**Introduction – Fundamentals of Financial Economics**

**Chapter 1 – The Finance Function**

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1.1 Financial Goal of the Firm

Corporate Financial Objective: Maximize current market value.

All financial decisions should be taken with respect to that objective.

For this, the internal rate of return (IRR) on investment must exceed the opportunity cost of capital ($K_0$) which is the cost of the funds used for financing the investment or Net Present Value (NPV) should be greater than zero.

We must therefore determine whether the corporation should 1) grow, 2) can continue with its current size, 3) should reduce their activities or 4) should disappear in order to create corporate value.

If the company has profitable investment opportunities then the capital budget expands, either through an increase in lending capacity (borrowing from banks or issuing bonds) or through an increase in equity (issuing new shares).

Corporate investment and financing decisions are two interrelated decisions.

A reduction in Research & Development (R & D) or a reduction in maintenance costs will increase profits in the short run but may reduce them in the long run. That is, we must maximize shareholder value in the long term.

Those decisions that increase corporate profits but do not affect cash flows represent a wasted effort.

Thus, the yield of corporate securities (corporate shares) is a meaningful measure of corporate business performance.
1.2 Evolution of Corporate financial theories

Corporate Financial theories have been developed as an independent discipline since the early twentieth century and it is still developing today. Previously, Finance was only a subset of economics.

In the 1920's, financial theories focused on describing the processes of mergers and acquisitions, financially distressed firm problems and existing financial vehicles for fundraising.

In those days, the goal of corporate finance was to explain and describe financial institutions, financial markets, financial securities and techniques through which funds were obtained, especially in the long term.

1929 depression influenced the subject matter of Finance during the 30's, so that emphasis was put on defensive actions aimed at ensuring the survival of the corporation. The goal became on the one hand in maintaining a sound financial structure and on the other to analyse the problems of illiquidity.

In the 1940's and 1950's Finance focus on large corporations and on financial vehicles, primarily long-term funding. During this period more attention was drawn to the analysis of firm cash flows and financial planning and control. This period is being mainly criticized for considering only the viewpoint of the banker and money lender's rather than focusing on other corporate stakeholders. Also during this period, the interdependence of investment decisions, financing and dividends is not taken into account.
From the late 1950's, modern financial theory arises and it relies on multiple pillars that we consider in detail below.

Basically, Corporate Finance starts to consider what the effects of alternative policies are on the value of the corporation.

Hence, it is important to consider not only how to obtain the funds but also to use them in order to create value.

During the second half of the 1950's, new methods and techniques for selecting investment projects were developed that began to forge a real theory for the efficient allocation of resources within the company.

It was the beginning of a new financial theory stream characterized by an analytical approach to decision making with special interest in the analysis of value maximization, but with little or no consideration of the nature of the balance between financial markets and the effect of individual incentives on these policies.

This concern for value maximization analysis led to a critical evaluation of capital structure and dividend policy of the corporation in relation to its overall assessment.

It is necessary to highlight the pioneering work of Modigliani and Miller (1958, 1961). Never in the field of financial theory had arisen a controversy as that caused when these authors argued that efficient financial markets and in the absence of imperfections, the politics of debt and dividends of the company were irrelevant for purposes of assessing firm value. Much of the subsequent theoretical developments have focused on the identification of market imperfections that could lead to a valuation effect.

Already in the 1960's, the most prominent landmark was the development of portfolio theory and its application to the financial management of the company. Portfolio theory was originally developed Markowitz in 1952, although its application is not widespread until it was the contributions of Sharpe (1964), Lintner (1965), Mossin (1966) and several contributions of Fama.

**Mean-Variance Model with a risk free asset**

Corporate Finance (Finanzas Empresariales)
In the sixties the equilibrium model of Sharpe-Linter-Mossin for asset pricing (Capital Asset Pricing Model - CAPM) allowed the application of theoretical developments posed to the financial management of the company.

