

AGRICULTURAL COOPERATION, FINANCE AND BUSINESS MANAGEMENT

AGRICULTURAL FINANCE

Prof. U K Pandey
Department of Agricultural Economics
CCS Haryana Agricultural University
Hissar – 125 004

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Meaning, scope and significance of agricultural finance

Agricultural finance deals with the financial aspects of the farm business. It includes both macro and micro finance aspects of an agricultural economy. Various scholars considered agricultural finance as under:

“Agricultural finance is the economic study of the acquisition and use of capital in agriculture. It deals with the supply of and demand for funds in the agricultural sector of the economy.” **Warren F. Lee, Michael D. Boehlje, Aaron G. Nelson and William G. Murray (1980)**

“Agricultural finance is the study of financing and liquidity services credit provides to farm borrowers. It is also considered as the study of those financial intermediaries who provide loan funds to agriculture and the financial markets in which these intermediaries obtain their loanable funds.” **John B. Penson, Jr. and David A. Lins (1980)**

“Agricultural finance is a branch of agricultural economics which deals with the provision and management of bank services and financial resources related to the individual farm units.” **R.K. Tandon and S.P. Dhondoyal (1971)**

“The investment on a farm is the combination of **“ability to invest”** and **“willingness to invest”**. **“Ability to invest”** is production finance while willingness to invest the development finance. The credit agencies which provide liberal credit for production purposes induce ability to invest. Moreover certain level of infrastructure is essential to absorb the production-oriented loan, thereby making development finance as a pre-requisite for the production finance”. **U.K. Pandey (1990)**

Farm financial management involves the farm as a whole for taking financial decisions. Indeed, the term farm financial management refers to the acquisition and use of financial resources in the individual farm-firm together with the protection of equity. Capital earnings are very crucial to the farm-firm as greater proportion of farm earnings are required to pay for the purchased inputs on the one hand and also for meeting the increasing amounts of consumption expenditure due to the rising population on the other. Financial management has both **“macro”** and **“micro”** aspects. The **“macro-financial management”** pertains to the overall aspects of finance, i.e., various sectors of the economy, agriculture, industry, lending institutions, rural and urban society, etc while **“micro-financial management”** mainly confines to the farm finance with a view to manage the individual farm-firm. In fact, the macro-financial management includes those aspects of finance which provide the overall frame work in which the individual farm-firm also functions. Since Indian agriculture is capital intensive, the farmer’s dependence to lending institutions so as to supplement the farm-finances has considerably risen. Thus, the lending institutions together with society set the overall framework in which the individual farmer has to manage his finances.

The relationship of farm finance with the production, marketing and consumption aspects of agricultural economy determines its scope. Farm assets are partly available in the beginning balance sheet and partly supplemented through lease or hiring in. Quite often, additional assets are also purchased through savings along with or without borrowing. These farm assets in conjunction with labour, management and appropriate technologies produce farm commodities of which partly retained for family and farm requirements while partly available for sales. Moreover, the farm enterprises combination depends mainly upon farmers’ home requirements, availability of market infrastructure, etc. These farm produced commodities on medium and large farms are stored which though involve storage costs yet generate higher returns by selling in lean periods and also help in liquidity management. Some farmers sold their farm produce for cash or for **“receivables”** that may be liquidated within a year or carried forward to the ending balance sheet. Farm inventories, receivables and cash provide liquidity which ultimately helps in taking decisions pertaining to production, marketing or consumption. Yet, the cash generated through marketed surplus can be used for repaying old debt, meeting current consumption and other social obligations and the remainder goes for savings. These farm savings are either used for the purchase of assets or for hiring in the non-farm capital assets, both with or without credit. It ultimately provides the ending balance sheet.

Agricultural finance possesses its usefulness to the farmers, lenders and extension workers. The economic principles of farm financial management facilitate in obtaining control over capital and its efficient use. The investment analysis pertaining to income, repayment

capacity and risk bearing ability determine the amount of capital a farm business can profitably and safely use. Hence, the farmer can determine his credit worthiness and can put forth his loan application with confidence to lender.

The knowledge of lending institutions, their legal and regulatory environment helps in selecting the appropriate lender who can adequately provide the credit with terms and related services needed to finance the farm business. The cash flow analysis helps the farms in determining the period wise quantum of loans needed and cash surpluses generated which can be used for repayment purposes, i.e., it reduces the interest burden and also checks diversion of farm earnings towards non-productive uses. These farmers can also take the temporal investment decisions with the help of capital budgeting.

The lenders not only earn the profit from their loaned funds rather also want to minimize the risk of loss from their loan advances. The principles of agricultural finance may help lender in assessing the borrower's credit worthiness (who has applied for loan) and determining the quantum of loan to be lent safely. The lender may also enhance the repaying capacity of the borrower either by participating in his production planning and management or by adjusting the time period of loan repayments.

Agricultural finance provide exposure to the extension worker about the structure and functioning of lending institutions which in turn helps him to guide the borrower to choose the cheap lender in acquisition of credit. Besides, he can also advise on most efficient use of credit, i.e., to maximize the returns to limited capital resources. Thus, the extension advisory service has vital role in the production planning with the farmers on the one hand while on consequential plans for the acquisition and use of limited funds on the other. Therefore, the lending agency would depend upon extension advisory service not only for establishing the soundness of credit to be advanced rather also for its effective and efficient uses on most productive purposes thereby reducing the risk of misutilization.

Basics of Credit

The word "*credit*" comes from the Latin word "*credo*" which means "*I believe*". Hence, credit is based upon belief, confidence, trust and faith. Thus, borrowing depends upon the ability to command capital or services currently with a promise to repay it in future date, i.e., borrowing involves obtaining certain amount of funds to be repaid as specified in agreement. The loan is based upon the confidence of borrower's future solvency and repayment. Hence, credit means ability to command the other's capital in return for a promise to re-pay at some specified time in future. Besides, credit is the combination of "*ability to borrow*" and "*willingness to borrow*". Infact, credit is an individual's borrowing capacity, oftenly being considered as an "*economic good*" to be produced, managed and marketed.

There are four C's of credit, viz, **character**, **capacity**, **capital** and **condition**, that must be considered in lending or using. The term character implies here the credit character related to those qualities of an individual which make him conscious about his debt. These characters may include borrower's moral qualities like honesty, integrity, sense of responsibility and trust worthiness. If a person has been borrowing the loan and also timely repaying the debt, it reflects that he possesses ideal credit character and vice-versa. Quite often, an individual may possess ideal character in usual sense, but rank low on credit character or vice-versa. Character is one of the basic cornerstones in assessing the risk bearing ability. A man of high

credit character can withstand unforeseen events and may save himself from becoming insolvent. Character has also a bearing on returns and repayment capacity.

The term capacity means the ability to pay his debt as and whenever it becomes due. Since payments usually depend upon income, the capacity is a function of income rather than savings. Moreover, income alone does not indicate capacity. The term capital refers to the equity or net worth of an individual or business. It assures that funds are available to repay the loan, if character and capacity prove to be inadequate. Hence, capital represents as one of the cornerstones for measuring the risk-bearing ability. The term condition also signifies the financial condition of the borrower which has direct relevance with the risk bearing ability.

These are seven P's of credit, viz, purpose, person, productivity-planning scheme or projections, phased disbursement, proper utilization, payment of instalment or repayment and protection security. All these characters determine the soundness of credit, i.e. generating adequate income (relates to purpose and productivity planning scheme or projections), repaying the same whenever falls due (payment of instalment or repayment) and maintaining risk-bearing ability (person and protection-security).

Classification of Credit

Credit can be classified on the basis of time, purpose, security, lender and borrower.

(i) Time classification:- It classifies credit into three groups, i.e. short, medium and long term. The “*short-term loans*” are generally advanced for meeting annual recurring purchases such as, seed, feed, fertilizers, hired labour expenses, pesticides, weedicides, hired machinery charges, etc., and termed as seasonal loans/crop loans/production loans. It is expected that the loan plus interest would be repaid from the income received through the enterprise in which it was invested. The time limit to repay such loans is a year or at the most 18 months.

“*Medium-term loans*” are advanced for comparatively longer lived assets such as machinery, diesel engine, wells, irrigation structure, threshers, shelters, crushers, draught and milch animals, dairy/poultry sheds, etc., where the returns accruing from increase in farm assets in spread over more than one production period. The usual repayment period for such type of loan is from fifteen months to five years.

