Chapter four

Evaluation criteria from the perspective of business profitability and national economic profitability

The economic Rating a process key criteria upon which a comparison of the benefits (gains) and costs. The private sector is interested in the direct relationship between them. As the government sector to Abdicate for the direct and indirect effects of the costs and the amount of national, social and economic gains as well.

The first topic Business profitability standards

The main objective of the establishment of any project is to achieve the biggest profit possible within the financial analysis of projects and highlights the importance of this standard in the capitalist systems in particular. And it is considered average by the standards to judge the success of productive enterprise or failure in that system, but the systems of socialist believes that profit is one of the main objectives in establishing projects also in addition to other goals set out in the plan, and profits in those regimes turned to serving the community through the establishment of service projects.

Here, as a number of different methods and criteria under which is calculated business profitability, namely: -

First, the simple way of return.

Secondly, the way of payback period.

Third, the net present value of return.

Fourth, the internal rate of return.

Fifth: profitability standard.
Sixth: the foundations of calculating Extinctions

Seventh: break-even point Standard.
Eighth: Sensitivity analysis.

First, the simple rate of return (simple return): simple rate of return rate It can be defined as the rate of return or the accounting rate of return, that the interest rate on which to invest an equal amount to achieve an equal income for the years in which the project is investing in work and production. In other words, is "the interest rate that equals the present value of cash flows generated by the project and the costs required by the proposed project?" Or is a percentage of the net profit (after deducting depreciation and tax values) for a project in a normal year and the value of the initial investment.
And compares the rate of return on invested capital at the interest rate of deposit in the bank, if the rate of return greater than the interest rate of the project, prefer to deposit interest rate and vice versa.

Note: the standard is extracted as a percentage ROI. It must be yielding as always greater than the interest Otherwise; the project is considered a loser. If it was a simple rate of return higher than the interest rate the project in the financial market, the average project is good and regaining acceptance. If there is a choice between several projects are, of course, choose the project, which is simple for the biggest return on other projects average rate equal to impose all the other aspects surrounding this project. Being average rate of return calculated according to the following stages:

1. Identify the average annual income

2. Dividing the average annual income on invested capital to determine the rate of return.

The rate can be as follows simple Return (yield) calculation:

$$R = \frac{\Sigma Q\,(P-C)}{I} \times 100$$

Whereas:

R = simple rate of return.

Q = annual production volume or size .

P = price per unit.

C = total cost of the unit for the year i.

I = initial cost of the project (capital Investor- Initial capital).

Example (1):

The initial investment cost for the project is equal to (100,000) dollars, and the size of the expected actual production (5000) and unit price per unit (8) dollars and the total cost of the unit, including the tax is (5) dollars.

<u>the required</u> : Extract the average simple Return

The solution:

$$\text{The average return} = \frac{(8-5)\ 5000}{100000} \times 100 =$$

$$\text{the average return} = \frac{15000}{100000} \times 100 =$$

= 15%

However, production costs and the size are not fixed over the life of the project and for the purposes of accuracy in the calculation and the resolution using the following equation:

$$R = \left[\frac{\sum Qi\,(Pi-Ci)}{N} \div I \right] \times 100$$

Whereas:

R = simple rate of return.

Qi = the volume of production for the year i.

Pi = price for the year i.

Ci = total cost of the unit for the year i.

N = production life (not economic) or the life of the project.

Example(2)

In the table below information on production and prices, and the cost per unit for the old project size (5) years, and the initial cost of the project is 50 million dinars.

Years	Annual production size (Qi)	ID(Ci) The cost per unit	Prices by years (ID) (Pi)
1	800000	95	110
2	1000000	90	105
3	1300000	80	100
4	1500000	70	95
5	1650000	65	95

Requirement / extract the average return on investment?

