Introduction to the Financial Investment

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I. The decision making

Decision-making is the process of choosing one of several options. It is a complicated process that involves the analysis of various personal, technical and situational factors. In fact, investment decisions pose a challenge for stakeholders, and certain personal factors, such as age, education and income, Play a crucial role in the decision-making process. On the technical side, there are different financial models that can be followed, while considering situational factors like current market conditions to make decision.

In the financial market, it is essential to understand human behavior in order to make good decisions. This involves comprehending human thought processes, which is facilitated by the study of cognitive psychology

II. Factors affecting investment decision in financial markets:

1. Transparency of information

In fact, it is recognized that information on intangibles impacts investment decisions and investors' evaluation processes. This creates situations of particularly acute information asymmetry between company managers and investors. For investors, accounting information, by impacting their investment decisions, represents an important source of control over the opportunistic behavior of managers. It is important to mention that one of the tools that enables managers to produce information useful for making investment decisions is financial accounting

2. Mimicry

Mimetic behavior in financial markets can lead to a wave of large-scale fund movements. In such markets, uncontrolled mimetic dynamics can lead to crises of confidence that can lead to general insecurity. Mimicry in financial markets is problematic when it accelerates and traders are forced to quickly align their behavior with that observed. Here, the credibility or relevance of economic information is no more fundamental. In such circumstances, it is sufficient to anticipate the trend in market behavior as best as possible and to stick to it. There is little confidence that quickly wins over all traders.

3. Psycology

Investor sentiment is a belief in future cash flows and investment risk that cannot be supported by fundamentals. Besides, Baker and Wurgler (2007) define it more specifically as optimism (high sentiment) or pessimism (low sentiment) about stocks.

In addition, investment decisions are affected by the number of psychological factors when making an investment decision. These factors are identified as overconfidence and optimism, heuristics, faith, pessimism, herd behavior and confirmation bias. Among these biases, heuristics, confirmation and pessimism make the investor more rational while biases like faith, overconfidence and optimism vary from investor to investor and these biases are responsible of the irrational behavior of the investor

4. Emotions and behavioral biases

Numerous observations have shown that our emotions are the source of several biases that affect our decision-making process. Our moods can have a significant impact on our perception of risk.

The researchers found that being in a good mood can help us to be more risk-taking and optimistic, while being in a bad mood can make us more critical. They believe this is because good moods make us more willing to take risks, while bad moods make us more cautious. What is most interesting is that people seem to be able to control their emotions a lot, depending on their mood.

5. The patent and IFRS

Professional investors consider the prior experience of the executive as an uncertainty-reducing factor in their investment choice. Indeed, according to the work of Villiers and Sharma (2017), by providing the market with accurate information about intellectual assets, investors can make better decisions and firms can obtain financing at lower costs. Patent ownership also provides valuable technical information that would otherwise be difficult to share

III. Decision making under certainty, risk and uncertainty:

1. Certainty

Definition: Certainty is a state where there is no doubt or ambiguity about the outcome of an event or decision. It implies absolute predictability and confidence in knowing what will happen.

Characteristics:

- Known Outcomes: In situations of certainty, the outcomes are known with complete assurance.
- No Variability: There is no variability or range of possibilities; the result is fixed.
- Objective Knowledge: Certainty is typically based on concrete, objective facts and evidence.
- Minimal Decision Complexity: Decision-making in a certain environment is straightforward, as there is no need to assess risks or consider alternative scenarios

Decision making under certainty

A condition of certainty exists when the decision-maker knows with reasonable certainty what the alternatives are, what conditions are associated with each alternative, and the outcome of each alternative. Under conditions of certainty, accurate, measurable, and reliable information on which to base decisions is available. The cause and effect relationships are known and the future is highly predictable under conditions of certainty. Such conditions exist in case of routine and repetitive decisions concerning the day- operations of the business.to-day

2. Risk

Definition: Risk exists when multiple possible outcomes are associated with an event or decision, and the probability of each outcome can be estimated.

Characteristics:

- Multiple Outcomes: Risk involves a range of possible outcomes, each with an associated likelihood.
- Quantifiable Probability: The probabilities of various outcomes can be quantified or estimated based on historical data or analysis.
- Objective Assessment: Risk assessment relies on objective information and statistical analysis.
- Decision Complexity: Decision-making under risk involves evaluating probabilities, assessing potential consequences, and selecting strategies to manage or mitigate risks.

Decision-making under Risk:

When a manager lacks perfect information or whenever an information asymmetry exists, risk arises. Under a state of risk, the decision maker has incomplete information about available alternatives but has a good idea of the probability of outcomes for each alternative. While making decisions under a state of risk, managers must determine the probability associated with each alternative on the basis of the available information and his experience.

3. Uncertainty

Definition: Uncertainty prevails when the outcomes of an event or decision are not only unknown but also inherently unpredictable. It involves a lack of information and a high degree of ambiguity.

Characteristics:

- Unknown Outcomes: Uncertainty entails a lack of knowledge about potential outcomes.
- Unpredictability: In uncertain situations, the future is unpredictable, and there is no reliable basis for assigning probabilities.
- Subjective Elements: Uncertainty can be influenced by subjective factors, such as personal beliefs and opinions.
- Complex Decision-Making: Decision-making under uncertainty is complex, often requiring expert judgment, scenario analysis, or simulation.

