

THE ECONOMIC-FINANCIAL FEASIBILITY

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1. INTRODUCTION

This chapter aims to offer students the main economic-financial analysis tools that can be used to draw up a Business Plan (from now on BP).

In other words, it is necessary to verify how convenient the business idea is, i.e. whether it is sufficiently profitable compared to other investment alternatives and/or compatible with the financial structure of the company. Furthermore, it is necessary to verify in this phase whether the previously established settings are capable of achieving the fundamental balances of capital solidity, financial solvency and economic profitability, the definitions of which are given below.

Capital solidity expresses the company's ability to ensure the balance between the system of capital investments and that of financing sources, verifying whether there is temporal homogeneity between the composition of the activities and the financial structure.

Financial solvency is the expression of the company's ability to cope, at any moment and promptly, with its cash outflows (or loans) through suitable inflows (or sources of financing).

Economic profitability, on the other hand, indicates the company's ability to generate income at a rate that allows it to remunerate its investments conveniently (compared to investment alternatives). These determinations represent the indispensable prerequisites for the growth and sustainable development of the company as well as the condition for being able to access further sources of financing (risk and/or credit).

2 . FINANCIAL STATEMENTS AND THEIR RECLASSIFICATIONS

The further analysis step in drafting the BP must therefore be the analysis of the **Economic-Financial Feasibility**.

The sources for this type of audit may be different, but, among the statements that can be used, the Balance Sheet (BS) and the Income Statement (IS) undoubtedly represent the main information base.

It is necessary, however, to reclassify BS and IS beforehand to obtain homogeneous value aggregates, useful for highlighting the most significant economic-financial parameters of the company situation.

It is preferable to start from the BS, whose asset and liability items are generally reclassified about their ability to convert into active and passive financial flows according to the liquidity and collectability criteria respectively.

Usually, the BS is reclassified about the following aggregates: immediate liquidity, deferred liquidity, availability and net fixed assets for assets; current liabilities, consolidated liabilities and equity for liabilities.

The IS items, however, are aggregated into classes of values, each expression of the income dynamics, and divided according to the contribution to the formation of the economic result of the typical and extra-typical (accessory) management.

The reclassification methods followed can be different, such as **contribution** and **value-added**. In this last case, the value of production, consumption of raw materials, and industrial, administrative and commercial costs are considered as aggregates, from the difference from which the added value arises.

The size in question, an indicator of the corporate wealth produced, remunerates:

- a) the labour factor through the payment of wages;
- b) the capital factor through the depreciation quotas;
- c) external financiers through interest;
- d) the State with the payment of taxes;
- e) the members through the operating profits, if produced.

What remains after remuneration of the capital and labour factors is the operating result of typical management, the difference between typical revenues and typical costs, and an indicator of the ability to efficiently combine the factors of production. Finally, from the algebraic sum with the balance relating to asset, financial, extraordinary and fiscal management, the net operating result or net profit is obtained.

For illustrative purposes, the BS and IS schemes specifically reclassified for the economic-financial analysis are shown in Tables 1 and 2. For a more immediate and effective view of the financial statement results, the aforementioned items can be expressed both in absolute value and as a percentage of total loans and turnover respectively.

Table 1 - Reclassified balance sheet

Balance Sheet	Absolute values	Percentage values on total loans
Earnings	200	4.3%
Bank	300	6.5%
Immediate liquidity	500	10.8%
Commercial credits	250	5.4%
Various credits	100	2.2%
Deferred liquidity	350	7.6%
Warehouse inventories	150	3.3%
Availability	150	3.3%
CURRENT ACTIVE	1000	21.8%
Tangible fixed assets	2500	54.3%