The solution:

1-total profit=

$12000000 = (15 \times 800000)$

$15000000 = (15 \times 1000000) +$

$26000000 = (20 \times 1300000) +$

$37500000 = (25 \times 1500000) +$

$49500000 = (30 \times 1650000) +$

140000000

2. Average annual income

28000000 = 5 ÷ 140000000 =

$$\text{3-average income} = \frac{28000000}{50000000} \times 100$$

$= \%56$

Example(3): If the size of the output of a project and the prices and the cost and useful life as follows:

Project Life	Annual production size	Cost Unit	Price Unit
1	400000	95	110
2	500000	90	105
3	650000	80	100
4	750000	70	95
5	825000	65	95

Required:

1. Calculate the simple average return on investment if I learned that the size of the investment is 100 million dinars.

2. Does the Clipper project in economic terms if I learned that the prevailing interest rate is 15%.

The solution: 1- The total profit =

$6000000 = 15 \times 400000$

7500000 = 15× 500000

13000000 = 20 × 650000

18750000 = 25 × 750000

24750000 = 30 × 825000

70000000

2. Average annual income=

70000000 ÷ 5 = 14000000

$$\text{3-average Return} = \frac{14000000}{100000000} \times 100 = \%14$$

The project rejected because the result (14%) less than the prevailing interest rate (15%) .

Second: the standard of Pay-Back Period

The Pay-Back period is defined as the time scale for the period in which the investments exploited in the project can fully recover. The period during which the project can recover its funds. In other words the expected period of recovery of the original expenditure during this period.

The recovery period is calculated as follows:

Initial investment

1- Payback period =----------

Net annual cash flow

Size of Investment

2- Payback period =_____

Annual net profit

1

3. Payback period =----------

Simple rate of return

Note:

1. If the initial investment is not equal, it will be collected in a year until we reach the total that is equal to the initial investment.

2 - Initial investment = the original cost of fixed asset + increase in working capital.

Example (1): In table (1) there are four projects for investment and we want to choose one of these four projects.

				The annual net cash flow		(USD) investment	Projects
Sum	Fifth year	Fourth year	Third year	Second year	First year		
280	30	50	80	70	50	120	A

175	15	20	30	50	60	140	B
240	20	30	60	60	70	160	C
310	40	60	70	80	160	200	D

Required : Which Project is best in this all projects

To see all this data about any project

years 2	120 = 70+50	A
years 3	140 = 30+50+60	B
years2.5	160 = 30+60+70	C
years 1.5	200 = 40+160	D

We can choice (d) because it's the best project according to pay-back period

Example (2):

When the head fixed capital (200,000 dinars) and the annual profit is (40,000 dinars), when it will be the steps as follows

200– 40 =160 **First year**

160 – 40 =120 **Second year**

120 – 40 =80 **Third year**

80 – 40 = 40 **Fourth Year**

40 – 40 = 0 **fifth Year**

:. A payback period is (5) years

or it can be solved according to the fair the following:

$$\text{payback period} = \frac{200000}{40000} = 5 \text{ year}$$

Example (3):

In Table (2) total revenue and total costs (without extinction) note that the total investment for the project is (36) thousand dinars.

the years	Revenues (thousand dinars)	Costs without extinction	Profits
2010	25	18	7
2011	30	19	11
2012	37	20	17
2013	33	22	11
2014	36	22	14
	161	**101**	60

Required: Calculate the payback period:

The solution:

* Revenue - Cost = Profit

* Average annual profit = 60 ÷ 5 = 12

* Payback Period = 36 ÷ 12 = 3 years.

And it can use another method called a manner that put the profits from the investments are as follows

36 - 12 = 24

24-12 = 12

12 –12 = 0 or three years, this means that the payback period is 3 years

Example (4):

In Table (3) About three different projects, the payback period is as shown in the accounts in the table of life will choose whichever is different according to the economic assets?

Data	Project A	Project B	Project C
Investments	**12000**	**12000**	**12000**
Average annual profit	**3000**	**3000**	**3000**
Life of the project	**5**	**8**	**4**
Gross profit	**15000**	**24000**	**12000**
Payback period	**4**	**4**	**4**

The solution:

Seen from the above information that the project (B) is better because it:

(A) achieves appropriate period of recovery.