The Capital Asset Pricing Model (CAPM) showed that part of the risk that the corporation is assuming is not relevant to shareholders because that part of the risk may be diversified through the formation of a well-balanced stock portfolio.

Graphic: diversifiable Risk versus Non-diversifiable risk

Its simplicity and suitability as an analytical tool were soon revealed as an appropriate model for the evaluation of corporate financial decisions in imperfect markets.
Moreover, the option pricing model (OPM) developed by Black and Scholes (1973) for the evaluation of financial claims from a contingent perspective was another significant contributions of the 1970's to modern financial theory, to allow treatment options in order to study issues such as the capital structure of the corporation, the inclination of lenders to limit borrowing or the valuation of corporate securities (both debt and equity).

Options theory has been applied not only to financial investments of the company but also to real investment (real options).

Graphic: Buying Options (Call Option) and puts (Put Option)
Financial theory has evolved from the original descriptive approach of corporate finance to an approach that combines rigorous analysis with normative theory, it has evolve from a field focused on raising funds to one that includes asset management, capital allocation and the valuation of the corporation in the market and an approach that emphasized the external analysis of the corporation to one that emphasizes decision making within the corporation.

1.3 Theoretical Fundamentals of Financial Economics

Financial theory is aimed at studying the rationality of the behaviour of economic agents when allocating their resources over time, seeking a balance between consumption and investment. Financial theory seeks to combine the principles of valuation with risk-return in an environment of financial markets.

Corporations, individual investors and financial markets are the only three components that are considered in order to simplify reality.

Managers in general and financial managers in particular act as intermediaries between the real asset portfolio and capital markets, being the capital budget and investment opportunities the only constraints that act on individual decisions.

Financial theory has been significantly enriched by various analytical contributions, mostly developed during the last Forty years.

These studies highlight those who have tried to reconcile and integrate the analysis of resource allocation processes, from the supply side of financial assets, which corresponds to the corporate's financial decisions, with analysis from the demand side which corresponds to individual financial decisions.

Financial theory has been progressively enriched by new models and techniques in an attempt to offer an adequate explanation to the new conditions and the new competitive model.

Microeconomic theory develops a theoretical construct that allows the corporation to make predictions that are relevant to the functioning of markets and price formation.

Thus, the allocation of scarce resources, the marginal analysis, opportunity cost, elasticity or the rate of return are some concepts that economic theory provides the world of business management.

These approaches are complemented by the contributions of the theory of financial markets.

Therefore, it should be noted the importance for the further development of financial theory has been the Capital Asset Pricing Model (CAPM) and more recently the Option Pricing Theory (OPT).

Recent trends focus on the contributions of agency theory and economic theory of information.

In particular, with regard to the resolution of conflicts of interests among various stakeholders who do influence the value of the corporation. One can say that financial theory is based on a set of several blocks, with are complementary to each other and which set the guidelines for the content of it.
1.3.1 The valuation principle

The basis of the analysis is provided by the theory of choice between consumption and investment.

Any investment decision is a function of the interest rate which is presented as an objective criterion of choice determined by the market.

The interest rate is an equilibrium rate between productive investment and the allocation of monetary resources. It is also a rate that links current and future cash flows.

The company must assess all costs and actual and potential benefits and combine them into a single measure used to determine which projects more or less create value in the company.

The evaluation of an investment project depends not only on risk-return parameters, but also requires consideration of other factors such as the relationship between finance and investment. It should also consider the liquidity factor and the contribution of the project to diversification, growth and overall business strategy.

This logic leads to set as investment criteria both the Net Present Value (NPV) and the Internal Rate of Return (IRR).

The present value of an asset (be it a business, investment project, action or liability) is equal to the present value of the asset expected cash flows.
The economic agent, faced with a situation of risk or uncertainty, it is not in a position to make
decisions (regarding the allocation of consumption over time, regarding the balance between
productive investment and monetary and asset valuation) without previously estimating the risks
involved and without a theory of resource allocation in an uncertain future.