“*Long-term loans*” are related to the long lived assets such as heavy machinery, land and its reclamation, erection of farm buildings, construction of permanent-drainage or irrigation system, etc. which require large sums of money for initial investment. The benefits generated through such assets are spread over the entire life of the asset. The normal repayment period for such loans ranges from five to fifteen or even upto 20 years.

(ii) Purpose classification:- Credit is also classified based on purpose of loans e.g. crop loan, poultry/dairy/piggery loan, irrigation loan, machinery and equipment loan, forestry loan, fishery loan etc. These loans signify the close relationship between time and use as well as rate of return (or profitability). Some times loans are also classified as production and consumption loans due to the fact that production loans are diverted for consumption purposes by the weaker sections. So, the banks have also started financing for consumption purposes (exclusively for home consumption expenditures) besides financing for the

production purposes. The consumption loans are also to be repaid from the sale proceeds of the crop.

(iii) Security classification:- Security offered/obtained provides another basis for classifying the loans. The secured loans are advanced as against the security of some tangible personal property such as land, livestock and other capital assets, i.e., medium and long term loans. The borrower's credit worthiness may act much more than the security offered, which if doubtful may result willful default. Moreover, the secured loans are further classified on the basis of type of security e.g. mortgage loans, where legal mortgage of some property such as land is offered to the lender, i.e., loans for intangible property such as land improvement, irrigation infrastructures, etc. and hypothecated loans, where legal ownership of the asset financed remains with the lender though physical possession with the borrowers i.e. loans for tangible property such as tractor, machinery and equipments. The private money lenders, usually possess items such as gold ornaments/jewellery or land as security, which reminds the borrower about his obligations of loan repayments. On the contrary, unsecured loans are generally advanced without offering any security e.g. short-term crop loans.

(iv) Lender classification:- Credit is also classified on the basis of lender such as (a) Institutional credit e.g. co-operative loans, commercial bank loans and government loans; (b) non-institutional credit e.g. professional and agricultural money lenders, traders and commission agents, relatives and friends etc.

(v) Borrower classification:- The credit is also classified on the basis of type of borrowers (i.e., production or business activity as well as size of business) such as crop farmers, dairy farmers, poultry farmers, fisherman, rural artisans etc. or agricultural labourers, marginal/small/medium/large farmers, hill farmers or tribal farmers etc. Such classification has equity considerations.

Role of Credit in agriculture

The adoption of modern technology, which is capital intensive, has commercialized agricultural production in India. Besides, the farmer's income is seasonal while his working expenses are spread over time. In addition, farmer's inadequate savings require the uses of more credit to meet the increasing capital requirements. Furthermore, credit is a unique resource, since it provides the opportunity to use additional inputs and capital items now and to pay for them from future earnings. Yet, credit needs vary under traditional and changing agriculture. In fact, credit has both "*static*" and "*dynamic*" characters.

At traditional and subsistence farming, i.e with no marketed surplus and only some financial income is earned from time to time, no credit can be given due to lack of repaying capacity. Afterwards, when a small quantum of marketed surplus becomes available, only a very small amount of credit "*can and should*" be provided. Here emphasis falls on the word "*should*" since credit has still a completely "*static*" character, i.e., it does not enhance production rather represents only a burden on the farmer's budget. The situation, however, becomes more complicated when the farmer resorts to distress sales, which does not necessarily imply the existence of a considerable food surplus. This sale itself has the character of disguised credit transaction. Nevertheless, in such cases the farmer may also apply for institutional credit. Here, credit is a "*double dead weight*". Firstly, the interest which the farmer has to pay to his institutional credit agencies has not been counter-balanced by any increase in his income. Secondly, there may be a considerable difference between the sale price and purchase price of

food grains, i.e., first marketed and purchased or borrowed afterwards. This kind of “*static*” anticipatory credit persisted specially during the pre-technological period. In all such cases, the quantum of credit supply should, therefore, be as small as possible since it enhances the agricultural production at a slow rate. However, the small farmer can be saved from the clutches of money-lenders who charges exorbitantly higher interest rate and makes him permanently indebted. Credit is, therefore, useful as long as it is administered in appropriate doses. The modernization of agriculture which shifts upward the production function in India, would only save the farmer from such forced borrowings.

Agricultural credit begins to show clearly a “*dynamic*” character when the farmer adopts improved agricultural production technology. Consequently, the institutional credit is utilized for increasing agricultural production and proceeds are available for both production and consumption purposes rather than the payment of old debt. However, under such circumstances it is essential that institutional credit is not only supplied in due time but also adequately. The provision of insufficient credit induces the farmer to borrow from the money-lenders to supplement his institutional loans. As soon as he is dealt by the money lender, he becomes indebted to such an extent that money-lender hardly leaves enough farm produce for him to maintain the family. Several studies in India have revealed that the interaction effects of capital and technology are substantially high in all the categories of farms. It signifies the fact that credit can play its “*dynamic*” role only in conjunction with the agricultural production technology, i.e. in presence of credit absorption capacity.

For assessing the credit needs, the borrower has to first prepare his farm plan which includes the acreage to be allocated under various crops in the plan, number of livestock enterprises, farm equipments and machinery etc. The financial institutions possess scales of finance for crops, size of loan for livestock enterprises as well as for the farm machinery and equipments. By multiplication, one can determine the short, medium and/or long term credit needs. An alternative approach to estimate the farmer’s credit needs based on farm plans, which is more scientific and also recognizes the differences in production potential of individual farm, has also been suggested. The various empirical studies in India have revealed the inadequate credit supply through the institutional credit agencies.

Credit in conjunction with modern agricultural technologies has ushered agricultural development across Indian regions. The liberal credit supply by the lending institutions enabled rapid infrastructural growth across Indian regions and thereby improved the farm level credit absorption capacity. Although credit has played vital role in agricultural development yet regional and farm-category wise disparity has also taken place. Infact, some of the states with better natural resource base have progressed well while some others lagged far behind. Like wise, some farmers with better resource endowments and access to financial and other institutions have marched faster while others could not do so. Furthermore, multiplicity of lending institutions together with the liberal deployment of credit through various on going schemes including micro-financing saved rural dwellers from the clutches of money lenders. Yet, non-institutional credit agents still survive as they follow the canons of financing.

Economic Principles in Capital acquisition and use decisions

The economic principles form the basis for making decisions pertaining to farm finance. These principles can be used for selecting the most-profitable enterprises, the amount of inputs to be used, comparing the cheapest source of farm finance and amounts to be borrowed

from each source. Thus, the most profitable use of capital mainly depends upon: (a) determining the size of each enterprise (factor-product relationship) (b) determining the most economic production techniques (factor-factor relationship) and (c) selection of most profitable enterprises or combination of enterprises (product-product relationship). All these principles help in maximizing the returns from an investment.

Factor-product relationship

Here the objective is to increase the size of an enterprise by equating marginal cost and marginal return. The relationship can be expressed as below:

$$\Delta X_1.PX_1 + \Delta X_2.PX_2 + \dots + \Delta X_n.PX_n = \Delta Y.Py \dots \dots \dots (1)$$

Where, $\Delta X_1, \Delta X_2, \dots, \Delta X_n$ represent marginal units of factors to be used in producing product Y, the PX_1, PX_2, \dots, PX_n are prices of various inputs and Py represents the price of product Y. The above equation can also be written as:

$$\Delta C(1+i) = \Delta Y.Py \dots \dots \dots (2)$$

Where ΔC represents the marginal capital excluding cost of capital and “i” the interest rate. If a borrower gets credit for all inputs from a single source to produce the product Y, or single lender provides credit for all purposes, then he can expand his enterprise to the optimum size. However, the cheapest source of credit would be more helpful in expanding the size of an enterprise.