(B) The total and average more profits.

(C) The longest period of his life.

Third: Net present value of return

the main feature of this standard is taking the time element into consideration when revenues and costs of the the proposed project. This means that distinction can be made using this standard between the monetary value of the unit during the different years of the life of the project, and can thus revenues and costs expected to be achieved in the future of the project estimate during the useful life of the project reflecting the value at the present time, by adopting the idea of an opponent and summed up the idea of an opponent in "reducing the stream of benefits (returns) and future costs of the project, equivalent to its value at the present time."

And measured by the present value of the project's net production revenue from the proceeds of the difference between the present value of the revenue stream and the present value of the stream of costs during the life of the project. The present value of all net profits (s) during the life of the project can be represented by the following equation: **NPV = Sum Si Qi (Pi- Ci)–C**

Whereas:

npv = net present value of return.

S = discount rate.

N = years.

Qi (Pi- Ci)= annual cash flow.

C = initial cost of the project.

Si = a discount coefficient can be expressed as the following:

$$S = \frac{1}{(1+p)^n}$$

According to this standard, the projects that achieve positive present value of the net return can be accepted and otherwise enslave projects that achieve a negative value. But who is taken on this criterion (which is how you can choose between multiple positive with a net value of projects. It can illustrate the piece through the following example:

Example (1):

If we have two projects (A) and (B)

The first :

* Costs 100 monetary units.

* Returns 150 monetary units.

* Net Return = 150-100 = 50 monetary units. (Positive value)

The second:

* Costs in 1000 monetary units.

* Revenue in 1100 monetary units.

* Net Return = 1100-1000 = 100 monetary units. (Positive value)

Note:

1. If you look at the two projects, we find that both are positive.

2. If you look at net returns, we find that the project compared to the best B Project A, because the net yield for the project equal to B (100 MU) and greater than the net return for the project, which amounted to A (50 MU).

3. We will choose this project (B) according to this method is that it has a positive net present value and greater. But the choice will be not correct, either by economic logic chooses A project because the cost of the first project, much of the second project on the one hand and on the other hand Revenues 50% compared to the project B which amounts to 10% less.

Example (2):

Indeed, data from the initial project cost of Default (100,000) and a monetary union and a life expectancy of 5 years and a discount rate (6%) and the value of the rubble (25000) monetary unit.

Years	Production size (MU)	unit price (MU)	Unit cost (MU)	price- cost	Cash Flow Qi(pi-ci)
1	25000	2	1	1	25000
2	28000	2	0.92	1.08	30240
3	30000	1.9	0.93	0.97	29100
4	35000	1.9	0.86	1.04	36400
5	35000	1.9	0.86	1.04	36400

Required: calculate the net present value of the expected project.

The solution:

1. The present value of the flows of the project by Default years:

Years	Cash flow Qi(pi-ci)	Discount factor when the discount rate (6%) (Si)	The present value of cash flow Si Qi (pi-ci)
1	25000	0.9434	23585
2	30240	0.89	26913.6
3	29100	0.8396	24432.36
4	36400	0.7921	28832.44
5	36400	0.7473	27201.72
total summation			**130965.12**

2. So the net present value equal to:

130965.12 – 100000 = 30965.12 Mu

As is well known that the fixed assets of the project have value and which is called the **value of the rubble**, so let we must take into account the value of the rubble net income you get production unit at the end of the project life. Because it is the other representing a return of the project, provided that the value of turning the rubble in the last year of the life of the project to their present value (beating her opponent in the coefficient in the last year), which makes the equation formula as follows:

S = Sum Qi(Pi- Ci)+ R (z)) –C

Whereas:

R: discount on last year coefficient.

Z: the value of the rubble.

