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Developed by
Industrial Promotion and Technology Branch (UNIDO)
in cooperation with the Inter-Regional Centre for Entrepreneurship
and Investment Training (EDII, Ahmedabad)

Expansion/ Modernization Projects



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INVESTMENT PROJECT PREPARATION AND APPRAISAL

IPPA Teaching Materials

Expansion/Modernization Projects

Module 6

Developed by

Industrial Promotion and Technology Branch (UNIDO)

in cooperation with

The Inter-Regional Centre for Entrepreneurship and Investment Training
(EDII, Ahmedabad)



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MODULE 6 – EXPANSION/MODERNIZATION PROJECTS

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INTRODUCTION

EXPANSION AND MODERNIZATION PROJECTS



A large proportion of investment projects are carried out by existing companies rather than individuals or groups launching new enterprises. These projects usually are performed to expand, rehabilitate or otherwise modify the structure of an existing company or perhaps to merge operations of two or more enterprises. The appropriate method of analysis of such projects differs significantly from that for a new investment.

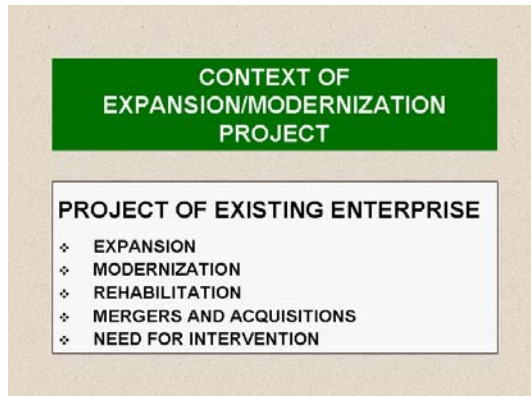
Some of the issues confronting the analyst in such cases are:

What are the consequences of doing nothing? How will the enterprise fare if it continues in its present mode of operations? Does the current configuration of the company represent the best use of the committed resources?

What will be the effect of the project? Will the expanded, modernized or rehabilitated configuration have a positive impact on profitability?

Is the project justified as an investment? Is it sufficiently attractive to warrant commitment of additional resources? Would it be attractive to a new investor?

CONTEXT OF EXPANSION / MODERNIZATION PROJECT



Project of existing enterprise: The method of analysis described is applicable to existing companies for which the project augments or otherwise modifies existing operations. The project may be oriented toward any or all of enterprise functions, from manufacturing to administration or distribution.

Expansion: The existing production capacity can be increased or new lines of production can be added.

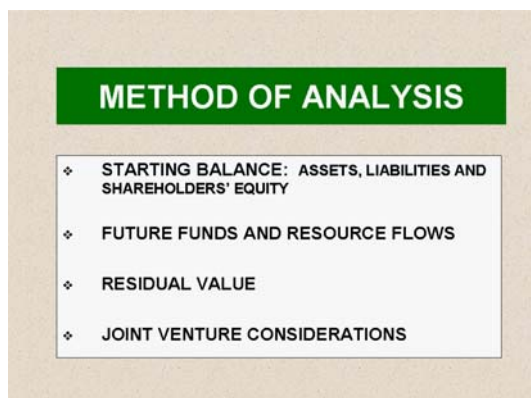
Modernization: The existing technology related to product or production may be upgraded, requiring new investment.

Rehabilitation: Production facilities and other operational elements of the enterprise that have deteriorated from use or neglect may require new investment for rehabilitation.

Mergers and acquisitions: Capital investment can be added to the existing company in the form of a merged or acquired enterprise.

Need for intervention: The impetus for embarking on an expansion or modernization project can arise from negative or positive signals, either deteriorating operating conditions or perceived prospects for increased benefits to shareholders.

METHOD OF ANALYSIS



With the exception of the case of enterprise liquidation, the analysis of an expansion, modernization or rehabilitation project is essentially future-oriented. For example, the original value of existing assets is of little interest. What is important is associated future costs and benefits to be generated. Only those aspects of the past upon which future financial events may be predicated are of interest and relevance.

Starting balance: assets, liabilities and shareholders' equity: Assessment of the project investment requires establishing what the investors are actually committing to the project, i.e. their equity contribution. In addition to simulating future events, the starting balance should reflect the actual contribution of investors to the project.