(Depreciation fund)	500	10.8%
Intangible assets	1000	21.7%
Financial fixed assets	600	13%
IMMOBILIZED ASSETS	3600	78.2%
TOTAL ASSETS	4600	100%
Short-term debts to banks	200	4.3%
Commercial debts	400	8.7%
Tax debts	100	2.2%
CURRENT LIABILITIES	700	15.2%
Mid/long-term loans	1000	21.7%
Severance pay fund	400	8.7%
Risks and charges fund	100	2.1%
CONSOLIDATED LIABILITIES	1500	32.5%
Social Capital	2000	43.4%
Reserves	100	2.2%
Profits (losses) previous years	0	0%
Operating result	300	6.5%
NET ASSETS (NET WORTH)	2400	52.1%
TOTAL LIABILITIES	4600	100%

Table 1- Reclassified income statement

Income Statement	Absolute values	Percentage values on turnover
Net revenues	2500	100%
Internal productions	200	8%
Variations in semi-finished and finished products	300	12%
PRODUCTION VALUE	3000	120%
Net purchases	600	24%
Variation Matt. raw materials, materials and goods	150	6%
Provision of services	400	16%
Industrial costs	50	2%
Administrative costs	100	4%
Commercial costs	150	6%
VALUE ADDED	1450	58%
Wages and salaries, social contributions	400	16%
TFR accrual	50	2%
GROSS OPERATING MARGIN	1000	40%
Depreciation of tangible fixed assets	190	7.6%
Accant. devalued cred. and div. operative	10	0.4%
OPERATING INCOME	800	32%
Asset management balance	50	2%
Financial income	50	2%

Financial charges	350	14%
Financial management balance	- 300	12%
Ancillary management balance	50	2%
ADJUSTED RESULT BEFORE TAXES	600	24%
Net income taxes	300	12%
NET RESULT FOR THE YEAR (NET INCOME)	300	12%

Having reclassified the balance sheet into the Balance Sheet and Income Statement dimensions, the information platform necessary for the subsequent balance sheet analysis by indices and flows now exists.

3. INDEXES OF CAPITAL AND FINANCIAL STRUCTURE

Once the necessary database has been obtained, the business analyst who will have to evaluate the historical performance of the company subject to BP will be able to continue his task, first of all using a series of indices.

The capital and financial analysis of the balance sheet indices is aimed at ascertaining the conditions of capital solidity (balance between capital investments and sources of financing), as well as the solvency of the company in terms of ability to promptly meet both short-term and which is due soon.

The most suitable indicators to represent the attitudes under consideration are:

- **NWC: Current assets – Current liabilities**

Net Working Capital (NWC) is one of the main indicators of the company's capital and financial solidity. At every moment of the life of the company, it mustn't be negative, because otherwise, it would mean that the fixed assets (consolidated assets) are being financed with short-term debts. This highlights a temporal discrepancy between the structure of the assets and the composition of the liabilities.

- **Fixed asset coverage ratio with permanent capital:**

$(\text{Shareholders' Equity} + \text{Consolidated Liabilities}) / \text{Fixed Assets}$

- **Structure Margin: Net Worth – Fixed Assets**

Expresses the extent to which fixed assets are covered by equity.

- **Incidence of financing sources on invested capital:**

- **Capitalization index:** $\text{Net Worth} / \text{Invested capital}$

- > 60-65% good capitalisation

- 30-60% acceptable capitalisation level

- < 30% financial structure, the weaker the higher the cost of debt¹.

- **Incidence of short-term liabilities:** $\text{Short-term liabilities} / \text{Invested capital}$

- **Incidence of consolidated liabilities:** $\text{Consolidated liabilities} / \text{Invested capital}$

- **Incidence of financial charges:** $\text{Financial charges} / \text{Third party means}$

Indicates the impact of financial charges on both short and medium-long-term borrowed capital.

- **Incidence of loans on invested capital:**

- **Rigidity index:** $\text{Fixed Assets} / \text{Invested Capital}$

The higher the incidence of fixed assets on invested capital, the greater the rigidity of the company due to the disinvestment difficulty that usually characterizes fixed investments.

¹ P. Chinetti, *Il check up operativo*, Edizioni FAG Milano, 2001.

- **Elasticity index:** *Current assets / Invested capital.* A high elasticity of investments exposes the company to fewer risks thanks to the possibility of being able to disinvest relatively more quickly.