Factor-factor relationship

It economically combines the factors and minimizes the cost of producing a product. Algebraically, it can be expressed as below:

$$\frac{Py \Delta Y}{PX_1} = \frac{Py \Delta Y}{PX_2} = \frac{Py \Delta Y}{PX_n} \dots \dots \dots (3)$$

Where, Y represents the product produced, Py output price, X_1, X_2, \dots, X_n are the various factors of production to be used in producing the product Y, and PX_1, PX_2, \dots, PX_n are the factor prices. To attain above mentioned equalities the farmer has to adjust the use of various inputs in producing a product. Usually, the borrowings from a single agency so as to acquire all factors facilitate in adjusting the relative amounts into various factors for achieving the aforesaid equality. The equation 3 can also be written as:

$$\frac{\Delta Y.Py}{\Delta X_1.PX_1} = \frac{\Delta Y.Py}{\Delta X_2.PX_2} = \frac{\Delta Y.Py}{\Delta X_n.PX_n} \dots \dots \dots (4)$$

Infact, $\Delta X_1.PX_1, \Delta X_2.PX_2$, etc. represent a certain amount of capital, i.e., ΔC . By using “i” to represent the interest rate or the cost of capital and subscripts 1,2,....., n as different factors of production, the above equation can also be stated as:

$$\frac{\Delta Y.Py}{\Delta C_1.(1+i_1)} = \frac{\Delta Y.Py}{\Delta C_2.(1+i_2)} = \frac{\Delta Y.Py}{\Delta C_n.(1+i_n)} \dots \dots \dots (5)$$

Above equation shows that the rate of interest has direct bearing in optimum allocation of capital amongst different factors of producing a product. For example, a farmer uses institutional credit with 12 per cent interest rate for the purchase of fertilizer and custom-

hiring. Hence, optimum allocation of these two factors depends upon one rupee worth of fertilizer for each rupee spent on custom hiring. Another farmer uses institutional credit at 12 percent interest rate for the purchase of fertilizers and non-institutional credit with 24 percent interest rate for the purpose of custom hiring. In this case, optimum use of two factors involves 88 paise worth of custom hiring for each rupee worth of fertilizers. Therefore, the difference in interest rate charges from two sources, shall influence the use of relative amounts of capital amongst two factors.

Product-Product relationship

Here the objective is to use credit in such a way that the last (marginal) rupee used in each enterprise produces the same amount of return i.e., equi-marginal return. Thus, maximization of income shall occur when the following equation holds true:

$$\frac{\Delta Y_1 P_{Y_1}}{\Delta C (1+ i)} = \frac{\Delta Y_2 P_{Y_2}}{\Delta c (1+ i)} = \dots \dots \dots \frac{\Delta Y_n P_{Y_n}}{\Delta C (1+ i)} = 1 \dots \dots \dots (6)$$

Obviously, a borrower who gets loan for all inputs from the single lender or lender who provides loan for all purposes can achieve above equality to his satisfaction. However, the cheapest source shall further maximize his satisfaction/income.

Before taking a loan, an intelligent farmer would like to know:

- 1 Whether or not should he take the loan; i.e is it mandatory for him to take the loan or can he manage without it?
- 2 What amount of money should he borrow?
- 3 How should he best utilize the borrowed money?
- 4 The answers to these three questions may be found with the help of tables 1, 2 and 3, respectively.

Decision for farm loan through partial budgets

Whether or not a farmer should take the loan to buy a buffalo/crossbred cow is illustrated in table 1. The analytical tool that helps in providing a practical solution to this important question is the partial budget. That is, additional costs on and returns from two or more substitutable inputs, practices or enterprises are weighed against each other. In table 1, the additional cost incurred from the purchase of a buffalo (Rs. 42,820) would be more than the current cost of Rs.33,700 on crossbred cattle by (Rs. 42,820 minus 33,700) Rs.9,120. Therefore, it would not be advisable to take a loan to buy a buffalo in preference of crossbred cattle which possess relatively higher milk production potential.

Determining the amount of money to be borrowed through principle of equity and increasing risk

The amount of money a farmer should borrow depends on his borrowing capacity, repaying capacity as well as his risk-bearing capacity. The difference between his assets and liabilities indicates his financial position and borrowing capacity. The repaying capacity is assessed from the cash returns of the farm in a year. The risk-bearing capacity varies from individual to individual. However, for all practical purposes, it can be estimated with the help of the principle of equity and increasing risk. This principle states that decrease in the percentage of

equity on a farm increases the risk of income loss. For example, if the equity percentage declines from 100% to 50%, 25% and 10% (see table 2), the net gain obtained, after repaying the loan taken and the interest on it, increases from 10% to 11%, 13% and 19%, respectively. This net gain is obtained when there is a 10% gain on investment. But in the case of a 10% loss on investment, after repaying the loan and the interest on it, the loss increases from 10% to 29%, 67% and 181%, respectively. Thus, though a farmer has the chance of gaining more when he borrows more capital, he runs a greater risk of losing more in the event of loss on capital investment.

After deciding the amount of money to be borrowed, the farmer should plan for its proper utilization. For this, he should first prepare an optimal farm plan; i.e. the plan that will give him maximum returns for his limited resources within the availability of cash and other resources. Then he should prepare a month wise annual cash flow.

Preparation and analysis of financial statements

It includes the cash flow statement, balance sheet and income statement.

Cash flow statement

It is also called as the sources and uses of funds or flow of funds statement. Both the cash in flows and out-flows are summarized over a given period of time. Moreover, it is prepared either for a farm business or to a farm operator's family. In a cash flow statement the total cash inflows must equal to the total cash out flows. The total cash in flows include; (i) total cash available which excludes borrowings, (ii) new operating loans, and (iii) new medium and long-terms loans as well as the consumption loan. Likewise, the total cash outflows consist of; (i) total cash required which excludes principal repayments, (ii) principal repayments and (iii) ending cash balance. In fact, it is the ending cash balance entry which really balances the account. Table 3 depicts the monthly cash flow statement on 7.5 acre farm in Haryana during the year 2006.

The problem of untimely repayment of loan instalments can be diagnosed and resolved by the cash flow statement of a farm business. Infact, an estimation of sourcewise cash income and monthwise cash expenses provide the monthwise deficit or surplus information. Thus, from an annual cash flow, a farmer can foresee when he

TABLE 1: ADJUSTMENT ON ACCOUNT OF PURCHASE OF BUFFALO VIS-À-VIS CROSSBRED COW ON A FARM

Sr. no.	Additional Expenditure	Rs.	Additional returns	Rs.
1.	Interest on buffalo loan amount of Rs.35,000@10%/annum	3,500.0	Neither there is more milk production nor dung production from buffalo as compared to crossbred cattle (Rather buffalo yields less milk/day and dung production is more or less same.)	Nil
2.	Depreciation (as buffalo is in Ist lactation).	Nil		
3.	Insurance premium @ 4%/annum of animal value	1400.0		

4.	Shelter i) Depreciation on shed @ 4% /annum on shed's capital investment (Rs.20,000) ii) Interest on bank loan for shed @ 10%/annum	800.0 2,000.0		
5.	Working capital (on feed, fodder, labour machines, etc)/annum Reduced Returns Loss due to 760 kg more lactation yield from crossbred cattle as compared to buffalo's lactation yield which would have been sold @ Rs.12/Kg.	26,000.0 9,120.0	Reduced expenditure i) Depreciation on crossbred cattle (as cow is in 1st lactation) ii) Interest on crossbred cow loan of Rs.35000 @ 10% per annum iii) Insurance premium @ 4% per annum iv) Depreciation on cattle shed @ 4% per annum on the shed's investment (Rs.20000) v) Interest on cattle shed investment @ 10%/annum vi) Working capital (on feed, fodder, labour, medicines, etc) per annum	Nil 3500.0 1400.0 800.0 2000.0 26000.0
	Total	42820	Total	33700

TABLE 2: PERCENTAGE OF EQUITY* AND RISK INVOLVED

Particulars	Category of farms with equity			
	Farm A	Farm B	Farm C	Farm D
Owned capital (Rs)	10,000	10,000	10,000	10,000
Borrowed capital (Rs.)	-	10,000	30,000	90,000
Equity (%)	100	50	25	10
Total capital invested (Rs.)	10,000	20,000	40,000	1,00,000
Gain @ 10% on capital	1,000	2,000	4,000	10,000

investment (Rs)				
Interest to be paid @9% (Rs)	-	900	2700	8100
capital at the end of year (Rs)	11,000	11,100	11,300	11,900
Gain in owned capital (%)	10	11	13	19
Loss @ 10% on capital investment (Rs)	1,000	2,000	4,000	10,000
Interest to be paid @ 9% (Rs)	-	900	2,700	8,100
Capital at the end of year (Rs)	9,000	7,100	3,300	-8,100
Loss on capital (%)	10	29	67	181

$$\text{*Percentage of equity} = \frac{\text{Owned capital}}{\text{Owned} + \text{borrowed capital}} \times 100$$

will actually need the loan and when he will be able to repay it. This is particularly important when he is required to pay a high rate of interest and when loans are available at all times. A cash flow also helps the farmer in checking his farm expenses and in assessing the possibility of reducing his costs.

