0000	0.00686 0.9274	-0.07543 0.3156	-0.00370 0.9608	-0.16862 0.0240	-0.03412 0.6502	-0.01765 0.8146	-0.22732 0.0022	0.12505 0.0953
CAMP	0.08199 0.2752	0.00686 0.9274	1.00000 0.0000	-0.14968 0.0455	0.07210 0.3375	-0.01898 0.8009	-0.12157 0.1050	-0.09987 0.1835	0.07338 0.3290	-0.05969 0.4274
ICOR	0.23127 0.0018	-0.07543 0.3156	-0.14968 0.0455	1.00000 0.0000	-0.28429 0.0001	0.15789 0.0348	0.33234 0.0001	-0.05032 0.5035	0.17510 0.0191	-0.07511 0.3176
OCC	-0.20446 0.0060	-0.00370 0.9608	0.07210 0.3375	-0.28429 0.0001	1.00000 0.0000	-0.08933 0.2344	-0.20321 0.0064	-0.09957 0.1848	0.01898 0.8009	0.07218 0.3370
MKT	0.15050 0.0443	-0.16862 0.0240	-0.01898 0.8009	0.15789 0.0348	-0.08933 0.2344	1.00000 0.0000	0.12921 0.0847	0.08916 0.2353	0.02046 0.7857	-0.04805 0.5230
HAND	0.33010 0.0001	-0.03412 0.6502	-0.12157 0.1050	0.33234 0.0001	-0.20321 0.0064	0.12921 0.0847	1.00000 0.0000	-0.01742 0.8170	-0.04963 0.5094	0.03860 0.6079
INC1	-0.16039 0.0320	-0.01765 0.8146	-0.09987 0.1835	-0.05032 0.5035	-0.09957 0.1848	0.08916 0.2353	-0.01742 0.8170	1.00000 0.0000	-0.38594 0.0001	-0.34081 0.0001
INC2	-0.04799 0.5235	-0.22732 0.0022	0.07338 0.3290	0.17510 0.0191	0.01898 0.8009	0.02046 0.7857	-0.04963 0.5094	-0.38594 0.0001	1.00000 0.0000	-0.39167 0.0001
INC3	0.11074 0.1400	0.12505 0.0953	-0.05969 0.4274	-0.07511 0.3176	0.07218 0.3370	-0.04805 0.5230	0.03860 0.6079	-0.34081 0.0001	-0.39167 0.0001	1.00000 0.0000

Annex A25

Income Level in Rs.	N	LOAN DISBURSEMENTS HANDLED BY: Cash	Tied Cash	Kind	Cash & Kind
Destitute & Very Very Poor (0-3500)	45	8 (18%)	1 (2%)	34 (76%)	2 (4%)
Very Poor (3501-4800)	55	6 (11%)	4 (7%)	42 (76%)	3 (6%)
Poor (4801-6400)	46	10 (22%)	1 (2%)	33 (72%)	2 (4%)
Above Poverty Line (6401-)	33	7 (21%)	1 (3%)	22 (67%)	3 (9%)
Total	179	31 (17%)	7 (4%)	131 (73%)	10 (6%)

Sample: UP Survey Round 2.The sample includes old beneficiaries who had intact assets in the second year and who were resurveyed after four years, excluding those who had moved, died, or were not located.
Note: Figures in parentheses represent percentages of the total number of beneficiaries in the category.

Type of Investment	Mode of Disbursement for IRDP Loans in U.P. In Kind 1\	Cash & Tied Cash
Primary Sector:		
Bullock Pairs	15	0
Agricultural Implements	1	1
Horticulture	0	1
Tube-wells	1	0
Pump-sets	20	1
Diesel Engines/Electric Motors	1	0
Others	1	0
Dairy Units	31	8
Goat Units	6	0
Fishery Units	1	0
Piggery Units	1	0
Secondary Sector:		
Handloom	2	0
Handicrafts	1	3
Others	0	1
Tertiary Sector:		
Repairs & Maintenance Workshops	4	0
Animal drawn carts	28	2
Rickshaws	4	1
Tailoring/Knitting	2	3
Others	22	17
Total	141	38

Source: UP Survey Round 2.
1\ Includes In-Kind disbursements plus combinations of Cash and In-Kind.