- **Treasury margin:** *(immediate liquidity + deferred liquidity) – current liabilities.*

Indicates the ability to meet short-term commitments with temporally correlated resources because they are liquid or liquidatable within 12 months.

- **Availability index (Current ratio):**

(immediate liquidity + deferred liquidity + availability) / Current liabilities

- > 2 good
- > 1.5 sufficient
- < 1 criticism

The values identified for the index in question have limited value if observed in isolation. It is necessary to consider the consistency and disinvestment capacity of the inventories about the weight assumed by the current liabilities.

- **Immediate liquidity index or Quick Ratio (Acid Test)²:**

(immediate liquidity + deferred liquidity) / current liabilities.

- 0.8 – 1.4 good liquidity
- 0.6 – 0.8 sufficient
- 0.4 – 0.6 insufficient
- < 0.4 liquidity crisis

- **Duration of the financial cycle:**

The duration of the financial cycle expresses the measurement of the average time necessary for current assets and liabilities to convert into incoming and outgoing monetary flows. This measure is given by the algebraic sum of the following three duration indicators:

- **Average days of deferral of trade credits**, average payment time of trade receivables:

$$[(Trade\ credits - advances\ from\ customers) / net\ revenues] \times 365.$$

- **Days warehouse stock averages**, average stock holding time in the warehouse:

$$Net\ inventories / net\ revenues \times 365.$$

The index expresses the average days needed to renew inventory and convert it into incoming cash flow.

- **Average days of deferral of trade payables**, average supplier payment time:

$$[(Trade\ payables - advances\ to\ suppliers) / net\ purchases] \times 365.$$

The algebraic sum of the three duration indices provides the **duration of the financial cycle**:

$$[(average\ credit\ payment\ days + average\ inventory\ days) - average\ supplier\ payment\ days]$$

An extension of the duration of the financial cycle indicates difficulties in converting current assets into liquidity and consequently a directly proportional need for financial resources.

Payment times from suppliers exceeding the sum of collection times from customers and warehouse stock times indicate a high bargaining power towards partners, as well as great reliability of the company in meeting both short-term and soon-to-expire commitments.

For their correct evaluation, a comparison with the sector averages and those of the main competitors is appropriate.

4 . PROFITABILITY INDEXES

The profitability analysis, however, starting from the reclassification of the IS, aims to clarify:

- the dynamics that led to the formation of the financial result for the year;
- profitability for all those who, in various capacities, have invested capital (risk or loan);

²This index is defined as "Seismograph" as it is significant in assessing the risk of corporate *default*. See Metallo G., *Tipici strumenti di analisi finanziaria*, Cedam, Padova, 1995.

- the measure of the convenience of the investment envisaged by the BP from an economic point of view in comparison with other investment alternatives.

The summary indicators most representative of the economic results are the following:

ROI (*return on investment*) or profitability of invested capital. This quantity indicates the ability of the business project to remunerate the financial resources (own and third-party) employed in it³:

$$\frac{\text{Operating income}}{(\text{Initial Invested Capital} + \text{Final Invested Capital}) / 2}$$

The value in the numerator is considered a steady state, i.e. constant over time that covers the useful economic life of the investment. In the denominator, since the invested capital, due to depreciation, undergoes a progressive decrease in value, until it reaches zero at the end of the useful life of the investment, it is appropriate to assume, as the value, half the amount of the initial invested capital. A high ROI signals the company's ability to produce income through characteristic management. However, it is a necessary condition for profitability that the index in question is always higher than the cost of debt i : $\text{ROI} > i$.

Furthermore, the difference between the ROI value and the cost of borrowing capital indicates the margin the company has to increase its financial debt.

ROS (*return on sales*): The index measures the profitability of sales, i.e. how much of the sales is transformed into operating income:

$$\frac{\text{Operating income}}{\text{Net revenues}}$$

ROE (*return on equity*). The index allows to appreciate the global profitability of the management (typical and extra-typical), as well as that of the own (or risk) capital committed to the initiative:

$$\frac{\text{Net income (or Net profit)}}{\text{Net capital (or Net worth)}}$$

The value of the ROE must be compared with a particular indicator of congruity: the minimum ROE⁴. The positive difference between the two indices, ROE and minimum ROE, already expresses a measure of the convenience of the investment.