Since farm plan is prepared at the beginning of a sowing season or a crop year; it suggests “*what should be*” or “*what ought to be*” on the farm if income maximization is the goal. Research workers prefer to call the farm plan a normative approach to farm income maximization, the farmer should consider the results in table 3 as alternatives if he wishes to maximize his farm income.

TABLE 3: ANNUAL CASH FLOW ON 7.5 ACRE FARM IN HARYANA DURING THE YEAR 2006

Particulars	Total	June	July	Aug.	Sept.	October	Nov.	Dec.	Jan.	Feb.	March	April	May
Cash balance (beginning of the months)	-	1600	1409	1551	980	22234	472	3538	2514	2465	2451	3602	3588
Total operating sales*	70518					16900	19368		16250		18000		
Money borrowed	2500			1500	1000								
Non farm income	21600	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total available (Rs.)	94618	3400	3209	4851	3780	40934	21640	5338	20564	4265	22251	5402	5388
Operating expenses**	26603	1380	1080	2463	1280	2800	3400	2800	2600	1600	1500	2800	2900
Capital expenditure†	30000					30000							
Family living and non farm expenditure	24500	1800	1200	1400	1800	3000	1900	2100	2800	2400	2300	1800	2000
Payment on current year's borrowed money	2,500					2500							
Interest paid on borrowed money††	130					130							
Total expenditure (Rs)	83733	3180	2280	3863	3080	38430	5300	4900	5400	4000	3800	4600	4900
Cash balance (end of month) (Rs.)	-	220	929	988	700	2504	16340	438	15164	265	18451	802	488

*Operating sales is the income expected from the sales of different crops and livestock products.

**Operating expenditure refers to the annual expenses to be incurred on current inputs, such as labour, fertilizer, seeds, chemicals, tractor fuel, feed purchased and electricity.

† Capital expenditure is the investment required to purchase some capital item, such as machines and livestock, to make some mid-term or long-term improvement on the farm.

†† Interest rate at 24% on Rs.1500/- for three months and on Rs.1000/- for two months.

Balance Sheet

A knowledge of the owner's equity or of the net worth of the borrower is helpful in assessing the security of loans and the risk involved in advancing loans. The "*balance sheet*" also called as "*net worth or financial statement*", is a summery of assets and liabilities of a business together with the statement of the owners equity or net worth. The term "*balance*" here implies that the value of assets must equal to the value of liabilities plus owner's equity or net worth. A balance sheet (Table 4) has a common set of characteristics. These are:

- 1 It pertains to specific point of time, i.e., 31st December 2006. In fact, the date should be chosen such as two successive balance sheets represent the beginning and ending points of time as covered by the intervening income statement. It may correspond the agricultural year, calendar year or financial year.
- 2 It characterizes the three essential components, viz., (a) assets (b) liabilities and (c) net worth or owner's equity, the balancing entry in the account.
- 3 It includes either owned or owed items and does not provide an accurate measure of total assets controlled, since many assets used in the production may be rented in.
- 4 The balance sheet can be prepared for a "farm business" or for a "farm operator's family" (includes both business and personal items). These assets and liabilities are presented in order of payments/liquidity. Moreover, the liabilities are written on left side while assets towards right side.
- 5 The balance sheet does not indicate the progress or deterioration of the farm business, unless drawn overtime and net worth is compared.
- 6 The balance sheet can be constructed on a cost basis/book value (purchase price or original cost minus depreciation) or current market value basis.
- 7 Sometimes the physical data is also given to see the changes in inventory value (quantity of grain or size and number of livestock), changes in unit prices or changes in both inventories and prices.

TABLE 4: THE BALANCE SHEET OF SRI AJIT SINGH'S FARM AS ON 30TH JUNE, 2006 IN HARYANA (HYPOTHETICAL DATA)

Liabilities	Rs.	Assets	Rs.
I. Current Liabilities		I. Current Assets	
1. Accounts to be paid	3000.00	1. Cash in hand	3800.00
2. Operating loans plus interest	9980.00	2. Cash in bank	26500.00
3. Portion of medium and long term loans due within 12months		3. Accounts receiables	10500.00
a) Medium term loan instalment plus interest	16200.00	4. Crops to be sold	
b) Long term loan instalment plus interest	29143.00	a) Rice	15000.00 (15qtl.)
		b) Wheat	6700.00 (9 qtl.)
		c) Gur	5500.00 (10 qtl.)
		d) Gram	5900.00 (8 qtl)
		5. Fertilizers	
		a) Urea	2650.00 (5 qtl.)
		b) DAP	2850.00 (5 qtl.)
		c) CAN	1500.00 (4 qtl.)

Total current liabilities	58323.00	Total current assets	80900.00
II. Medium-term Liabilities		II. Medium term Assets	
1. Livestock loan (milch and draught animal loan)	26000.00	1. Livestock (milch and draught animals)	45000.00 (2+2)
2. Minor irrigation loan	18000.00	2. Heifers	28600.00 (2)
3. Other machinery and equipment loan	10000.00	3. Tubewell	80000.00 (1)
		4. Other equipments and machinery.	130000.00
Total medium-term liabilities	54000.00	Total medium term assets	283600.00
III. Long-term Liabilities		III. Long term assets	
Tractor & its accessories	120000.00	1. Land	360000.00
Total long term liabilities	120000.00	2. Tractor & its accessories	120000.00
IV. Total Liabilities	232323.00	Total long term assets	480000.00
V. Net worth	612177.00	Total Assets	844500.00
Total Liabilities plus net worth	844500.00		

8 Net worth is placed towards liability side as the owner like creditor has claim against the business for the assets equal to net worth. In fact it is the liability of the business which owes that amount to the owner. But net deficit is placed on the asset side to show the “*shortage of assets*”. In balance sheet, the liabilities (as listed in the left side) are presented under three heads; (a) current liabilities, (b) medium-term intermediate liabilities and (c) long-term liabilities.

Liability: - It represents an amount which is owed to others whether payable in cash, kind or services.

Current liability:- are debts payable within the operating year (normally 12 months) e.g. crop loan. Accrued interest on loans owed i.e., short, medium and long term, in the year the statement is prepared, loan instalments of medium and long term loans due within the next 12 months are considered as the current liability. Just like operating loans, the payments for medium and long term loans must come from the sale of current assets.

Intermediate/medium-term and long term liabilities:- There are the obligations associated with the intermediate and long term assets, respectively. One should consider outstanding principal which is due beyond 12 months as intermediate or longterm liability. Medium term loans/liability are those whose maturity between 1 and 7 years while long term loans/liability possess maturity is more than 7 years.

Contingent liability:- These become due under specific circumstances, such as capital gain taxes. Such taxes become due only when the capital asset is sold. Such liabilities are only accounted for if the balance sheet is prepared on market value basis.

Asset:- These represent the value that are owned and classified according to time required to convert them into cash with a minimum loss, i.e., current, medium and long-term assets. Moreover, the assets are listed in sequence of their liquidity.

a) Current assets:- These are consumed within the single year and can be converted into cash without disrupting the farm business (sale of land disrupts the farm business).

b) Medium term assets:- These assets can not be converted or sold for cash in short period of time, e.g., milch and draught animals, small equipments, etc. These assets are not consumed within the year and continue to give returns beyond one year.

c) Long term or fixed assets:- These are also part of production plan but are of permanent nature. Farm real estate represents the major long term asset on the balance sheet for most farm operators.

d) Net worth:- The owner's equity or net worth represents the residual entry in the account which "**balances**" the statement.

Net worth in a year will change due to farm earnings, paid up capital, capital gains or losses, etc. However, an equal increase and decrease in assets, equal increase in assets and liabilities, equal decrease in assets and liabilities and an equal increase and decrease in liabilities will undoubtedly affect the structure of balance-sheet but net worth would remain unchanged. On the contrary, an equal increase in assets and liabilities would arise once purchased with credit. Thus, total assets and liabilities are changed but net worth remains unchanged. Furthermore, the net worth would be reduced by diverting a part of the loan for consumption purposes. Infact, loan payments are transactions that lead to an equal decrease in assets and liabilities, leaving the net worth unchanged. In case long term loans are used to pay off the short term loans, it would result into an equal increase and decrease in liabilities consequently, net worth would be unaffected since debt has been restructured to improve the liquidity position.

Financial tests and ratios

The financial ratio analysis can also be done based on balance-sheet data which monitors the financial structure of the farm business or farm operator. These financial ratios provide information pertaining to extent of risk involved in lending to the farmer and can be divided as (a) liquidity ratios, and (b) solvency ratios.