Since the value of the rubble = 25000 (Mu) The final results will be like this:

30695.12 +(25000 ×0.7473) - 100000

30695.12 +(18682.5) - 100000

=50352.38 **Mu**

Example 3:

We have three cost of each project ($ 1,000) and the Return of each of them equally and equal to ($ 1,200), the project life adult (5 years) each.

years	Project A	Project B	Project C	The current value of the dinar
1	350	150	0	0.952381
2	300	100	0	0.907025
3	300	150	200	0.863838
4	150	400	400	0.822702
5	100	400	600	0.783526
Sum	1200	1200	1200	

Required: What is the best project at a discount rate (5%).

The solution: Discounted return

Project A	Project B	Project C
333.3	142.9	0
272.1	90.7	0
259.9	129.6	172.8
123.4	329.1	329.1
78.4	313.4	470.1
1066.4	1005.7	972

And after subtracting the cost (in 1000) for each of them will get:

$1066.4 - 1000 = 66.4$

$1005.7 - 1000 = 5.7$

$972 - 1000 = -28$

This is the first project will be the best

Example 4

If you have the following data from the two projects (A and B).

the details	Project A	Project B
The investment cost of the project	$12000	$18000
The useful life	5 years	4 years
Annual net revenue	$3000	$5000

Knowing that:

1. the cost of the initial investment paid a single payment for the project (A).

2. Pay the initial cost of investment in two equal installments, the first when incorporation and the second in two years for the project (B).

3. The discount rate is the prevailing (7%) (Prevailing interest rate).

Required: Which projects is a better way by the net present value?

The solution:

The project (A):

1. The present value of the cost for project (investment cost) is $ 12,000 pays for it all at once.

2. The present value of return (Revenue) net will be as follows:

First year 3000 × 0.935 = 2805

Second year 3000 ×0.873 = 2619

Third year 3000 ×0.816 = 2448

Fourth year 3000 × 0.763 = 2289

Fifth year 3000 × 0.713 = 2139

Sum = 12300

So the total present value of revenues (revenues) = 12300

Net Present Value = sum of discounted revenues - total discounted costs

12300-12000= **300$**

The project (B):

1-extract discounted investment cost.

A-9000 for the first installment not discounting to drive it in the course of incorporation, but we are discounting the second installment, which shot just after two years at a discount rate (7%) and we will get:

B-second installment 9000 × 0.873 = 7857 $

Total investment cost is discounted:

9000 +7857 = 16857 current value of the investment

2. In the same way extract net revenues discounted:

First Year = 5000 × 0.935 = 4675

second year = 5000 × 0.873 = 4365

Third Year = 5000 × 0.816 = 4080

Fourth Year = 5000 × 0.763 = 3815

So the total present value of revenues (revenues) = 16,936

Net Present Value = sum of discounted revenue - total costs discounted

16936-16857=$79

Fourth, the internal rate of return method (IRR)

The basic idea it is to find the discount rate, which use equal to the investment value with the current value of the net cash flow over the life of the project, in other words is the discount rate that gives the project the present value of the cash flow is equal to zero, This rate can be calculated by the equation following:

IRR = discount rate at least + difference between the discount price ×

$$\frac{\text{Net present value of at least discount price}}{\text{the difference between the net present value of the price discount}} \times 100$$

Note:

1. The project in which the internal rate of return equal to or accept more than the discount rate prevailing in the market, whenever this rate is higher than the discount rate the more the project is better than the other.
2. As a result of this equation are in percentages.

Example (1):

The following data represent the total revenue and costs for industrial project supposed to produce iron.

Required:

Calculate the internal rate of return for the project, noting that the approved discount rate ranging between (9% - 15%), as the prevailing interest rate in the market is 12%.