Thus, summary measures such as the mathematical expectation, the variance or the standard deviation
and coefficient of variation are useful in risky environments. However, these instruments and
measurements describe the risk but do not allow, in the absence of an objective criteria, to formulate
decision rules.

The theory of the utility tries to avoid such problems, departing from the assumption that economic
agents elections are based on their utility.

This utility is linked in part to their inter-temporal consumption preferences and in part to the risk
level of investment and consumption decisions. This utility translates into a function that expresses the
attitude toward risk aversion (risk averse, risk neutral or a preference for risk).

1.3.2 Efficient Markets

In finance, the efficient-market hypothesis affirms that financial markets are informationally efficient.
That is, it is not possible to consistently achieve returns in excess of average market returns on a risk-
adjusted basis, given the information available at the time the investment is made. Thus, it is said that
a market is efficient if the formation of prices reflect correctly, in an unbiased way, fully and at all
times, all available information. The efficient market hypothesis has its genesis in the theory of
random walk.

The price represents a consensus of the members of the market about the true market value of the
good or service based on all available information.

If the adjustment to the new information is instantaneous then successive price changes are
independent and random.

In an efficient market, prices of securities (observed at any time) are based on a correct evaluation of
all available information at that time. Such market includes, instantly, the consequences of past events
and reflects expectations about future events.

Thus, the price of a financial asset is at any time, a good estimate of its intrinsic value (also called
fundamental value of the asset). It is therefore impossible to predict future changes in the price of the
asset, since all known or anticipated events are already embedded in current prices.

If capital markets are efficient, the market value of the corporation reflects the present value of
expected cash flows of the company, including those arising from future investment opportunities.

The efficient markets hypothesis has several implications for corporate financing.

1) There is no ambiguity about the objective function of the company: it is necessary to maximize
   its current market value.
2) Those decisions that increase profits or earnings but do not affect cash flows represent wasted
effort.
3) If new securities are issued at market prices the problem of dilution of benefits for former owners is removed.
4) Stock performance is a meaningful measure of business performance for shareholders.

Figure: Efficient markets and pricing efficiency: levels of efficiency in financial markets

Fundamental analysis is complemented by graphical analysis. Thus, we can identify three levels of efficiency in financial markets, weak efficiency, semi-strong efficiency and strong efficiency.

1.3.3 Portfolio Theory. Equilibrium Valuation Models (CAPM & OPM)

Portfolio theory provides interesting proposals to clarify the concepts of return and risk.

It develops the idea of diversification of investments in securities based on the following general principle:

A stock portfolio may present a total risk which is weaker than the addition of individual stock risks.

At the same time the yield of the portfolio is still equal to the weighted average yields of the stocks that are included in the portfolio.

This idea implies that it is possible to combine stocks in multiple ways in order to form multiple security portfolios.
Some of these portfolios are efficient in terms of risk-return and this set of portfolios forms the efficient frontier.

In order to choose among efficient portfolios, finally, the choice will depend on the utility of the investor.

*Graphic: portfolio with two assets and the efficient frontier*

**Markowitz Mean-Variance Model with two assets**

The logic of analysis leads to the development of the Capital Asset Pricing Model (CAPM) which is a model of equilibrium prices of financial assets based on the measure of volatility (beta) of the stock (security) which represents a measure of systematic risk.

A generalization of this proposal is the Arbitrage Pricing Model (APM) which postulates that the required return depends on many factors that approximate arbitrage opportunities, whose relative risk is expressed by a set of beta coefficients.

1.3.4 Option Theory

One of the biggest milestones in the evolution in financial theory takes place in 1973 with the development by Black and Scholes of a formula in order to compute the price of a financial option.

The implications of the model are many because the formula is useful in order to value corporate securities (shares and debt).

It also has important applications to the investment opportunities field when considering real options.

Financial contracts developed by a corporation are complex to the extent that they specify the rights that the providers of funds (shareholders or creditors) will have in the future. However, such rights are uncertain and yields depend on future states of the economy.