Decision-making under Uncertainty:

Most significant decisions made in today's complex environment are formulated under a state of uncertainty. Conditions of uncertainty exist when the future environment is unpredictable and everything is in a state of flux. The decision-maker is not aware of all available alternatives, the risks associated with each, and the consequences of each alternative or their probabilities. The manager does not possess complete information about the alternatives and whatever information is available, may not be completely reliable. In the face of such uncertainty, managers need to make certain assumptions about the situation in order to provide a reasonable framework for decision-making. They have to depend upon their judgment and experience for making decisions.

VI. The function of Finance

1. Financing

The financial system is one of the subsets of the overall economic system. Its function is twofold. First, it is to create for economic actors who have incomes greater than their consumption expenditures, in the broadest sense of the term, an efficient structure for centralizing savings thus made available for investment. Second, it is to achieve an efficient allocation of the financial resources thus mobilized, that is to say, to distinguish among the actors of the production subsystem, called companies, again in a broad sense, those whose projects offer the best prospects for creating future wealth. To respond to the great variety of these projects, financial operators have designed a wide variety of financing instruments. At this stage of the presentation, we will limit ourselves to making two fundamental distinctions, on the one hand, between debt financing and risk capital financing and, on the other hand, between financial intermediation and market financing.

2. Valuation of financial assets

Financial assets are debt rights or shareholder rights issued by an entity that operates in the so-called real economy sphere, that of the production of marketable goods or services. These financial assets are promises of deferred income. In order to assign a monetary value to them that they can compare to the price they are asked for, investors must be able to determine, or at least estimate with sufficient precision, the issuer's capacity to generate through its production and marketing operations sufficient income to service its debt and remunerate its shareholders on the surplus in a manner consistent with their expectations, while building up internal savings known as self-financing. To do this, they must have a model, i.e. a formalized representation that allows their decision-making situation to be quantified. This representation must be both as realistic and as "manageable" as possible. Good modeling is, in fact, a well-designed compromise between these two at least partially contradictory requirements.

V. The theory of investment of modern finance: the Axioms

Axiom 1: ***"Economic agents are rational"*** In its broadest sense, rationality is defined by Simon [1976]as "…behavior appropriate to the achievement of given goals within the limits imposed by given conditions and constraints." The conception that the TFM has forged, which is that of the entirety of neoclassical economic theory, is described by Simon as substantial rationality, which considers it possible to identify all the determinants of the value of the objects of choice and, consequently, to designate in each situation the decision that is the best of all possible decisions: the optimum. Such an approach implies adopting extremely strong postulates, constituting the so-called perfect information hypothesis.

Axiom 2: *“The financial market is efficient ”*

Based on the postulates that underlie the hypothesis of perfect information, one could consider — which is very often the case — that this second axiom is purely and simply a corollary of the first and can be stated as follows: a market in which prices fully and almost instantly reflect the available information is said to be efficient.

A. The investment theory of modern finance: the model with a certain future:

$$V_t = V_0(1 + i)^t$$

Where:

Vo: the capital invested at time zero (beginning of the 1st period)

i: the interest rate per period

Vt: the capital accumulated at compound interest at time t (end of period t)

t: the time index (number of elementary periods elapsed since the initial time (time zero or beginning of the 1st period)

$$V_0 = V_t \times \frac{1}{(1 + i)^t}$$

B. Decision making in uncertain future

Table 1.1 – Consequence matrix

		EVENTS Ei (i = 1,n)		
		E2		In
		PROBABILITIES pi		
	p1	p2		pn
ACTIONS (j = 1, m		CONSEQUENCES C,ij		
A1	C,11	C,12		C,1n
A2	C, 21	C,22		C,2n
	C,m1	C,m2		C,mn

The multi-periodic generalization of the payoff matrix is called a decision tree

C. The investment theory of finance in a risky future

When the future is uncertain, the risky nature of the investment decision to be made makes it essential to differentiate financing methods. The partners provide what is called "risk capital" (meaning full risk) by providing the company's own funds which are "on the front line" to absorb losses, so that the partners can lose up to their entire outlay. In the second general method of financing, debt, the holders of debt securities can demand repayment of the capital lent and payment of interest. In the event of default by the debtor company, they can cause it to declare bankruptcy in order to recover all or part of their due from the liquidation bonus (always possible). This is therefore not risk-free capital, but capital with lower risk. Even in the simplest case where the company has issued only ordinary shares and a single class of ordinary debt securities to finance itself, its cost of financing must be defined as the weighted average cost of invested capital — the famous WACC — Weighted Average Cost of Capital of corporate finance textbooks: the costs, expressed in relative terms in the form of an interest rate, of each source of financing are weighted by its share in the overall financing of the company. The cost of capital is the average annual rate of return expected to be generated by an investment project to provide the company implementing it with a net increase in wealth, which is called the Net Present Value (NPV) of the project.

Let, over a horizon of T periods (t = 0, T)

It: investment flow at time t (in fixed assets and working capital)

Et: net operating flow at time (t = 1, T)

Rt: residual (or resale) value at time t (t = t + 1, T)

k: weighted average cost of capital (WACC)

The Net Present Value of the project is calculated as follows:

$$VAN_0 = \sum_{t=0}^{T} \frac{I_t}{(1+k)^t} + \sum_{t=1}^{T} \frac{E_t}{(1+k)^t} + \sum_{t=1}^{T} \frac{R_t}{(1+k)^t}$$

The decision criteria is to accept the project only if its NPV is non-negative. Indeed, an NPV = 0 means that the project exactly meets the profitability requirements of the financiers.

Thanks