(A) Liquidity ratios: - These ratios indicate the ability of the farmer to generate sufficient cash in order to meet the debt obligations without disrupting his farm business. These are:

$$(i) \quad \text{Current ratio} = \frac{\text{current assets}}{\text{current liabilities}}$$

This ratio indicates the extent to which current assets, if liquidated, would cover the current liabilities, i.e., the value of current assets for each rupee of current liability. The higher current ratio means more liquidity exists in the farm business.

$$(ii) \quad \text{Working ratio} = \frac{\text{Sum of current plus working assets}}{\text{Sum of current plus working liabilities}}$$

Over period, both current and working assets are converted into cash. This ratio reflects that whether or not the cash derived in this period would be adequate to cover the liabilities of the same period. Higher ratio, being more than one, indicates that the risk-bearing ability of the borrower is adequate.

$$(iii) \quad \text{Debt-structure ratio} = \frac{\text{Current liabilities}}{\text{Total liabilities}}$$

Lower the value of this ratio, higher is the liquidity position of the farm business.

$$(iv) \quad \text{Acid test ratio or quick ratio} = \frac{\text{Current assets minus inventories and supplies}}{\text{Current liabilities}}$$

This ratio reflects the adequacy of cash, accounts receivable, etc. to cover all current liabilities.

(B) Solvency ratios:- Solvency is a measure of financial security, i.e. what would be left in case all the assets are converted into cash and debts are paid.

$$(i) \quad \text{Leverage ratio or debt-to-equity ratio} = \frac{\text{Total liabilities}}{\text{Net worth}}$$

If the leverage ratio is higher, the farm operator has larger claims/debt to pay in relation to his equity.

$$(ii) \quad \text{Net capital ratio} = \frac{\text{Total assets}}{\text{Total liabilities}}$$

A greater than one net capital ratio indicates that the liquidation of farm business would generate adequate cash to repay the total liabilities.

$$(iii) \quad \text{Equity-to-asset value ratio} = \frac{\text{Farmer's equity or net worth}}{\text{Value of assets}}$$

Since total assets = total debt + owner's equity, leverage ratio, net capital ratio and equity-to-asset value ratio are alternative ways of expressing the overall leverage position of a farm business.

Income statement or profit and loss statement

It is a measure of revenue and expenses during a specified accounting period (usually a year). It provides a fairly good picture of income earning and managerial ability of the farmer, in case drawn over a number of years. Moreover, an income-statement can be constructed either for a farm business or of a farm operator. Once prepared for a farm business, it reveals the success or failure story over time together with the costs and returns associated in the use of capital and/or credit. Usually, the income statement considers the various types of income such as (a) cash revenue from sale of crops, livestock and its products, earnings from custom hiring and cash receivables, (b) kind income such as, value of farm produce consumed by the family, the rental value of farm dwellings, (c) unrealized income such as inventory changes,

(d) miscellaneous sources, if any. However, the non-farm income can also be included in the income statement, if prepared for a farm operator. Normally, three income level figures, viz., net cash income, net farm income and returns to management, are to be considered while preparing the income statement.

Cash farm operating expenses represent those expenditures of cash which are associated with the operation of a farm. These include; the purchases of seed, feed, fertilizers, pesticides and supplies i.e. variable cash expenses are incurred only if production is undertaken. Fixed cash expenses represent the outlays incurred even in the absence of production, e.g., land revenue, interest on medium and long-term loans, etc. Expenditures on the purchase of capital assets such as tractor, bullocks, pumpsets, land, etc., are not considered as a cash expense because these assets are consumed over the period. In fact, the cost of these capital assets is allocated over their entire life by including annual depreciation as an expense item. Similarly, the current principal payment on loans is also excluded as cash expense since repayment of principal has no effect on profit as liabilities are reduced by an equal amount. However, the interest payments form a cash expense. These total cash farm expenses are deducted from the total cash farm revenues to get the net cash farm income.

The inventory of a farm may also differ between the beginning and at the end. Therefore, these changes may also be accounted for at the time of income measurement. In fact, the annual net change in crop and livestock inventories, fertilizer and other supplies must be accounted for if we are interested to measure the accurate profit. In case inventories are greater at the end of the year as compared to beginning of the year, then addition to farm income would be positive. Contrarily, if inventories declined during the year, the income would be reduced while doing non cash adjustments in the income statement. Similarly, changes in the value of crop and livestock inventories due to the changes in price should also be reflected when adjusted for the income. The changes between beginning and ending liabilities such as debt and interest payments may also be considered while preparing an income statement. The non-farm income represents the net cash earnings of farm operator and his family from non-farm investments and occupations. This may also be included if we are preparing the income statement of a farm operator. Likewise, the value of farm produce consumed by the farmer and his family should be included while measuring the net farm earnings. By subtracting the imputed value of family labour and interest on the investment (or working capital) with the net farm earnings, one can get the returns to management of a farm business (Table 5).

Financial tests and ratios

These ratios can be divided into two categories viz; (a) Efficiency ratios, which relate expenses to gross income, and (b) Profitability ratios, which relate income to the capital investment.

TABLE 5: INCOME STATEMENT OF SRI AJIT SINGH'S FARM IN HARYANA FOR 2005-06 (HYPOTHETICAL DATA)

Particulars	Amount (In Rs.)
A. Cash Receipts	
a) Sale of crops	88650.00

b) Sale of livestock and livestock products	32500.00
c) Custom hiring (camel and cart)	18600.00
d) Miscellaneous (Pension from military)	30000.00
Total	169750.00
B. Cash Expenses	
a) Wage payments, hired machinery charges/fuel expenses and draught animal charges	18900.00
b) Purchase of material inputs for crops	18600.00
c) Irrigation/electricity charges	8500.00
d) Expenses on livestock feed, Veterinary and medicine expenses.	9800.00
e) Miscellaneous expenses (such as repair/upkeep of farm buildings and machinery, land revenue, depreciation on capital assets, interest on operating loans, medium and long-term loan instalments plus interest there of etc.)	19500.00
Total	75300.00
C. Net Cash Income (=Cash receipts(-)cash expenses)	94450.00
a) Inventory changes (±)*	13500.00
b) Value of farm produce consumed	20600.00
D. Net farm earnings (=Net cash income(±)inventory charges+value of farm produce consumed)	128550.00
a) Operator's family labour and interest on investment	38800.00
E. Returns to Management(Net farm earnings minus imputed value of family labour and interest on the investment or working capital)	89750.00

*It reflects the addition to inventory value minus interest paid on medium and long-term investment alongwith depreciation amount (if any)

Note: Depreciation amount is Rs.12040.

Efficiency ratios:- These ratios measure the degree to which a farm operator uses his farm resources in order to obtain the optimum results.

$$(i) \quad \text{Operating ratio} = \frac{\text{Total operating farm expenses}}{\text{Gross farm income}}$$

It reflects the proportion of operating farm expenses into the gross farm income.

$$(ii) \quad \text{Fixed ratio} = \frac{\text{Total fixed farm expenses}}{\text{Gross farm income}}$$

It represents the share of fixed farm expenses per rupee of gross farm income.

$$(iii) \quad \text{Gross ratio} = \frac{\text{Total farm expenses}}{\text{Gross farm income}}$$

It expresses the proportions of gross farm income being absorbed by the total costs.

$$(iv) \quad \text{Expense structure ratio} = \frac{\text{Fixed cash expenses}}{\text{Total cash expenses}}$$

Higher the value of expense structure ratio, the more inflexible the farm operator is to adjust quickly and efficiently with the changing market conditions.

The less than one efficiency ratios (i.e. operating, fixed, gross and expense structure ratio) indicate that the borrowed loan has generated additional return/income.

Profitability ratios:- The rate of return on investment offers one criterion which can be applied across different types and sizes of farm businesses. Furthermore, income to investment ratios indicate the efficiency with which capital is being employed in the farm business.

$$(i) \quad \text{Capital turnover ratio} = \frac{\text{Gross income}}{\text{Total capital investment}}$$

It measures the gross farm income generated per rupee of capital investment. It is used to quickly appraise the efficiency of capital.

$$(ii) \quad \text{Rate of return on debt and equity capital} = \frac{\text{Net return to capital}}{\text{Total capital investment}}$$

It relates to the return from debt and equity capital invested in the farm business to the total farm business assets.

$$(iii) \quad \text{Rate of return on equity capital} = \frac{\text{Return to equity}}{\text{Net worth}}$$

It describes the returns per rupee of equity invested and provides a basis for comparison with the rates of return on non-farm investments. Greater than one profitability ratios indicate that borrowed loan has generated the additional returns reflecting thereby the sound investment.