Years	Revenues	Costs	discount rate of 9%	Discount rate 15%
1	32000	82000	0.9174	0.8696
2	65000	98000	0.8417	0.7561
3	120000	100000	0.7722	0.6575
4	120000	100000	0.7084	0.5717
5	120000	100000	0.6499	0.4972
6	120000	100000	0.5963	0.4323
7	120000	100000	0.5470	0.3759
8	140000	100000	0.5019	0.3269

The solution:

Years	Revenues	Costs	discount rate of 9%	Discount rate 15%	The present value of the Revenues at 9%	The present value of the costs at 9%	The present value of the Revenues at 15%	The present value of the costs at 15%
1	32000	82000	0.9174	0.8696	29356.8	75226.8	27827.2	71307.2
2	65000	98000	0.8417	0.7561	54710.5	82486.8	49146.5	74097.8
3	120000	100000	0.7722	0.6575	92664	77220	78900.0	65750
4	120000	100000	0.7084	0.5717	85008	70840	68616	57180
5	120000	100000	0.6499	0.4972	77988	64990	59664	49720
6	120000	100000	0.5963	0.4323	71556	59620	51876	43230
7	120000	100000	0.5470	0.3759	65640	54700	45108	37590
8	140000	100000	0.5019	0.3269	70266	50190	45766	32690
Total					**547189.3**	**535283.4**	**426903.7**	**431565**

1-net present value at the discount rate of 15%:

426903.7-431565= -4661.3$

$$\text{internal rate of return} = 9 + 6 \times \frac{11905.9}{(-4661.3) - 11905.9}$$

$$= 9 + 6 \times \frac{11905.9}{(4661.3) + 11905.9}$$

$= 9 + 6 \times (0.718) =$

$9 + (4.308) = \%13.308$

So we accept the project because the internal rate of return is 13% larger than the prevailing interest rate, which is 12% price.

Example 2

the following data represent the aesthetic revenues and total costs of the project are supposed to produce industrial clothes.

- Note that the approved discount rate of between (18% -20%)
- Note that the interest rate in the market is 16%.

Years	Revenue	Costs
1	132000	182000
2	165000	198000
3	220000	200000
4	220000	200000
5	220000	200000

Required: Calculate the internal rate of return for the project.

Example 3

The following data represents total revenues and costs for an industrial project to produce fabrics.

Years	Revenue	Costs	Discount rate 9%	Discount rate 15%
1	**32000**	**82000**	**0.9174**	**0.8696**
2	**65000**	**98000**	**0.8417**	**0.7561**
3	**120000**	**100000**	**0.7722**	**0.6575**
4	**120000**	**100000**	**0.7084**	**0.5718**
5	**120000**	**100000**	**0.6499**	**0.4972**

6	120000	100000	0.5963	0.4323
7	120000	100000	0.5470	0.3759
8	140000	100000	0.5051	0.3269

Required: -

Calculate the internal rate of return for the project, noting that Discount rate approved between (9% - 15%), and the prevailing market interest rate of (12%), and for the purpose of excluding the risk or uncertainty in the future assume increased costs for (2 %).

Fifth: Standard profitability:

The standard is divided into three main profitability sections: -

A: Standard profitability.

B: Standard profitability rate.

C: The standard capital turnover rate.

$$\text{A: Standard profitability} = \frac{\text{The annual net profit forecast}}{\text{Total capital}} \times 100$$

Note: choose the project that achieves the highest rate.

Example (1):

Below three projects (A-B-C) specific to each project and information.

Sequence	data	Project A	Project B	Project C
1	**Fixed capital**	200	300	150

2	**Working capital (variable)**	40	80	70
	Total capital	240	*380*	*220*
3	**Annual discount rate**	٪8	8%	8%
4	**Annual output value**	650	800	500
5	**Taxes and other expenses**	110	100	80
6	**The annual net profit forecast**	40	50	30
7	**Annual costs**	500	650	390
8	**Life of the project**	10	15	15

Required: What is the order of the project in terms of profitability?

Solution:

$$\textbf{project A} = \frac{40}{240} \times 100 = ٪17$$

$$\textbf{project B} = \frac{50}{380} \times 100 = ٪13$$

$$\textbf{project C} = \frac{30}{220} \times 100 = ٪14$$

We choose this project (A)

B: Standard profitability rate.

$$\text{A: Standard profitability rate} = \frac{\text{Net annual income}}{\text{Fixed capital}} \times 100$$

Note: Select the project that achieves the highest rate.