Future funds and resource flows: In the case of expansion or rehabilitation projects, in addition to financial capital and operating flows there may be physical resources that flow into and even out of the project that should be accounted. An example of physical resources that flow "into" the project are existing finished product and material inventories. A physical resource flow "out" of the project might consist of a physical asset committed to external purposes. In any case, the future flows starting from project inception and ending at the planning horizon of all funds and resources, both capital and operating, should be accounted.

Residual value: At the planning horizon the residual value of assets and liabilities should be accounted. What should be assumed as the value of assets that are expected to exist at that point in time? The pricing system used in the analysis should be one determinant. If constant pricing is employed the values of assets ordinarily shouldn't be inflated to estimate their anticipated value. If the assets are truly expected to change in value relative to general inflation then this could legitimately be reflected in the estimated current value at the planning horizon.

In no case should some assumed terminal value be included to reflect appreciation in share value over time. The future value of shareholdings should be reflected in the surpluses generated during each operational period, discounted at a rate consistent with the expected return on capital. This is equivalent, in every respect, to simulating the reinvestment of all surpluses (and the opportunity cost of resources dedicated to covering deficits) for each operating period.

Joint venture considerations: If the expansion, rehabilitation or modernization project is financed wholly or in part with new equity from external sources, the issue of proportions of ownership by old and new investors inevitably arises. Some benefits of such a project, even though not financed by the existing investors, will rightfully be claimed on the basis of the ongoing enterprise. These types of issues, and suggestions about how they might be resolved, are discussed in the section on Dynamic Indicators, Financial Analysis of JV.

An example of an expansion-rehabilitation case is contained in *Related Documents*.

PRESENT VALUE, EQUITY AND TOTAL INVESTMENT

PRESENT VALUE
EQUITY, TOTAL INVESTMENT

- ❖ Enterprise (E)
- ❖ Enterprise plus project (EP)
- ❖ Project (P)

- ❖ $NPV_{EP} = NPV_E + NPV_P$
- ❖ $PV_{EP} = PV_E + PV_P$

A assessment of the operating entity at each level (enterprise, enterprise plus project, and project) can be determined by finding the present value of future costs and benefits (net flows for each period to the planning horizon), discounted at the opportunity cost of capital. The discount rate should be that for the particular decision-maker. For example, if the project is to be financed by new investors, the discount rate for the project and for existing operations may differ.

Enterprise (E): The net of inflows and outflows for existing operations for each period to the termination of planned operations.

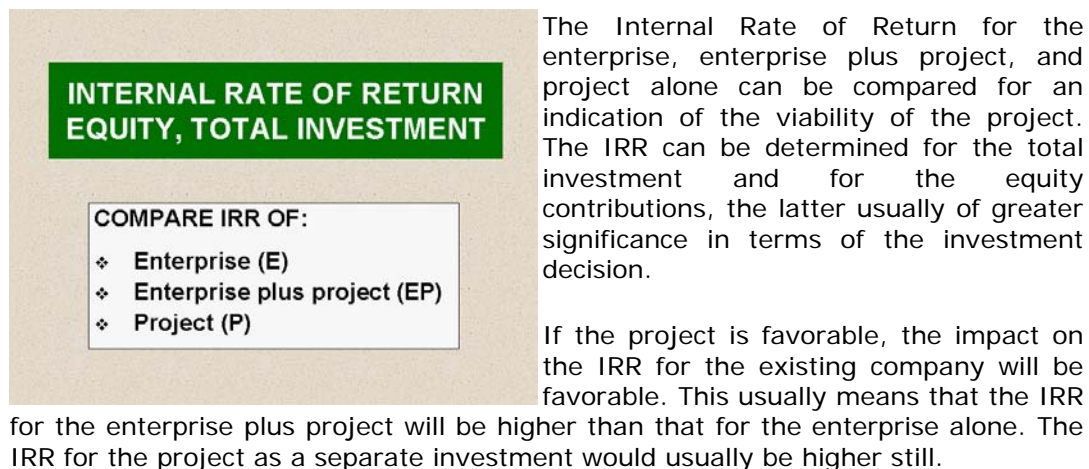
Enterprise plus project (EP): The net of inflows and outflows for existing operations plus the project for each period to the planning horizon.

Project (P): Net flows for the project alone, derived by subtracting the flows for E from those for EP.

NPVEP = NPVE + NPVP: The Net Present Value for the equity at each level should be determined. This is the present value of flows from $t=0$ with the equity (net worth from the initial balance and any future equity contributions) considered as outflow. Using the same time frame for each calculation (and identical discount rates) will result in the additive relationship shown.