Investment appraisal/loan appraisal

To estimate the rationality of a loan, it is essential to do credit analysis. The considerations of credit analysis fall into three groups; **returns, repayment capacity and risk bearing ability**; these are popularly known as the **three R's of credit**. To estimate the rationality of borrowing, three questions should be carefully examined.

- 1 Whether investment will provide sufficient returns to cover the principal and additional costs?
- 2 Whether the borrower has sufficient repayment capacity to return the loan and the interest on it when these amounts are due?
- 3 Whether the borrower has capacity to meet the risk and uncertainties involved in using the borrowed funds. If the answer to the above questions are “**yes**”, then there is a sound case for advancing/taking the loan. If the answer to any of the question is “**no**”, then the loan should not be advanced/taken. A negative answer to question (i)

indicates that the use of funds, if borrowed, will not be profitable; negative answers to the questions (ii) and (iii) mean that the borrower may fail to fulfill his obligations. Hence, in any of these cases, the loan should not be advanced/taken.

Returns from an investment: The first R of credit

The returns from an investment, the first test of credit, has great significance to both creditor and borrower. It requires that both borrower and lender are satisfied about the returns from credit which cover the principal and interest. Furthermore, the basic question pertaining to returns analysis is whether or not the use of credit generates adequate income and is most profitable use. Thus, even though the use of credit may be profitable it should also be examined whether or not it is the most profitable. Similarly, the examination of returns from an investment in terms of generating adequate incomes to compensate for the contribution of family labour and management as well as building owner's equity is also essential. Hence, overall profitability of a farm business must be evaluated to assess the possibility of earning income from most profitable enterprise to compensate the loss from another. Thus, the problem of determining the most profitable use of capital is a part of decision making and involves, (a) the selection of most profitable enterprises (product-product relationship), (b) determining the most economical production techniques (factor-factor relationship), and (c) determining the size of each enterprise (factor-product relationship). However, the following points may be kept in mind while calculating the expected returns from the borrowed funds.

- 1 Estimate the gross returns by multiplying average yields with its corresponding expected average prices, the conservative prices should be used for safety purpose. These gross returns should be worked out both with and without borrowed funds.
- 2 Estimate the total cost both with and without borrowed funds, these costs should be slightly on higher side to take into account the risk.
- 3 Estimate the additional cost and additional returns from the investment, do not use average cost and average returns.

The use of credit becomes an economically sound proposition, if the net cash income is more due to the use of borrowed funds, with a sufficient margin for income variability.

Repayment capacity: The second R of credit

It should also be taken into consideration while extending/borrowing a loan. In fact, it is not only sufficient for a loan to be productive rather it should also generate adequate returns so that loan instalments can be repaid. It is quite possible that a loan may be productive but may not generate adequate income after meeting the family and farm expenses to regularly pay the loan instalments.

The repaying capacity is the amount of money that a farm family would be able to spare from their total earnings so as to repay the loan after meeting his farm and family expenses. Ability to repay a loan is influenced by the income generating capacity of the farm business, off farm earnings, the liquidity of the farm as reflected by the balance sheet and the cash flows on the farm (with due consideration for farm and family obligations). Furthermore, the ability to repay may be influenced by numerous factors but willingness to repay a loan is quite essential. In short run, the current assets must be able to repay the current liabilities.

However, in long run the sufficient income must also be available (after meeting operating expenses, family living expenses and expenses for the farm-firm growth) so that debt obligations can be repaid. In this context, the cash flow analysis of a farm business depicts the complete picture of repayment ability, i.e., the period of cash inflows so that loan terms and payment dates can be tailored with it.

For maximization of the net returns from an investment, the credit is to be used upto the point where additional (marginal) net income equals to that of additional (marginal) cost. Therefore, the repayment of principal and interest depends upon the type of loan taken by the farmers, viz., self-liquidating and non-liquidating or partially liquidating loans.

Self-liquidating loans:- These are loans to acquire goods or services that are completely used up in one production season or in annual production process. These are, infact, the short-term loan (operating expenses) which become a part of working expenses in the single production process. In estimating repaying capacity the borrowed funds are not deducted as costs are included in working expenses. The repaying capacity for such loans should be determined as below:

Repaying capacity = (Gross income including off-farm income) minus (living expenses + working expenses excluding proposed loan +taxes and L.I.C. premiums + other loans and repayments due).

Non-liquidating loans:- These are loans where resources acquired are not expended or consumed up in a single production process, i.e. the acquired resources are consumed over a number of years. Such loans do not completely become a part of the first year's costs and returns from such investments are spread over a number of years. A loan for the purchase of tractor or land reclamation is an example of non-liquidating loan, *i.e.*, all the medium and long term loans are non-liquidating loans. These loans may contribute indirectly to the repayment capacity by enabling the farmer to produce more net income than otherwise would be possible without the use of such resources. The repaying capacity for such loans is worked out as:

Repaying capacity = (Gross income including off farm income) minus (working expenses including seasonal loans + living expenses +taxes and LIC premiums + repayment of other loans due).

The poor debt-servicing capacity can be due to:

- 1 Small operational land with inadequate infrastructures on these farms ultimately result into the lower gross returns.
- 2 Lack of appropriate avenues for off-farm income in the area/region.
- 3 Poor yield of crops due to factors such as poor land, inadequate/erratic rainfall, salinity/alkalinity problems, disease and pest infestations, low adoption of improved technology, etc. Similarly, rearing of low yielder milch animals, small herd size, lack of adequate feed and fodder, veterinary facilities, in-efficient milk marketing etc. may result lower returns from milch animals.
- 4 Sale of crop produce during the post harvest months (also through in-efficient channel), distress sales and poor market infrastructures.

- 5 High production costs due to high input prices (also due to in-efficient purchase of farm inputs).
- 6 Diversion of loans for unproductive purposes, and
- 7 High cost of living.

Above listed, the first four factors reduce the gross returns while the last three factors increase expenses. All these factors reduce the net cash income and there by ability to repay the loan or debt servicing capacity. However, to strengthen the debt-servicing capacity the following factors may be kept in mind:

- 1 Improving net worth of the farm business through savings. The net farm income can be increased by cultivating high yielding crop varieties and rearing high yielder milch animals, optimum combination of crop and livestock enterprises, selecting least cost combination of inputs, most profitable level of input use, removing imbalances in the resource availability and in its use, ploughing off farm incomes, etc.
- 2 Adjustments in the time period of loan repayment, i.e., larger the number of instalments better would be the debt-servicing capacity and vice-versa.
- 3 Adjustments of type of loan, i.e. use of more self-liquidating loans as compared to the non-liquidating loans.
- 4 Adequate supply of institutional credit at cheaper rate of interest alongwith the consumption loan.
- 5 Non-diversion of production loan to the unproductive purposes.
- 6 Efficient sale of farm produce and also the purchase of farm inputs.
- 7 Reduction in the cost of living and working expenses.
- 8 Improving managerial skill of the farmer through Farm Advisory Service or Trainings.
- 9 Use of cash flow statement to adjust the repayments with cash inflows.

Risk bearing ability

Risk bearing ability, the third R of credit, determines the quantum of credit which can be safely used by the farm-firm. It means the ability of borrower to withstand the unexpected low incomes, unpredictable losses and expenses and to continue the farming. It provides the “***last line of defence***” in the use of credit. It is quite possible that a loan may be productive and may also generate adequate repaying capacity but borrower may not be able to afford the shocks of probable financial losses due to poor/inadequate risk-bearing ability. The assessment of risk bearing ability is, therefore, essential since both returns and repayment capacity are based on average estimates of production, prices and costs, which seldom hold true. Farming is exposed to the many natural hazards such as, attack of insects, pests and diseases and also to the price fluctuations. Instability in farm income is more common as compared to the stable farm income. Consequently, most of the farmers are risk- averter rather than the risk preferer. Hence, the variability in gross incomes has to be accounted for before arriving at a fairly stable and also reliable estimates of the level of repayment capacity. The stable repayment capacity, based on deflated gross returns, may be worked out to account for risk-bearing ability of the borrower. For this purpose, the general variability coefficients of the area may be considered due to non-availability of these coefficients for an individual borrower in developing countries. From deflated gross income, deductions should

be made for farm and family expenses and the loans due. The balance would indicate the repayment capacity for the relevant period.

Stable repayment capacity = (Deflated gross returns **minus** working expenses **plus** family living expenses **plus** old debt payments **plus** L.I.C. premium, etc.)