Incidence of extra-typical (ancillary) management:

$$\frac{\text{Net income}}{\text{Operating income}}$$

The index measures the impact of extra-typical (accessory) management on the result achieved by typical management, assuming values higher than, equal to or lower than unity depending on whether the financial and extraordinary management improve, worsen or leave the management result unchanged operational.

³ It is an important indicator as it expresses the ability to combine production factors and remunerate them. However, one should not make the mistake of looking at it in isolation. In fact, if no investment is made during a financial year, the ROI tends to increase due to the amortization which reduces the invested capital. This does not mean that the situation has improved, on the contrary it has worsened. It is therefore necessary to also consider the investments necessary to maintain the competitive capacity of the company unchanged.

⁴This quantity is expressed by: $rf + (rm - rf) * \beta$. See paragraph 9. The discount rate.

5. SPATIO-TEMPORAL ANALYSIS

The main equity, financial and economic indicators make a further verification necessary which takes the form of a comparison of the results identified both in a diachronic (historical) and in a spatial sense. In other words, it is necessary to compare the current indices with those of the last 3/5 years, as well as with those achieved by the main competitors and the sector average.

This analysis contributes to understanding the economic-financial evolutionary trend of the company and the determinants of its and its competitors' competitiveness.

6. ANALYSIS OF FINANCIAL FLOWS

The analysis of the Balance Sheet and Income Statement indices provides information whose value can be traced back to the mere moment of closing of the annual and/or intermediate (half-yearly or quarterly) balance sheet. This analysis neglects the dynamics of financial flows, as well as the monetary needs necessary to fuel the management process.

The time gap that usually characterizes the dynamics of the income and monetary cycle means that the survival of the company is strictly dependent on the generation of cash flows that guarantee the coverage of financial needs, as well as the correct and timely fulfilment of the commitments undertaken by it.

This information need can be satisfied by preparing a financial statement for total and cash flows. For this purpose, it will be necessary to compare the financial situation relating to at least two subsequent financial years, to verify the changes that have occurred in the consistency of the individual active and passive items as a result of management events. This ultimately allows us to verify the correct balance of sources and uses (Table 3).

The aforementioned variations can be classified as follows:

- the increase in a liability item gives rise to a source of financing (e.g. taking out a mortgage);
- the decrease of a liability item corresponds to the use of financial resources (e.g. repayment of a debt);
- the increase of an asset item determines the use of financial resources (e.g. purchase of machinery);
- the decrease of an asset item involves an incoming financial flow which gives rise to a source of financing (e.g. sale of inventories).

Table 3 - Sources-Uses balance

USES	SOURCES
(+) Use	(+) Source
(-) Source	(-) Use

Source: Metallo G., 1995

The most suitable changes must be made to the flows listed above to eliminate the effects of changes of a purely accounting nature which do not give rise to any movements of a financial

nature⁵. It is therefore necessary to "purify" the balance sheet, to obtain a more faithful representation of the financial dynamics and of the financial strategies and policies implemented by the company.

At this point, the financial flows can be represented according to Table 4.

Table 4 - Financial statement by total flows

Financial statement	Sources	Uses
Immediate liquidity		
Deferred liquidity		
Availability		
Total Current Assets		
Current Passive		
Tangible fixed assets		
Intangible assets		
Financial fixed assets		
Total Fixed Assets		
Consolidated liabilities		
Net assets		
Permanent Capitals		

As already mentioned, the different financial manifestation that characterizes costs and revenues induces a liquidity requirement without which the management processes cannot be activated. Producing income, therefore, is a necessary but not sufficient condition, since it is necessary to generate "cash". The cash flow analysis therefore takes on great importance precisely because of its ability to highlight how the changes that occurred in the economic and financial items, in terms of cash inflows and outflows, contributed to the formation of the cash flow or outflow. . Furthermore, what are the income, current, operational, financial and extra-typical management items, and to what extent have they generated or absorbed liquidity (Table 5).