Example (2):

Below are three projects (A-B-C) and information for each project?

Sequence	data	Project A	Project B	Project C
1	**Fixed capital**	200	300	*150*
2	**The annual income**	30	*50*	*45*
3	**Expenses**	10	*15*	*5*
4	**Net annual income**	20	*35*	*40*

Required: What is the order of the project in terms of standard profitability rate?

Solution:

$$\textbf{project A} = \frac{20}{200} \times 100 = \%10$$

$$\textbf{project B} = \frac{35}{300} \times 100 = \%12$$

$$\textbf{project C} = \frac{40}{150} \times 100 = \%27$$

We choose this project (c)

C: Standard capital turnover rate:

It is the ratio between the annual output value of the project and the capital. This ratio (the speed of capital turnover) reflects the project's ability to achieve profits without the need to estimate or calculate the profit.

$$\text{C: Standard capital turnover rate} = \frac{\text{Output value}}{\text{Total capital}} \times 100$$

Note: Select the project that achieves the highest rate.

Example (3):

Below are three projects (A-B-C) and the information for each project is the order of the project in terms of the rate of turnover of capital?

Sequence	data	Project A	Project B	Project C
1	**Total capital**	*200*	*300*	*160*
2	**Output value**	*600*	*1200*	*800*
3	**Capital turnover**	*3*	*4*	*5*
4	**Arrange for projects upon selection**	*Third*	*Second*	*First*

If the first project with a profit rate (6%) and the second (8%) and the third (4%), the arrangement of these projects will be as follows:

Net profit for the project (A) = 3 x 6 = 18 Third
Net profit for the project (B) = 4 × 8 = 32 First
Net profit for the project (C) = 5 x 4 = 20 Second

It is a different order arrangement than the first case.

Example (4):

In the table below are three alternatives to an industrial project (A.B.C) and information for each project.

Required:-

1. What is the order of alternatives in terms of business profitability?
2. What is the order of alternatives in terms of profitability rate?

Sequence	data	Project A	Project B	Project C
1	Fixed capital	1200	1800	900
2	Annual costs	3000	3900	2340
3	The annual income	270	450	405
4	Annual discount rate	٪8	8%	8%
5	Age of production project	10	10	15
6	Working capital	240	480	420
7	Net annual income	120	210	240

Example (5):

Below are three projects (A - B - C), and information for each project: -

The details	Project A	Project B	Project C
Fixed capital	600	900	450
Variable Capital	90	150	135
Expected annual net profit	120	150	90
Net annual income	60	75	120
Output value	1800	3600	2400

Required: These projects are arranged according to:

1- Business profitability.

2- Profitability rate.

3. Capital turnover.

Sixth: Basis of Calculating Spreads

Depreciation or so-called depreciation of assets or depreciation of assets is an accounting charge carried at the expense of profits and losses and reflects the use of assets and the depreciation of their value as a result of such use or statute of limitations in order to reach the figure reflects profits as a reflection of the truth.

First: Depreciation:

Depreciation is calculated in many different ways, but the most important and most common are:

(A) Fixed-line method:

Depreciation is calculated on the basis of a fixed percentage of the original value during its economic life as in the following equation:

$$D = \frac{C - S}{N}$$

Whereas:

D = Annual depreciation premium.

C = initial value of the origin.

S = The value of the ruins.

N = the economic age of the original

The rate of depreciation as follows

$$\text{Depreciation rate} = \frac{1}{\text{Economic Age}} \times 100$$

Example (1):

It is expected that the value of capital repairs and modernization during its economic life ($ 2000), the value of the sale of the rubble of $ 500 and its economic life (10 years), what is the depreciation rate and its annual amount under the straight line method?

The solution:

$$\text{Annual depreciation} = \frac{1000 - 500}{10} = \mathbf{950\ \$}$$

$$\text{Percentage (depreciation)} = \frac{1}{10} \times \mathbf{100} = \mathbf{10\%}$$

Example (2):

Machine price ($ 8000), and its value as scrap ($ 1,400) and her economic life (10 years).