PVEP = PVE + PVP: This calculation involves only the flows from $t=0$ onward. The value represents the future value of net benefits over costs, and is a measure of value for the enterprise. It is a way of establishing relative values for the existing company and for the expanded or rehabilitated entity with the project implemented. It is useful for negotiations when new investors are required to provide equity for the project. The relationship holds only if the time frame is identical for each case and discount rates are equal.

INTERNAL RATE OF RETURN, EQUITY AND TOTAL INVESTMENT



The Internal Rate of Return for the enterprise, enterprise plus project, and project alone can be compared for an indication of the viability of the project. The IRR can be determined for the total investment and for the equity contributions, the latter usually of greater significance in terms of the investment decision.

If the project is favorable, the impact on the IRR for the existing company will be favorable. This usually means that the IRR for the enterprise plus project will be higher than that for the enterprise alone. The IRR for the project as a separate investment would usually be higher still.

An IRR for the enterprise plus project lower than that for the enterprise indicates that the project is not favorable. This may indicate that the project investment is too high in relation to any additional benefits to be derived.

For the determination of IRR's the inflows and outflows are identical to those for the determination of NPV previously discussed.

FOREWARNING SIGNALS

FOREWARNING SIGNALS

- ❖ LOSS OF MARKET SHARE
- ❖ SECTOR COMPETITION INCREASING
- ❖ TECHNOLOGICAL OBSOLESCENCE
- ❖ DECLINING TECHNICAL EFFICIENCY
- ❖ DECLINE IN PROFITABILITY
- ❖ DECREASE IN SHAREHOLDER VALUE

Some of the negative signals that can precipitate the need for an expansion, modernization or rehabilitation project are the following:

Loss of market share: The company may be losing out to competitors in regard to the proportion of the market served.

Sector competition increasing: New entrants may be coming into the field, indicating confidence in their ability to successfully compete with existing

producers.

Technological obsolescence: The competitive advantages of emerging technologies may become apparent to management.

Declining technical efficiency: Consumption of resources in production or other enterprise functions may be increasing as a result of deteriorating facilities or management lapses.

Decline in profitability: The need for rehabilitation may be obvious from a declining top or bottom line.

Decline in shareholder value: Markets usually quickly perceive looming problems for the enterprise. A decline in shareholder value may be the first indication of the need for a revitalization project.

MODERNIZATION METHODS

MODERNIZATION METHODS

- ❖ **TECHNOLOGICAL IMPROVEMENTS**
 - QUALITY, YIELD, COST, VOLUME,
- ❖ **CAPACITY ADDITION (EXPANSION)**
 - ECONOMY OF SCALE, INCREASED MARKET REACH
- ❖ **DIVERSIFICATION**
 - PRODUCT DIFFERENTIATION, BACKWARD, FORWARD INTEGRATION, COST ADVANTAGES
- ❖ **REHABILITATION**
 - RESTRUCTURING, DISINVESTMENT, MERGER, ADDITION OF MORE PRODUCTIVE ASSETS

Revitalization of the enterprise can be effected through the implementation of one or more measures:

Technological improvements: The installation of more modern facilities or upgraded monitoring and control functions can result in increases in quality, yield and volume of output and lower costs.

Capacity addition (expansion): Additional capacity to serve new markets or a larger proportion of existing markets can lead to

economies of scale and increased market reach (wider geographical penetration).

Diversification: Additional markets can be addressed, and risk diminished through diversification that can take the form of product differentiation (increasing the degree of uniqueness in products offered), expanding an existing product line or

adding new ones, or backward or forward integration. The latter can provide cost advantages by eliminating elements and their margins in distribution channels.

Rehabilitation: Restructuring involves realignment and reassignment of enterprise functions to achieve greater efficiencies. Disinvestment of unproductive or underperforming assets may permit the reallocation of capital to better uses. Assets can be added through merger with another entity or through acquisition that may provide synergies resulting in greater operational efficiency and profitability.

IMPLICATIONS



The implementing an expansion, rehabilitation or modernization project can have beneficial implications for the enterprise. However, a bit of caution is advised in the case of mergers and acquisitions. History shows that what looks possible in theory is not always achievable. In recent years many high profile acquisitions and mergers have faltered as the dynamics of the marketplace and the clash of corporate cultures create unforeseen difficulties.

Market: Successful projects can enhance the company's position in the market, increasing share or even creating new markets from product or promotional innovations.