The stable income or financial position though determines the borrower's ability to bear the financial shocks yet the risk bearing ability of a borrower depends upon the following factors:

- 1) Ability and willingness to save.
- 2) Ability to borrow, i.e., credit worthiness of the borrower as a person, especially in bad times.
- 3) Ability and willingness to adjust and withstand the adverse conditions, i.e., reducing both operating and living expenses in bad periods.
- 4) Equity and net worth, the backbone of risk bearing ability. The risk bearing ability can be enhanced by certain measures such as:
 - a) Taking crop, livestock and other insurances.
 - b) Adoption of financial strategies (e.g. internal cash or asset rationing, internal and external credit rationing and reducing farm and family expenses.)
 - c) Adoption of suitable marketing strategies (such as hedging, forward contracts for sale of farm products and purchase of input supplies to reduce price risk).
 - d) Adoption of suitable production strategies (such as flexible production programmes, use of plant protection, weedicides and other farm practices, growing less risky or more stable farm enterprises, diversification of farm production programmes).
 - e) Building up of owner's equity or net worth through savings and personal credit through fair dealings.

Cost of credit

Rate of interest is the price or cost of servicing a loan which is to be paid by the borrower while using it. The various factors associated with the cost of credit include; the cost of obtaining loanable funds (which usually depends upon the sources, demand for and supply of capital in the market), a risk premium i.e. both default risk (a loan may not be fully repaid as and when it falls due and interest rate) or market risk (the possibility of changing interest rate once a loan has been sanctioned), administration's servicing costs associated with the size and term of loan (sometimes overhead costs are very high both on small and large loans) and inflation (the real value of principal payments made in future may be less than the real value of loan received today). Besides, the lender has to take care of abstinence while increasing deposits/savings. Hence, the lender would like to be compensated for their cost of funds, inflation, risk, administrative expenses and also for abstinence.

Concepts about interest rate

Interest rate, being the price of money loans is usually determined by the supply and demand for money. On the one hand, the rate of interest depends upon the supply of money available

to the community; on the other, it depends on the demand for that money, i.e., liquidity preference. In general, as supply of money increases/rises in relation to demand the interest rate falls and vice-versa.

(a) Simple and compound interest:-

The simple interest is the product of principal, the time in years and the annual rate of interest e.g. the interest of Rs.10,000/- for one year with 10 per cent rate of interest equals Rs.1000 and only one payment of interest is made when loan matures. When simple interest is computed for part of a year then time in years is a fraction, with numerator being the term of loan in days and the denominator is days in a year. The amount is called “*exact*” simple interest when 365 days or 366 days in a leap year, are used in the denominator of the fraction. But when 360 days are used as denominator of the fraction, the amount is called as “*ordinary*” simple interest which is slightly greater than the “*exact*” simple interest.

Compound interest:- Here the interest is periodically “*converted into the principal*” i.e. annually, biannually, quarterly, etc. The interval between successive conversion is called the “*conversion period*” and amount due at its end is called the “*compound amount*”. The “*compound interest*” is difference between the compound amount and the beginning principal while “*compound interest rate*” is the rate per conversion period charged on outstanding balance at the beginning of that period.

The amount of interest charged increases with the frequency of compounding and it is very much liked by the lender but disliked by the borrower. The periodic rate or rate per conversion period, referred to as the “*compound rate*”, is the “*True or actuarial rate*”. Thus, true rate is charged against the principal in each conversion period and it decreases as the frequency of compounding increases. The annual rate referred as a true rate only when interest is compounded annually.

(b) Nominal and effective rates:-

The “*nominal annual rate or nominal rate*” is the periodic rate converted on an annual basis (under the situations of converting interest to the principal more than once in a year). On the contrary, the rate of interest actually earned per annum is called the “*effective annual rate*” and is obtained by compounding the true rate for a period of one year. The nominal rate though provides a fairly good basis for comparing loans, yet the effective rate is more precise.

(c) Interest on beginning balance:-

For computing the interest on beginning balance there are two methods:

i) Discount method:- The total interest charges are subtracted or discounted from the beginning principal amount and then loan instalments are fixed e.g. with 10 percent interest rate on Rs. 20,000 for a period of 3 years the interest would be Rs.6000/-. Thus, the borrower will receive only Rs.14,000 and instalments would be computed by dividing Rs.20,000 through total number of payments.

ii) **Add-on-method:-** Here the total amount of interest is added to the principal amount borrowed and borrower initially receives the full amount. The periodic instalments/payments are computed by dividing the principal plus total interest by the total number of payments.

Loan repayment plans

A borrower may have good repaying capacity but defective repayment plan proposed by the lender would render him to become defaulter. It is, therefore, essential to chalk out well thought repayment schedules/plans. The most commonly used repayment plans for repaying the medium and long-term loans are discussed below:

i) **Straight end Lumpsum repayment plan:-** The entire loan is repaid on the expiry of the term but interest amount is paid every year. This plan has advantage of using existing capital where the borrower feels high marginal productivity of capital. Furthermore, this plan assumes that the good year shall balance out the bad year and at the end sufficient repaying capacity would be available to repay the entire loan. However, it happens quite often that at the end sufficient repaying capacity is not left and chances of defaulting the loan become high.

ii) **Partially amortized loan repayments:-** An “*amortized loan*” is one which is repaid in a series of payments/instalments to cover both interest and principal amount. The term “*amortization*” means “*killing by degrees*”, i.e., the repayment of principal loan in a series of instalments.

The partially amortized loan involves small principal payments every year of the repayment term and remaining unpaid principal balance become due at the end as a lump sum or balloon payment. This payment term is slightly better than the earlier one as entire principal loan is not left for repayment at the end.

iii) **Amortized even/level repayment plan:-** Here the equal total payments are made every year i.e. a larger proportion of each succeeding principal amount/instalment and a smaller amount representing the interest. As interest payment decreases, the principal payment increases over the life of the loan to make equal total payment. This repayment plan is more suitable where income flow is constant over the entire period of asset, e.g., tractor or pump set, etc. The following equation is used to calculate the annual repayment instalment on even/level repayment basis.

$$P = B \frac{1}{a} \frac{1}{n \cdot i}$$

Where, “**P**” represents the amount of annual instalment i.e., principal plus interest, “**B**” is the face value of the loan, “**n**” is the number of years for which loan has been given and “**i**” the annual interest rate. The term “ $\frac{1}{a} \frac{1}{n \cdot i}$ ” is read as “*1 divided by a sub n at rate i*” and represents the annuity that “**1**” will buy/purchase for “**n**” years with an annual interest rate “**i**”.

iv) **Amortized decreasing repayment plan:-** It involves the constant principal payment and the declining interest payment on outstanding balance. Consequently, total instalments decline in every succeeding year till the loan is not repaid. The decreasing repayment plan is appropriate when borrower is able to pay the higher initial instalments. This plan is well

suited for farm machinery and equipment loan as a nominal amount of money is needed in initial years for repair and maintenance which helps the borrower to pay the heavy instalments in the beginning.

v) **Graduated loan amortization plans:-** It assumes lower instalments for the repayment of loan during early years as compared to conventional level/even repayment plan. When borrower's income increases, the repayment amount also increases.

vi) **Flexible or variable repayment plan:** - Since amortized repayment plans do not account for income variability overtime, the borrower may become defaulter during the draught year. In variable repayment plan, the higher amounts are repaid in good years while small or no repayment is made in bad years. It is a flexible repayment plan and fits well into the variable nature of farm incomes.

Access to Agricultural Credit Facilities by Women

Development of women received attention of the Government of India in the **First Plan (1951-56)**, with the welfare of disadvantaged groups like destitute, disabled, aged, etc. The **Sixth Plan (1980-85)** adopted a multi-disciplinary development approach with special thrust on the three core sectors of health, education and employment of women. In the **Seventh Plan (1985-90)**, the developmental programmes continued with the major objective of raising their economic and social status and bringing them into the mainstream of national development. The **Eight Plan (1992-97)** played a very important role in the development of women. It promised to ensure that benefits of development from different sectors do not by pass women, implement special programmes to complement the general development programmes and to monitor the flow of benefits to women from other development sectors and enable women to **function as equal** in the development process. The "**Empowerment of women**" became one of the **nine** primary objectives of the **Ninth Plan (1997-2002)**. To this effect the approach of the plan was to create an enabling environment where women could freely exercise their rights both within and outside home, as equal partners alongwith man. The approach to **Tenth Plan (2002-07)** for empowering women was distinct from that of earlier plans, as it now stands on a strong platform for action with definite goals, targets and a time frame. Accordingly, a sector-specific 3 fold strategy for empowering women, based on the prescription of the **National Policy for Empowerment of Women**, included:

a) **Social Empowerment:** To create an enabling environment through various affirmative developmental policies and programmes for development of women besides providing them easy and equal access to all the basic minimum services so as to enable them to raise their full potentials.

b) **Economic Empowerment:** To ensure provision of training, employment and income-generation activities with both "**forward and backward**" linkages with the ultimate objective of making all potential women economically independent and self reliant; and

c) **Gender Justice:-** To eliminate all forms of gender discrimination and thus, allow women to enjoy not only the **de-jure** but also the **de-facto rights** and **fundamental freedom** on par with men in all spheres, viz, political, economic, social civil, cultural, etc.