Required: Calculate amortization rate using the fixed-line method?

The solution:

$$\text{Rate of depreciation} = \frac{800 - 1400}{10} = \mathbf{660\ \$}$$

B) The reduced installment method:

Depreciation under this method is calculated using the discount rate of the original value as in the equation below:

$$D = 1 - (\frac{S}{C})^{\frac{1}{N}} = D = 1 - \sqrt[N]{\frac{S}{C}}$$

Annual depreciation under this method decreases each year compared to the previous year.

Example (3):

Machine value ($ 1000) and the value of the sale as rubble is ($ 100) and its economic life (10 years), found in a decreasing installment method depreciation rate as well as the current sale value in the 6 year.

The solution:

$$D = 1 - \sqrt[10]{\frac{100}{1000}} \qquad = 1 - 0.79 = 0.21$$

The details of this process are carried out through the use of the fixed percentage of depreciating depreciation Agencies:

First Year: (Current Selling Value)

The amount of the first year premium $1000 \times 0.2057 = 205.7$

$1000 - 205.7 = 794.3$ $ (Selling Price)

The amount of the first year premium $1000 \times 0.2057 = 205.7$

(Selling value) $1000 - 205.7 = 794.3$ $

Second year: (current sales value)

The amount of the second year premium is 0.2057 x 794.3=163.4

(sales value) 794.3– 163.4 = $ 630.9

Third year: (current sales value)

The amount of the third year premium is 630.9 x 0.2057 = 129.8

(Selling value) 630.9-129.8 = $ 501.1

Fourth year: (current sales value)

The amount of the fourth year premium is 501.1 x 0.2057 = 103.1

(Selling value) 501.1- 103.1 = $ 398

Fifth year: (current sales value)

The amount of the fifth year premium is 398 x 0.2057 = 81.9

(Selling value) = 398- 81.9 = $ 316.1

Sixth year: (current sales value)

Sixth year premium amount is 316.2 x 0.2057 = .6502

(Selling value) = 316.2 - 65.02 = $ 251.18

National economic profitability standards

The standards or measures of national economic profitability have an important and clear difference compared to the national profitability standards, and the most important criteria adopted to measure national economic profitability are:

First: Foreign exchange standard (abundance in foreign exchange - benefit from foreign exchange).
Second: the benefit-to-cost standard.
Third: the standard of production-to-costs.
Fourth: The standard of return on investment.
Fifth: The Capital Intensification Standard.
Sixth: The standard of employment and wages.
Seventh: The value-added factor.
Eighth: capital laboratories to production.
Ninth: The criterion of the rate of social return.

First: Foreign exchange standard (abundance in foreign exchange - benefit from foreign exchange):

Foreign exchange is one of the rare elements of production, especially in developing countries. Reliance on this criterion will lead to preferring projects that require the least amount of foreign currency, or that generate the largest return on foreign exchange, either by export or by replacing the products of those projects with Imported goods.

One of the important reasons that lead to the adoption of this standard, and consequently the establishment of industrial projects for imported goods, is the desire to provide foreign currency through the way of reducing payments from that currency in order to benefit from them for strategic purposes (economically, socially, politically) such as obtaining production equipment or raw materials or Complementary parts not available locally.

We choose the project that needs the least amount of money estimated in foreign exchange, especially fixed and working capital and maintenance, as well as the production of goods that replace imports. The following parameter is used to calculate foreign exchange:

$$\text{Foreign exchange factor} = \frac{\text{Net product added in foreign exchange}}{\text{Capital investment}} \times 100$$

Example (1):
If the establishment of a project costs the size of the capital investment (8) million monetary units in hard currency, and at the same time produces a value of (1200,000) monetary units annually in hard currency, the foreign exchange factor based on the above formula becomes as follows:

$$\text{Foreign exchange factor} = \frac{1200000}{8\ 000000} \times 100 = 15\%$$

Note: The project that gives the best laboratory is preferred.