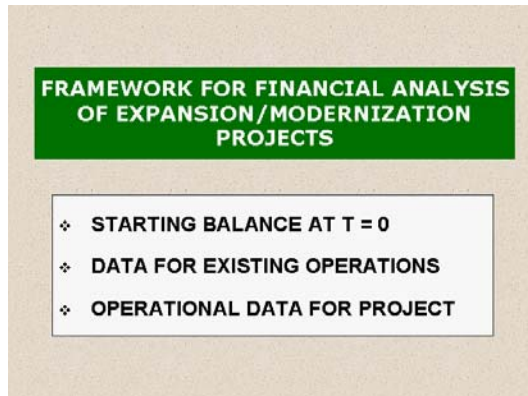
Technology: Improvements in technology can result in more reliable performance in company functions and greater profitability from enhanced efficiencies. However, considering its usually considerable price, projects should be designed to fully exploit the technology and avoid or minimize acquisition of unused features. Remember that it took about three decades for industries to finally learn how to fully exploit the digital computer.

Financial performance: Ultimately the justification for projects of this type is their effect on financial performance. However, decision makers can be unduly influenced by short-term impacts rather than the long-term implications of modernization or expansion. If the planning horizon is too short, new investment will not look attractive.

Organization and staffing: One of the greater difficulties associated with projects of this type is the effect on the organizational structure and personnel. Inevitably there will be consequences as functions are restructured and assigned new responsibilities and as personnel are moved vertically and horizontally, with some added and others sent abroad to new and different challenges.

Increase in enterprise valuation: Markets may perceive greater value in the restructured enterprise. A poorly conceived merger or acquisition may result in decreased market assessment of value. In either case, investors can rely on valuations based on their own assessment of future benefits to be derived from the project.

FRAMEWORK FOR FINANCIAL ANALYSIS OF PROJECT

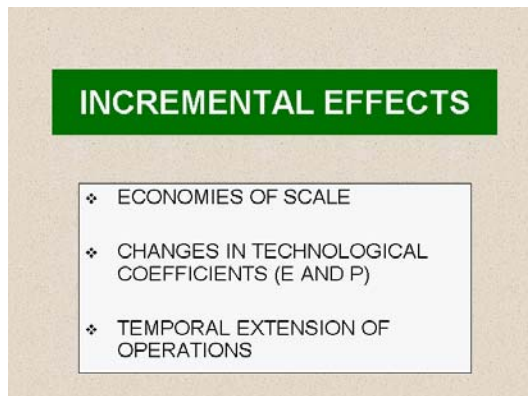


Starting balance at $t = 0$: The balance sheet for the existing company should be developed for the time immediately preceding the start of the project ($t=0$).

Data for existing operations: Projections of the cash flows for the existing company without the project from $t=0$ onward to the planning horizon should be developed for each planning period.

Operational data for project: It may be necessary in some cases to take particular care to isolate operational features of the project, particularly if there are synergistic effects on existing operations. For example, if efficiencies on existing lines result from the project, their effects are attributable to the project and should appear in the project flows, even though these lines were part of the original company.

INCREMENTAL EFFECTS



To assess the viability of the project in isolation it is necessary to determine the incremental effects, the difference between the situation "**with**" the project and "**without**" the project.

Economies of scale: Production factors at higher levels of output may be obtained at lower cost as a result of price breaks or quantity discounts. Unit costs may be reduced by spreading resources over higher levels of production. For example supervisory costs for higher production

may be little different from that of lower production so that unit costs are reduced.


Economies of scale may be applicable to the existing or new facilities, or both. The net impacts should be attributed to the project.

Changes in technological coefficients (enterprise and project): The modernized plant may have lower technological coefficients (unit of input resource per unit of output). Extraction rates from raw materials may be improved. Maintenance costs for the new production system may be lower as a consequence of superior design.

The effects of changes in technological coefficients on existing lines should be attributed to the project.

Temporal extension of operations: The project may result in extending the life of the enterprise. For example, a mine rehabilitation project may result in continuing operations after the time that plant shutdown was planned without the project. The impact of the project is the extension of operations beyond the time of planned shutdown.