Women and Micro-credit:- The Tenth Plan recognized the need for a comprehensive credit policy to increase women's access to credit either through the establishment of new micro credit mechanisms or micro-financial institutions or strengthening the existing ones. In this context, expansion of the activities of **Rashtriya Mahila Kosh** have received special attention with adequate financial support in the Tenth Plan. Efforts are made to draw lessons from the success stories of various voluntary organizations which have already established their credentials in the field of micro credit for women and encouraged them to expand their activities, both within and outside their states. Efforts are made to equip all States/Union Territories with **Women's Development Corporations** to provide both "*forward*" and "*backward*" linkages of credit and marketing facilities to women entrepreneurs, besides being active catalyst for empowering women economically.

NABARD'S Exclusive schemes for women:-

1. ASSISTANCE TO RURAL WOMEN IN NON-FARM DEVELOPMENT (ARWIND)

This scheme has objective of encouraging lending to rural women, preferably organized in groups and supported by Voluntary Associations (VAs)/Non-Governmental Organizations (NGOs), Women Development Corporations, Khadi Village and Industries Commission (KVIC)/Khadi and Village Industries Board (KVIB), Co-operative Societies, Trusts, etc. The scheme has both credit and grant components. It is envisaged that women groups organized or sponsored by a suitable agency could avail of bank credit normally not exceeding Rs.50,000/- per woman member for an individual activity or a group activity with 100% refinance support from NABARD.

NABARD considers need-based grant assistance subject to availability of promotional funds to meet the sponsoring agency's expenditure for organization of groups, sensitisation, training and other related expenditures. In case, the sponsoring agency provides services such as supply of raw materials, quality control, marketing, etc., such services undertaken by it, are also eligible for financial assistance under NABARD's credit linked promotional schemes, viz., Mother Units/Common Service Centres.

2. ASSISTANCE FOR MARKETING OF NON-FARM PRODUCTS OF RURAL WOMEN (MAHIMA):-

In this scheme the objective is of extending credit and credit linked promotional assistance to agencies dealing with marketing of non-farm products of rural women with a view to giving a fillip to their efforts for creating a "*niche*" or "*pro-women*" market. The credit is extended by way of refinance, i.e., 100% refinance upto Rs.10 lakh promotional grant. The ceiling on quantum of promotional assistance is 25% of the project outlay of Rs.10lakh, i.e., Rs.2.5 lakh or 25% of the minimum sales turnover, which ever is lower.

The loan assistance through banks is upto Rs.10 lakh by way of refinance and 100% through refinance support. The ratio of grant to refinance is 1:3. Soft loan assistance to agencies for margin money (interest free loan) is provided. The bank will, however, levy a service charge of 3%. Furthermore, it is expected that the Voluntary Associations/Non-Governmental Organizations and other project proponents would be willing to contribute atleast 10-15% of the project outlay by way of their share therein.

DEVELOPMENT OF WOMEN THROUGH AREA PROGRAMME (DEWTA)

Development of Women Through Area Programme (DEWTA) is an approach to promote women specific activities and clusters with the objective of generating employment through entrepreneurship and assisting in setting up of sustainable enterprises. The programme aims to address various needs of women, identified by women themselves, through capacity building, networking and convergence of services for focused implementation and visible impact.

WOMEN'S SELF-HELP GROUPS:-

Micro-finance initiatives of NABARD through its SHG-bank linkage programme has passed through various phases, viz., pilot testing (1992-95), mainstreaming (1996-1998) and expansion (1998 onwards) and has assumed the shape of a Micro-finance movement in the country. The programme has started making inroads in resource poor regions of the country as well. Its main features are:

- (i) The VAs, NGOs and other Self Help Promotional Institutions (SHPIs) including a few banks who play the role of facilitator.
- (ii) SHGs should be in existence for at least six months actively promoting savings and lendings amongst their members.
- (iii) SHGs are normally informal groups.
- (iv) The size of the group is not to exceed 20.
- (v) Banks will finance the SHGs in proportion to the savings mobilized by the group. The proportion of savings to loan could vary from 1:1 to 1:4 (or) even more depending upon the assessment by the bank.

NABARD provides 100% refinance assistance to banks.

RURAL WOMEN'S CLUBS:- NABARD encourages banks to form informal groups of farmers, artisans, etc. and even exclusively of rural women for propagating principle of "*Development through Credit*" (WDCs) inculcating repayment ethics and promoting people's participation in the process of development. The assistance is available on selective basis for launching clubs for rural women, farmers, artisans, etc., at the rate of Rs.3000/- per club per year towards maintenance expenses to the designated Service Area Bank for three years. Clubs are formed for building up mutually beneficial relationships between banks and women borrowers, farmers, etc., in the village covered by the clubs. Such clubs, if run in association with VAs/NGOs, the VAs/NGOs are entitled for additional administrative grant to the extent of Rs.2000/- per club per annum for a period of three years. NABARD also extends maintenance expenses at the rate of Rs.3000/- per annum for three years to the clubs maintained by VAs/NGOs. Various training programmes have been designed for the benefit of rural women folk in the club areas which include training in farm/non-farm, service activities, income generating activities, women development programmes, etc., with the help of designated banks, VAs/NGOs.

SETTING UP OF WOMEN DEVELOPMENT CELLS (WDCs) BY RRBs/SCBs/DCCBs/SCARDBs:-

The objective is to provide promotional assistance to SCBs/DCCBs/SCARDBs and RRBs for setting up “*Women Development Cells*” to pay focused attention for the economic empowerment of rural women through improved and increased flow of credit to them through “*relationship banking*” and formulation of appropriate operational strategies thereof.

The WDCs are constituted by the banks concerned with one or two lady officers to deal with project preparation, appraisal, monitoring, evaluation exclusively for women’s economic development and other related aspects. The lady officer should be a bank employee or a deputationist from sponsor bank (in case of RRBs) or Government Department (in case of co-operative bank) and should have graduate or post graduate qualifications preferably in social science, management, rural development, with experience in project formulation, appraisal, financing and monitoring and should have been specifically earmarked for the purpose. NABARD would arrange sensitization training for such officers. The banks concerned should agree to maintain the cell on a long term basis.

NABARD’s assistance is in the form of “*grant*” to cover 50% of the salary comprising pay and allowances of the designated lady officer(s) plus additional expenditure not exceeding 10% towards supporting staff/or overheads and conveyance charges of key personnel upto Rs.5000/- subject to a maximum of Rs.1, lakh per cell per annum. The balance expenditure will have to be met by the banks concerned. The NABARD’s duration of assistance is initially for a period of 3 years from the date of sanction of the WDC, which shall be extended for another 2 years on merit by NABARD.

The job chart for the “*key personnel*” of WDC also exists. These are: (i) WDC lady officer will identify the potential areas for development of women either on individual or group (ii) Assist the bank in the preparation of Action Plan for financing women borrowers (iii) The Action Plan should be in consonance with the Sub-Plan for Women/gender planning for the district (iv) Identify agencies (NGOs, VAs, etc) for net working for dispensation of credit to women through bankable schemes, (v) Help rural women in the availment of loan assistance from the bank (vi) Sorting out issues relating to credit and other support services to women and initiate the process of better gender awareness amongst banks and communities (vii) Modify internal policies for enhancing the credit, (viii) Strengthening the data base for gender disaggregated figures for planning (ix) Initiate innovative schemes for development of women and help to increase the flow of credit to women (x) Acting as a nodal officer between the bank and the women clients or agencies dealing with women, (xi) Act as a resource person for women related/women specific issues, (xii) Suggest measures for their overall well-being and co-ordinate other agencies in the field.

Selected further readings

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