However, the criterion remains suffering from defects and intakes, and the reason for this is that a large amount may be spent on importing a specific commodity such as planes, for example, but the cost of setting up a factory for it drains a foreign currency larger than the cash spent on importing it, so this indicator needs more accuracy and scientific study.

Therefore, it is necessary to rely on the indicator more precisely, which is the expected saving rate in foreign currency. The results of the last indicator can be determined by comparing the amount of savings expected in foreign currency - as a result of producing the commodity locally - with the estimated cost of setting up the project in foreign currency in the country. During the use of the following equation:

$$\text{The expected savings rate in foreign currency} = \frac{\text{The expected annual savings in foreign currency}}{\text{The expected investment cost in foreign currency}} \times 100$$

Example (2):
If the establishment of a project costs (8) million monetary units in hard currency, while achieving the redemption of the value of (2) million monetary units annually in hard currency, the ratio of saving in hard currency according to the above formula is

as follows:

$$\text{Expected savings rate in foreign currency} = \frac{2000000}{8 \text{ million}} \times 100 = 25\%$$

This means that by establishing this project, we can save annually (25%) of the foreign exchange that was previously allocated to the import.

Second: the benefit / cost ratio

This standard is considered one of the complementary criteria of the net present value (NPV) standard, and is used in selecting the project that achieves the highest evidence of profitability, and is therefore used in the arrangement of investment projects that achieve positive values. It is clear that the economic project has multiple economic effects, such as increasing the production of the units it produces, creating new job opportunities, Reducing the need for foreign capital, by increasing exports, reducing imports, or both, often having other cultural, social, or health implications. Based on this, if we are able to find the amount of these benefits and attribute them to costs, we can obtain a factor that shows us the amount of reaching the society's goals. This criterion compares the benefits (returns) with the discounted costs, and they are calculated as follows:

$$\text{Ratio of returns (benefits) to costs} = \frac{\text{Total discounted benefits}}{\text{Total costs deducted}}$$

Note: The general rule in using this criterion in evaluating projects is acceptance of projects in which the ratio of returns (benefits) to costs is one and more correct.

Example (1):

If there are three projects (A, B, and C), the information is available as shown below :

Required information	Project A	Project B	Project C
1- Fixed capital	200	300	500
2- The net annual production value	50	70	80
3- The net production value	20	30	40
4- Consumption (extinction)	15	25	20
5- Indirect benefits	40	60	80
6 - Total costs	35	55	60
7- Benefits (returns)(2 + 5)	90	130	160

Required: Arrange projects according to returns to costs and benefits to costs.
The first requirement:
Returns to costs:

$$\text{Project A} = \frac{50}{35} = 1.42$$

$$\text{Project B} = \frac{70}{55} = .127$$

$$\text{Project C} = \frac{80}{60} = .133$$

The second requirement:
Benefits to costs:

$$\frac{90}{}$$

Project A = $\frac{\text{_____}}{35}$ = 2 .57

Project (b) = $\frac{130}{55}$ = 2.36

Project C = $\frac{160}{60}$ = 2.66

Third: The criterion of the rate of production to costs:

This standard compares production with total costs, and is calculated as follows:

$$\textbf{Production-to-cost ratio} = \frac{\textbf{Amount or value of net annual production}}{\textbf{Total costs}}$$

Note: Of course, the greater that difference between the production value (the amount of production) and the total costs, that is better.

Example (1):

If there are three projects (A, B, and C), the information is available as shown below, and it is required to clarify the priority arrangement of the projects according to production to costs.

Required information	Project A	Project B	Project C
1- Fixed capital	200	300	500
2- The net annual production value	50	70	80
3- Operating expenses	20	30	40
4- Consumption (extinction)	15	25	20

5- Total costs	35	55	60

The solution:

$$\text{Project A} = \frac{50}{35} = 1.42$$

$$\text{Project B} = \frac{70}{55} = .127$$

$$\text{Project C} = \frac{80}{60} = .133$$