SIGNIFICANCE OF STARTING BALANCE



Development of the starting balance, a 'snapshot' of the status of the existing enterprise at the time of project commencement, is an essential feature of the analysis. Values taken from the accounts of the company will usually not serve for this purpose. The important considerations are (1) determination of net worth based on realistic assessments of the values of assets and liabilities, and (2) the effect of balance sheet elements on future cash flows. For example, if assets listed in the balance sheet are valued at their liquidation price or their value in the best alternative application, depreciation rates should be adjusted to reflect their projected impact on earnings and taxation.

Opportunity cost of existing assets: A realistic assessment of the amount of capital invested in the existing enterprise is required. This is usually not reflected in the 'book value' of assets and liabilities as they appear in the company's accounts, but should be valued on the basis of 'opportunity cost', the value in the best alternative use.

Impacts on future financial flows: The starting balance should be constructed to accurately reflect the impact of assets and liabilities on future flows: Inventories, receivables and payables should be valued, and their liquidation timed to reflect realistic assessments of their financial consequences. Receivables, for example, may have to be 'written down' to reflect un-collectable accounts.

Depreciation: Accumulated depreciation should be adjusted to reflect the actual value of assets. Depreciation rates on asset values in the starting balance should be adjusted to simulate their projected impacts on profits and taxes.

Debt service and other obligations: Outlays of principal, interests and financial fees should be adjusted to reflect anticipated payments.

VALUATION OF EXISTING ASSETS

VALUATION OF EXISTING ASSETS

- ❖ LIQUIDATION VALUE
- ❖ VALUE IN ALTERNATIVE APPLICATION
- ❖ PRESENT VALUE METHOD FOR OPERATING ENTITY

There are essentially three ways to value the assets of an existing enterprise.

Liquidation value: One way is to assume that part or all of the enterprise will cease operations and that the assets will be liquidated. Their value to alternative users (buyers) will depend upon whether they will be scrapped or used in other applications, as-is or after rehabilitation by the new owner.

Value in alternative application: The owners of an asset can set a value by considering its use in the next most favorable application. This is its opportunity cost, which can be determined on the basis of future benefits that would be derived by the owners if the asset is so deployed.

Present value method for operating entity: The assets can be valued on the basis of present value of future benefits in the planned application. The value of those assets that are necessary for the continuing operations of the existing company can be valued by determining the present value of net flows resulting from continuing operations. In other words, whatever assets are necessary for the 'operational entity' should be included in the package. For example, if some level of current assets (inventories and receivables) are essential to continuing operations, they should be included in the package against which future benefits are credited. Assets that are not necessary in this regard can be valued separately.

POSSIBLE SCENARIOS

POSSIBLE SCENARIOS

- ❖ ENTERPRISE DOES NOTHING
 - "WITHOUT PROJECT" SCENARIO
- ❖ PROJECT IMPLEMENTED
 - ENTERPRISE PLUS PROJECT SCENARIO
 - PROJECT IN ISOLATION (Incremental effect)

For an ongoing enterprise, at a point in time the proprietors have the choice of essentially "standing pat", i.e. doing essentially nothing that materially affects the tenor or composition of the business, or doing something significant to alter its state and future prospects.

Enterprise does nothing: This is the "without project" scenario. The future will be predicated on the acceptance of the product and extant modus operandi. How markets react will be a function of the

entrenchment of the product and marketing strategy and actions of competitors and substitutes.

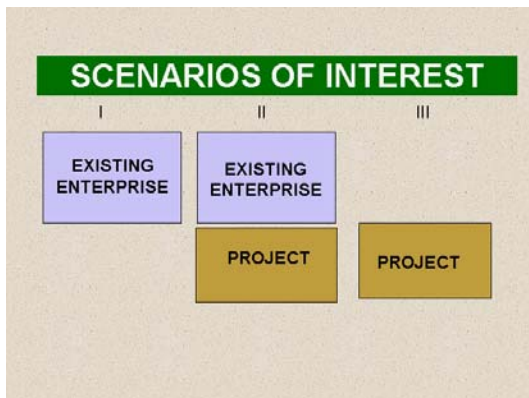
Expansion, rehabilitation, modernization project implemented: The perspectives of existing owners or prospective acquirers are best understood by considering two scenarios in regard to these types of projects. The "enterprise plus project scenario" is used to analyze its future performance with the project implemented. This consists of the financial consequences of future events related to

both existing operations and any additions or modifications resulting from the project, taking into account any changes in the performance of existing facilities resulting from the project.

Another interesting viewpoint is the "project in isolation scenario". This is the *incremental effect* of the project, which can be regarded in some respects as a separate entity, particularly if it is to be financed with new money from external sources. In this case one interesting issue that arises is who will be the beneficiary of synergies or economies resulting from the project. For example, should all benefits of economies of scale accrue to the new investors?