Annex A26

FOLLOW-UP BY BANK & BLOCK OFFICIALS

Income Level in Rs.	Total N	Beneficiaries Visited by Bank Officials		Number of Visits by Bank Officials					Beneficiaries Visited by Block Officials		Number of Visits by Block Officials				
				1	2	3	>3	Ave.			1	2	3	>3	Ave.
Destitute & Very Very Poor (0-3500)	45	33	(73%)	13	9	9	2	2.0	41	(91%)	13	13	4	11	2.5
Very Poor (3501-4800)	55	49	(89%)	11	23	10	5	2.3	52	(95%)	10	24	9	9	2.4
Poor (4801-6400)	46	35	(76%)	14	13	5	3	2.0	40	(87%)	8	19	10	3	2.4
Above Poverty Line (6401-)	33	27	(82%)	10	11	2	4	2.1	31	(94%)	6	10	10	5	2.6
Total	179	144	(80%)	48	56	26	14	2.1	164	(92%)	37	66	33	28	2.5

Sample: UP Survey Round 2. The sample includes old beneficiaries who had intact assets in the second year and who were resurveyed after four years, excluding those who had moved, died, or were not located.
Note: Figures in parentheses represent percentages of the total number of beneficiaries in each category.

SUSTAINED ACCESS TO CREDIT FOR IRDP BENEFICIARIES

Annex A27

Income Level in Rs.	N	Beneficiaries That Subsequently Attempted to Borrow from the Bank		NOB with Overdues=0 That Subsequently Attempted to Borrow from the Bank		Beneficiaries That Obtained Subsequent Bank Loans		Beneficiaries That Obtained Subsequent Bank Loans & Had Overdues=0		Potential Bank Client Base: NOB with Overdues=0 After 4 Years		Potential Bank Client Base: NOB with Overdues=0 and Intact Assets After 4 Years	
Destitute & Very Very Poor (0-3500)	139	14	(10%)	13	(9%)	8	(6%)	8	(6%)	95	(68%)	68	(49%)
Very Poor (3501-4800)	36	3	(8%)	3	(8%)	3	(8%)	2	(6%)	24	(67%)	19	(53%)
Poor (4801-6400)	7	1	(14%)	1	(14%)	0	(0%)	0	(0%)	6	(86%)	5	(71%)
Above Poverty Line (6401-)	3	0	(0%)	0	(0%)	0	(0%)	0	(0%)	3	(100%)	3	(100%)
Total	185	18	(10%)	17	(9%)	11	(6%)	10	(5%)	128	(69%)	96	(51%)

Sample: UP Survey Round 1. The sample includes old beneficiaries who had intact assets in the second year and who were resurveyed after five years, excluding those who had moved, died, or were not located.
Note: Figures in parentheses represent percentages of the total number of beneficiaries in each category.

Annex A28

SUSTAINED ACCESS TO CREDIT FOR IRDP BENEFICIARIES

Income Level in Rs.	N	Beneficiaries That Subsequently Attempted to Borrow from the Bank		NOB with Overdues=0 That Subsequently Attempted to Borrow from the Bank		Beneficiaries That Obtained Subsequent Bank Loans		Beneficiaries That Obtained Subsequent Bank Loans & Had Overdues=0		Potential Bank Client Base: NOB with Overdues=0 After 4 Years		Potential Bank Client Base: NOB with Overdues=0 and Intact Assets After 4 Years	
Destitute & Very Very Poor (0-3500)	45	3	(7%)	3	(7%)	2	(4%)	2	(4%)	20	(44%)	14	(31%)
Very Poor (3501-4800)	55	5	(9%)	5	(9%)	4	(7%)	4	(7%)	29	(53%)	24	(44%)
Poor (4801-6400)	46	6	(13%)	6	(13%)	4	(9%)	4	(9%)	31	(67%)	21	(38%)
Above Poverty Line (6401-)	33	6	(18%)	4	(12%)	2	(6%)	1	(3%)	22	(67%)	19	(58%)
Total	179	20	(11%)	18	(10%)	12	(7%)	11	(6%)	102	(57%)	78	(44%)

Sample: UP Survey Round 2. The sample includes old beneficiaries who had intact assets in the second year and who were resurveyed after four years, excluding those who had moved, died, or were not located.
Note: Figures in parentheses represent percentages of the total number of beneficiaries in each category.

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