Table 5 - Cash flows

Operating income

+ depreciation

+ provisions

- use of funds

= Flow of income management

+- credits to customers

+- various credits

⁵Think of non-monetary costs such as amortization and partly provisions or the compensation of a credit with the release by the debtor of bills of exchange, or the allocation of the profit to reserves; all changes which do not involve any movement of a financial nature.

+/- debts to customers

+/- various debts

+/- Availability

= **Current management flow**

+ Divestments

- Investments in:

Real estate Materials

Real estate Intangible

Real estate Financial

- Distribution of Profit

= **Surplus or financial requirement**

+/- Consolidated Debts

+/- Own resources

= **Operating cash flow**

+/- Initial cash flow

= **Final cash flow**

7. THE OVERALL EVALUATION OF THE INVESTMENT

It is clear that the study of economic-financial feasibility does not only have a historical purpose but affects the very heart of the BP: **the ability of the initiative to produce income adequately**.

Furthermore, limiting the evaluation of an investment only to balance sheet ratios and incoming and outgoing cash flows is limiting. This is because it is appropriate to evaluate the investment globally, also considering how the cash flows manifest themselves from a temporal perspective. The value of the cash flows depends significantly on this dynamic and correlatively on the risk associated with the investment⁶.

The main evaluation tools that refer to this approach and whose knowledge is essential for anyone who wants to try their hand at drafting the BP are the **Net Present Value (NPV)** and the **Internal Rate of Return (IRR)**.

8. THE NET PRESENT VALUE METHOD

The Net Present Value (NPV) of an investment expresses the value assumed, at a certain date, by the discounted algebraic sum of the positive and negative cash flows that it generates at a given rate of return.

The logic underlying the concept of present value is deterministic. In fact, €100 available in a year is equivalent to having €95 available today if the rate at which discounting is carried out is equal to 5.2%.

And vice versa, investing €95 today at a rate of return of 5.2% allows you to obtain €100 in a year.

To calculate the NPV, the cash flows in question take on the following characteristics:

- **monetary**: since the investment is considered from a financial point of view, the moment in which the monetary income and expenditure occur is taken into account;
- **incremental**: those flows are considered exclusively attributable to the incremental investment;
- net of taxes and gross financial charges.

Any common costs or sunk costs *are not* considered incremental flows, as they have already been incurred and are therefore independent of the subsequent investment decision.

⁶ The greater the risk associated with the initiative, the greater the rate of return requested by the financiers at which the flows are discounted.

In formula:

PVCI = Present Value of Cash Inflows
 PVCO = Present Value of Cash Outflows

$$NPV = PVCI - PVCO = \sum (E - U) * (1 + i)^{-t}$$

$NPV > 0 \rightarrow PVCI > PVCO$ profitability rate $> i$ (discount rate)

$NPV = 0 \rightarrow PVCI = PVCO$ profitability rate $= i$

$NPV < 0 \rightarrow PVCI < PVCO$ profitability rate $< i$

The convenience of investing in a project depends on the positive value of the NPV and correlatively on how much higher the profitability rate is compared to the discount rate, in comparison with investment alternatives.

The NPV method is widely used in operational practice thanks to the approach characterised by the prediction of the time factor, the discount rate and the temporal distribution of cash flows.

The limitations of the approach lie in:

- a) in the subjective nature of the choice of cash flows and the discount rate;
- b) in the absence of information on the measurement of the profitability rate.

Uncertainty and risk, typical elements of investments, can however be valorised using the probabilistic NPV technique. The NPV can take on different values about the hypothetical pessimistic, normal and optimistic scenarios and the events that have the greatest impact on it. Furthermore, NPV prospects are weighted with the probability that each hypothesis will occur. The sum/product matrix gives rise to the expected weighted average NPV, which provides a more refined and prudential measure as it includes further information.

$$\text{Average Expected NPV (X)} = \sum NPV_i * p_i$$

Table 2- The probabilistic NPV

Conditions	Probability	NPV _i	Expected NPV = NPVi * pi
Pessimistic	0,3	200	60
Normal	0,5	400	200
Wait	0,2	600	120
<i>NPV Average Weighted Expected</i>			380

It is appropriate to use the aforementioned approach for various investment alternatives and opt for the one that provides the highest expected weighted average NPV or for the one whose probability around the average is greater if the projects under consideration have the same value (Table 6).