Another advantage in performing this type of analysis is to decide what really is the project. It is all too easy to attribute to the project revenues that are not justified (more accurately attributable to other activities) and to ignore costs that should be included (often the use of existing facilities that are assumed to have 'sunk' costs).

SCENARIOS OF INTEREST



This is a graphical representation of the scenarios that might be of interest to existing proprietors, potential acquirers or mergers, or new investors for an expansion, rehabilitation or modernization project.

The first block (I) represents the analysis of the existing enterprise under the assumption that there will be no significant changes to the product line or modus operandi, except perhaps those that are necessary to maintain current

market share and profitability.

The second block (II) represents the existing enterprise with the project implemented. The configuration of the enterprise includes both the old operations and any changes from the project, which may even include modifications in the product line or process and termination of existing lines and facilities. There would normally be either new production facilities or the application of more advanced technologies in some areas. The existing and/or new facilities would ordinarily be more efficient than the old. Some synergies might be realized, e.g. in a merger the old facilities might be upgraded to the technology provided by the new partner. A larger resulting enterprise might result in economies of scale.

The third block (III) represents the project in isolation. It is the analysis of incremental effects. This would include any of the aforementioned synergies and efficiencies resulting from the project. It is the difference in anticipated performance with and without the project (not before and after).

The financial analysis for each of these scenarios would follow the normal analytical procedures with the exceptions noted above concerning simulation of future financial events. This mainly concerns how the initial balance of assets, liabilities and net worth (or shareholders' equity) are set up.

**RELATED
DOCUMENTS**

EXAMPLE

The development of the financial analysis for an expansion-rehabilitation project is shown in the associated COMFAR files “Expansion-Rehabilitation Enterprise” and “Expansion-Rehabilitation Enterprise + Project”. An Excel file is also included showing the results for the case.

The proprietors of a company contemplate implementing a project that would double the production capacity and upgrade the efficiency of the old plant. The new facilities and modernization would take place in Y1.

In the example a starting balance is developed for the existing enterprise based upon the best estimates of value. Fixed assets with an original value of 800 and depreciated over 5 years at 10% to a book value of 400 are actually valued at 500 (their estimated market value). Current assets are written down from their nominal value of 200 to 100 to account for uncollectables. There is an accumulated operating loss on the books of 100 that can be charged against future earnings up to the full amount. The estimated net worth of the enterprise at the end of the current year (the year before embarking on the project) is 200, the difference between assets and liabilities (300) adjusted for the accumulated loss of 100.

Financial projections showing the income statement and cash flow for the equity participants are included for three scenarios: (1) The company continues to function in its present mode, i.e. the project is not implemented. This is labeled Existing Enterprise (E); (2) The project is implemented; this includes the income and cash flows for both the existing enterprise and the project. Some efficiencies are realized as a consequence of the project in the old line production. Operating costs are reduced as shown. The new investment takes place at the beginning of Y1 and production in the new line commences in Y2. This is labeled Enterprise plus Project¹. (3) The cash flow applicable to equity participation for the project only is developed by simply subtracting the Enterprise flows from the Enterprise plus Project flows.

The Net Present Value (NPV) discounted at 12% (the opportunity cost for existing and new capital) for the equity in each case and the corresponding IRR is shown. The IRR's for the Enterprise, Enterprise plus Project, and Project are 7.8% (8.7% in COMFAR), 18.7% (20.9% COMFAR) and 23.6% (26.5% COMFAR) respectively². The IRR values in COMFAR and Excel differ slightly as a result of small differences in the IRR calculations. The COMFAR values are more accurate.

The NPV for the Enterprise alone is negative (-31), indicating that it is unsatisfactory for the existing owners. The existing company does not earn 12% on its estimated capital or net worth at t=0. With the project implemented the surplus over total

¹ The values shown are from the accompanying files executed on COMFAR, the UNIDO project analysis software. The results for the project alone can be obtained in COMFAR by using the 'Incremental analysis' feature. Both the Enterprise file and the Enterprise + Project file are loaded. Then after calculations for both files are executed the 'Incremental analysis' feature activates when one of the discounted cash flow tables is opened in the 'Show results' module.

² NPV values in the COMFAR files and in the spreadsheet file are essentially identical as the adjustments were made to the spreadsheet NPV calculations to accord with the COMFAR method that is more accurate. IRR values are calculated with the internal spreadsheet functions, creating a slight discrepancy with the IRR values calculated in COMFAR, in which the original and new equity and the residual value in Y6 are correctly discounted.

capital cost (investment plus expected rate of return of 12%) is 280. For the project in isolation, the surplus value generated, over and above the total cost of capital is 311. Most of the value in the Enterprise-plus-Project scenario is clearly attributable to the project.

Suppose new investors are required to provide the equity for the project. At issue is who is to benefit from the efficiencies realized in the old production - the existing owners, the new investors or both. The percentage of ownership and the method of distributing dividends (none are shown) would have to be decided. This could be predicated on the value added to the enterprise from the project. A breakdown of the enterprise valuation for each of the above cases, along with other data, is shown in Table I.

Table I COMFAR Program Results

	NPV* (12%) t=0	Equity (Net worth) t=0	Proportion of total capital	IRR, %	Valuation CF's Y1-Y6 at t=0 */*	Proportion of Valuation %
Enterprise	-30.9	200**	18.3	9	169.1	12.3
Enterprise + Project	280.4	1092***	100.0	21	1372.8	100.0
Project	311.3	892	81.7	26	1372.8- 169.1=1203.7	87.7

* NPV E+P = NPV E + NPV P

** The actual value of equity at the cost of capital (the valuation of the company) is 169, the value of future CF's

*** $200+892^*=1092$ ($892=1000$ discounted to $t=0$ at 12%)

/ The present value of flows for years 1 through 6 (i.e. from $t = 0$ onward)

The proportions of the equity or net worth at $t=0$ for old and new (project) investors is 18.3% and 81.7% respectively. Should this be the proportion of total common shares owned by each of the partners in the combined venture? If the old investors agree to this, their share of the total value of future flows will be 18.3% of 1372.8 or 251, an increase of about 33% $((251-169)/169)$ without committing more of their own resources. Since the project generates 87.7% of total future benefits (1203.7 of the 1372.8 value of future flows) the new investors might argue that their investment should warrant 87.7% ownership with only a 12.3% share for the existing owners. In this way they would reap the benefits of efficiencies in the old production engendered by the project. If the distribution of ownership were on the basis of invested capital (assuming the existing owners prevail in their claim of 200 of equity) the proportions would be 18.3% and 81.7%.

If the new investors accepting anything less than 87.7% ownership, their rate of return would be less than 26% (the return on the project financed with the new investors' capital). For example, if the new investors accepted 80% ownership, the IRR from their perspective would drop to 18% (see example case data).

The benefit of the loss carry-forward for the original owners without the project is shared with the new investors if the project is constructed. However, the method of analysis (determining the incremental effect of the project by subtracting the 'with project' flows from the 'without' project flows), fully captures all differential impacts

so that the interests of the original owners would not be compromised by accepting the proportion of ownership based upon the relative valuation of 'without' flows to 'with' flows.

For example, if the existing owners do accept 12.3% of ownership, considering their true investment of 169 (the present value of future flows at 12% discount rate) in proportion to the enterprise plus project valuation of 1372, their rate of return would be precisely what it was for the enterprise without the project, 12%, even though the pattern of inflows and outflows is different³. This is shown at the bottom of the spreadsheet file (Position of existing owner with 12.3% ownership, valuation basis). Also shown is the situation if the existing owners have 18.3% of ownership, based on the proportion of equity capital assuming their value of 200 for the existing assets.

However there is some justification for the original owners claiming a larger proportion of ownership on the grounds that the project could not exist without the original framework.

Negotiations on these issues would undoubtedly be required.

³ The value should be 12%, but differs because the calculation routines in the spreadsheet differ somewhat from those in the COMFAR program.

EXPANSION - REHABILITATION EXAMPLE

STARTING BALANCE

Fixed Assets	500	Original value 800, book value 400 (5 years depr @ 10%), est. value 600
Current Assets	100	Book value 200, but written down for collectibles
TOTAL ASSETS	600	
Long term loan	400	10% interest on unpaid balance; 100 principle payment per annum
Accumulated loss	100	Loss-carry-forward up to 100 per annum
Equity	300	Paid-in equity 300 (net worth 200)
TOTAL LIABILITIES AND NW	600	