9 . THE DISCOUNT RATE

The discount rate at which the positive and negative cash flows originating from the investment are discounted is nothing other than the return expected by all those who in various capacities have

committed resources (risk or debt) for its implementation. In the case of loan capital, the rates usually referred to are those of the credit market, Euribor, ABI prime rate plus any spread, BTP etc. A different and more complex approach requires the identification of the rate of return on risk capital, for the definition of which it is necessary to appeal to the principles of the financial theory of the *Capital Asset Pricing Model*.

It follows that the return on risk capital is equal to:

$$r_e = r_f + (r_m - r_f) * \beta$$

Where :

- r_e = yield of venture capital ;
- r_f = return on risk-free securities ;
- r_m = average stock market return (risky investments);
- β = beta index of systematic risk in the sector to which the business *belongs*⁷.

The beta index expresses the extent of the non-diversified systematic risk to which the investment is subject, i.e. the risk that systematically affects all companies belonging to the same sector as a result of the general trend of the economy. Beta values greater than 1 indicate a higher risk than that recorded on average on the stock market. In other words, economic fluctuations amplify their effects on investment more than proportionally⁸. A beta less than 1 indicates that the sector to which the company's activity belongs is little affected by the general trend of the economy⁹, while a beta equal to unity indicates that the sector presents a trend substantially correlated to that of the economy.

The formula $(r_m - r_f) * \beta$ represents the premium for the risk that one assumes simply for having committed one's resources to a risky investment. The higher the risk, the higher the return required by lenders. Any difficulty in disinvesting the investment can be enhanced by adding a further percentage to the returns already identified that discount such a circumstance.

At this point, the discount rate to be used for discounting the expected cash flows is expressed by the average between the cost of risk capital and the cost of loan capital weighted by the financial structure calculated net of the tax benefit deriving from the possibility to deduct financial charges. It is also known as *WACC* (*Weighted Average Cost of Capital*):

$$WACC = r_e * K / (K + D) + r_d * (1 - t) * D / (K + D)$$

Where:

- D = loan capital;
- K = risk capital;
- r_d = return expected by creditors;
- r_e = return expected by shareholders;
- t = tax rate.

At this stage, it may be useful to prepare simulations (*sensitivity analysis*) to identify the most appropriate composition between risk capital and loan capital that optimizes the dynamics of cash flows.

⁷ It is possible to know the beta values for each sector, thanks to the publications of the most important financial companies.

⁸ This is the case of companies operating in sectors with a strong technological push or, in general, with strong competition.

⁹ This is the case of companies operating in the food sector.

10. THE INTERNAL RATE OF RETURN METHOD

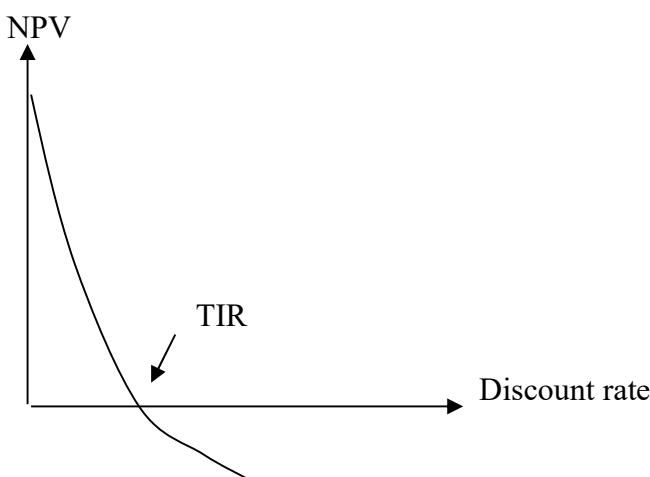
Similarly to what was seen for the NPV, the IRR method expresses the profitability offered by the investment over the period covered by the forecasts (3/5 years). The IRR is the discount rate which, by equalizing the value of the incoming and outgoing cash flows, cancels the NPV of the investment.