EXISTING ENTERPRISE - INCOME AND CASH FLOW								
YEAR	0	1	2	3	4	5	6	
Revenue		250	350	350	350	350		
Op. cost		230	300	300	300	300		Before interest and tax
Interest		40	30	20	10	0		
Net profit b/t		-20	20	30	40	50		
Loss carry forward		0	20	30	40	30		
Net taxable profit		-20	0	0	0	20		
Taxes (20%)		0	0	0	0	4		
Net profit a/t		-20	20	30	40	46		
Inflow								
Net profit a/t		-20	20	30	40	46		
Depr		80	80	80	80	80		
Residual							200	CA 100, FA 100 (est.)
Total inflow		60	100	110	120	126	200	
Outflow								
Fixed assets		0	0	0	0	0		
Loan principle		100	100	100	100			
Total outflow		100	100	100	100	0	0	
FLOW NPV, IRR E	-200	-40	0	10	20	126	200	
Discounted 12%	-200.00	-35.71	0.00	7.12	12.71	71.50	113.49	
NPV (12%) E	-\$30.9							
IRR	7.8%							
CF FIN PLAN E		-40	0	10	20	126	200	
PV Y1-Y6 12%	\$169.1							

ENTERPRISE PLUS PROJECT - INCOME AND CASH FLOW							
Revenue E		250	350	350	350	350	
Revenue P			350	350	350	350	
Op. cost E		180	200	200	200	200	Reduced by 50 in Y2 and by 100 in Y3-5 due to project
Op. cost P			200	200	200	200	
Interest E		40	30	20	10	0	
Net profit b/t		30	270	280	290	300	
Loss carry forward		30	70	0	0	0	
Taxable profit		0	200	280	290	300	
Taxes		0	40	56	58	60	Maximum 100
Net profit a/t		30	230	224	232	240	
Inflow							
Net profita/t		30	230	224	232	240	
Depr E		80	80	80	80	80	
Depr P			80	80	80	80	
New equity		1000					
Residual							880 E: CA 100, FA 100(est.); P: CA 200, FA 480 (book value)
Total inflow		1110	390	384	392	400	880
Outflow							
Fixed assets		800	0	0	0	0	Investment for project in Y 1
Increase WC			200				
Loan principle		100	100	100	100		
Total outflow		900	300	100	100	0	0
NET FLOW		210	90	284	292	400	880
Less equity	200						Equity - E: 200; P: 1000
Less new inv.		1000					
FLOW NPV, IRR E + P	-200	-790	90	284	292	400	880
Discounted 12%	-200.00	-705.36	71.75	202.15	185.57	226.97	499.34
NPV (12%) E + P	\$280.4						
IRR	18.7%						
CF FIN PLAN E + P		210	90	284	292	400	880
PV Y1-Y6 12%	\$1,373.3						

PROJECT							
FLOW NPV, IRR P	0	-750	90	274	272	274	680
Discounted 12%	0.00	-669.64	71.75	195.03	172.86	155.47	385.85
NPV (12%) P	\$311.3	210	90	284	292	400	880
IRR	23.6%						
CF FIN PLAN P		250	90	274	272	274	680
PV Y1-Y6 12%	\$1,204.2						
NEW INVESTORS WITH 80% OWNERSHIP							
	0	1	2	3	4	5	6
CF FIN PLAN E + P		210	90	284	292	400	880
80% of flow		168.0	72.0	227.2	233.6	320.0	704.0
EQUITY NEW INV		-1000.0					
NET FLOW NEW INV		-832.0	72.0	227.2	233.6	320.0	704.0
NPV (12%) NEW INV	\$163						
IRR NEW INV	18%						
POSITION OF EXISTING INVESTOR WITH 18.3% SHARE OF OWNERSHIP, ASSUMED EQUITY BASIS							
CF FIN PLAN E + P	0	210	90	284	292	400	880
18.3% of flow	0	38.472	16.488	52.029	53.494	73.28	161.22
Less equity	200						
NET FLOW	-200	38.472	16.488	52.029	53.494	73.28	161.22
NPV (12%)	\$37.31						
IRR	17%						
POSITION OF EXISTING INVESTOR WITH 12.3% SHARE OF OWNERSHIP, VALUATION BASIS							
CF FIN PLAN E + P	0	210	90	284	292	400	880
12.3% of flow	0	25.83	11.07	34.932	35.916	49.2	108.24
Less equity	169						
NET FLOW	-169	25.83	11.07	34.932	35.916	49.2	108.24
NPV (12%)	-\$5.95						
IRR	10.9%						

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