In formula:

$$NPV = \sum E (1 + IRR)^{-t} - \sum U (1 + IRR)^{-t} = 0$$

Here too the underlying logic is relatively simple. Investing €95 today to make €100 in a year implies a return of 5.2%. A positive NPV, and therefore the opportunity to invest, is recorded every time the discount rate (WACC) is lower than the IRR (Figure 1).

Figure 1 – The NPV and the IRR



However, there are particular cases in which the IRR method can give rise to as many solutions as there are changes in the sign of the cash flows or not provide for any (no solution). In such situations, the method in question loses its reliability in terms of informative value, while the NPV criterion remains the approach to refer to.

11. THE PAY-BACK PERIOD

A further method of financial and risk assessment of business initiatives is represented by a *pay-back period*. The multi-year nature of the investments and the simplicity of application of the tool justify its wide diffusion in the operational practice of drafting the BP.

The *payback period* measures the time necessary for the initial amount of invested capital to be completely replenished, thanks to the net monetary flows, as well as implicitly the time of exposure to investment risk.

$$P_{bp} = I / E$$

I = Initial investment amount

E = average annual net available flow

(difference between incoming and outgoing flows)

Depending on the subjective propensity to risk, it is usual to establish an acceptability threshold expressed in terms of recovery time (*cut-off period*) for the choice or exclusion of entrepreneurial initiatives. Among several investment alternatives, it is preferable to favour the one that guarantees the quickest recovery of the invested capital and which immediately presents the highest income,

due to the possibility of being able to reinvest them as they are collected. If the amount and/or sequence of net flows present an irregular configuration, the moment of recovery is identified by accumulating the various discounted collections in succession.

The method, however, is not without disadvantages. The tool in question does not consider the flows whose manifestation occurs after the moment of recovery of the investment, as well as the temporal distribution of those whose collection occurs before the reintegration date.

12. THE BREAK-EVEN ANALYSIS

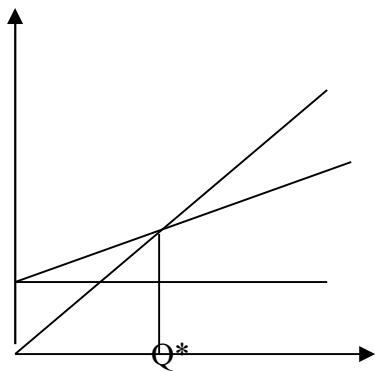
The analysis of the break-even point represents a tool for analysis, planning and control of the estimates of the variable fixed costs, variable costs, revenues and profits connected to the investment. This analysis is generally present and advisable for every type of project, both in the case of business and marketing plans. The aim is to identify the sales volume at which revenues fully cover total management costs (Figure 2).

In formula:

$$\begin{aligned} R &= P * Q & R &= \text{Revenue} \\ TC &= FC + VC & TC &= \text{Total Costs} \\ P * Q &= FC + VCu * Q & FC &= \text{Fixed Costs} \\ Q &= \frac{Fc}{P - VCu} & VC &= \text{Variable Costs} \\ & & P &= \text{Price} \end{aligned}$$

Q^* = Break-Even Quantity

Figure 2 - Analysis of the break-even point



The company begins to achieve profits for sales volumes immediately following that of the break-even point.

Furthermore, this analysis allows us to appreciate:

- the ratio between fixed costs and variable costs indicative of the economic structure of the company;
- the relationship between sales volumes and maximum production capacity which highlights the degree of exploitation and potential of the operating system;
- the safety margin is given by the percentage difference between the estimate of the volume of output to be placed on the market and the volume corresponding to the break-even point. This allows us to understand, both in a forecast and in the final analysis, within which area, whether of profits or losses, we are placed in the face of a reduction or increase in the estimated volume of sales. Furthermore, it simultaneously expresses the percentage of tolerable error in sales forecasting.

Margin of Safety:
$$\frac{\text{Expected revenues} - \text{Balanced turnover}}{\text{Expected revenues}}$$

The tool in question is suitable for the representation of typically single-product companies (same variable cost and single price). In the case of multi-product companies, however, it is possible to resort to determining the equilibrium turnover using the following formula¹⁰:

$F = \text{equilibrium turnover}$

$$F = \frac{FC}{1 - \frac{VCu}{P}}$$

13. THE CREATION OF VALUE

The evaluation of an investment concludes with the determination of the value that it manages to generate for the entrepreneur. In other words, the "excellent" company should set itself the aim of achieving not only economic balance but rather the highest measure of the balance in question (compatibly with the sustainable development of the company and *profitable customer satisfaction*).

That is, it is necessary that the investment, in addition to guaranteeing the coverage of costs, through the generation of revenues, also remunerates the notional charges (calculation interests, management compensation, cost of the resources owned by the entrepreneur) ¹⁰ to achieve the creation of the so-called extra profit or economic value.

Generating accounting profits, therefore, does not necessarily imply the creation of economic value and profits¹¹.

The possible hypotheses regarding "value" can be summarized as follows:

Revenues = costs	→ Destruction of value
Revenues = costs + notional charges	→ No value
Revenues > costs + notional charges = extra profits	→ Creation of value

In other words, the company creates value when revenues exceed the sum of costs and notional charges; only in this case is there an excellent company.

*Economic Value Added (EVA)*¹² as an indicator of the creation of corporate value has become increasingly widespread.

In analytical terms, EVA is equal to the difference between the net operating income after taxes, produced in the reference period (*NOPAT*¹³) and the cost of capital employed (*WACC*):

$$EVA = NOPAT - (WACC * \text{Capital employed})$$

Economic size Financial size Asset size

¹⁰F. Aloi, A. Aloi, *Budget and management control for SMEs*. IPSOA, 2005.

¹¹ Edited by L. Ugolini, handouts: «*The creation and measurement of value through Economic Value Added*», Florence, 19 May 1999.

¹² See Stewart G. Bennet III, *EVA: fact and fantasy*, in *Journal of applied corporate finance*, 1993; Stewart G. Bennet III, *The search for value: a guide for management and shareholders*, EGEA, Milan, 1997.

¹³ NOPAT is the acronym for Net Operating Profit After Taxes. See Damodaran A., *Financial evaluation manual*, McGraw Hill, Milan, 1999.

The NOPAT is considered a synthetic and integrated indicator because the three fundamental economic, financial and patrimonial quantities converge in it¹⁴.

The NOPAT determination is usually calculated as shown in Table 7.

Table 7 - The determination of NOPAT

<i>Operating revenues –</i>
<i>Operating costs before depreciation =</i>
<i>Gross operating income (EBITDA¹⁵) –</i>
<i>Depreciation =</i>
<i>Net operating income –</i>
<i>Taxes =</i>
NOPAT

As highlighted in Table 7, a series of adjustments are made to the reclassified income statement to identify a quantity that effectively expresses the creation of value. Net operating income is considered an indicator of the efficiency and cost-effectiveness of the company from which the taxes directly weighing on this quantity are deducted.

The determination of the share of these taxes requires the reclassification of the EC and the calculation of their incidence relative to the characteristic operating result. In reality, all operating taxes can be subtracted from the net operating income since in a healthy company the majority of the income derives from operational management. Finally, by capital employed we mean the Net Operating Invested Capital (NOIC) in operational management (characteristic or typical) net of the self-financing generated.

The tools outlined above illustrate in progression (*step by step*) the path necessary to evaluate the economic-financial impact of the entrepreneurial initiative. It is advisable, however, to obtain reliable projections and estimates and therefore avoid conflicting results, an integrated and iterative use of the same.

¹⁴ Economics & Management 1/2004.

¹⁵ EBITDA is an acronym for Earnings Before Interest, Taxes, Depreciation and Amortization.