A financial contract is more complex the more states of nature are considered. Thus, complex contracts are nothing but the aggregation of multiple simple contracts.
In this sense, financial options are contracts that are simpler than securities (shares or debt). So it is easier to develop the general limits to value a financial option in terms of current and future price of shares and then analyse what effects do different factors have (such as maturity, interest rate risk-free cost of money and changes in the underlying security returns).

Thus, option theory allows the financial evaluation of conditional assets. This implies that option pricing models can be used to value securities of the corporation. Thus, the theory of options is useful in various fields:

- Allows the valuation of complex securities and facilitates analysis of corporate financial structure.
- You can overcome some of the problems posed by the net present value since the analysis using options is more flexible.
- It raises the base for the joint study of the interrelationship between strategic planning and capital budgeting.

1.3.5 Value, financial structure and cost of capital

We have developed a set of theories, mainly due to Miller and Modigliani (1958, 1961) about the irrelevance of financial structure on firm value that leads to state that, in perfect markets, investment decisions are independent of funding decisions.

*Graphic: cost of capital in perfect markets*

When the perfect markets hypothesis is relaxed, the analysis of financial decisions rotates around three main considerations regarding the nature and impact of market imperfections that are listed below:

1) In imperfect markets, financial decisions may influence the evaluation of the company by the market as companies make long-term goals that are relevant in order to adjust their financial decisions.
2) Adjustment costs or restrictions are an indicator of existing imperfections in the market that will cause delays, so that the companies will not fully adjust its current economic and financial structure to the desired and the corporation will adjust only partially.

3) Market frictions or imperfections will lead to interdependencies between investment decisions, financing decisions and dividends policy.

Other studies seem to confirm the influence on financial decisions that a number of variables have such as size, asset structure, financial and economic risk, sales policy and self-financing policy.

These research works reveal how corporate financial decisions seem to be adopted according to target debt ratios over time although, in the short term, may deviate from these target ratios in response to seasonal considerations and market conditions.

1.3.6 Contributions of the new institutional economics

A fundamental development of financial theory is based on a series of attempts to incorporate the personal interests and incentives of the management team within the financial theory of the firm.

Management theories postulate the existence of an objective function of the business leaders in order to maximize their own utility and not the maximization of shareholder value. This issue is discussed in more detail in the next section.

The developments presented above tend to indicate that financial theory has two supports, on the one hand, economic theory and on the other financial markets.

Under these conditions, corporate financial theory would only be a theory of financial markets in which the corporation is perceived as an economic agent whose decisions are determined and sanctioned or punished by the market.

However, the reality is that the corporation is a group of stakeholders that must be analyzed as a consensus among different groups of individuals who, stimulated by their own respective utility functions, choose to work together in the firm or corporation.

This is how economic and financial implications of the dissociation between ownership and control are better understood.

Signal theory and agency theory both try to explain theoretically the existence of actual observable behaviours.

In short, the problem is posed in terms of investigating the incentives faced by each of the parties (stakeholders in the corporation) and the elements that contribute to determining the contractual equilibrium.

Therefore, studying the relationship between the company manager (agent) and shareholders (principal) or the relationship between shareholders (agent) and creditors (principal) is crucial. A significant work in this field is that of Jensen and Meckling (1976).


As previously discussed, in relation to corporate financial decisions, there are a set of well-defined topics and skills that form the conceptual framework of financial economics at the Corporation.
Once analysed schematically the financial fundamentals of the economy, we can distinguish three issues that limit the scope of it.

1) What should be the size of the corporation and what its growth rate?
2) What kind of assets should the corporation invest in?
3) What should be the composition of corporate liabilities?

One answer to these questions requires the fulfilment of three preconditions:

- The existence of an explicit financial goal which is to create shareholder value.
- A systematic approach for allocating resources within the corporation.
- A method of analysis that allows the choice of the optimal combination of financial liabilities.

Thus, the corporation target is the maximization of shareholder value represented by the market share price. This price reflects the quality of investment decisions, financing decisions and dividend policy. This goal should be coordinated with other goals set by the management of the corporation. A corporation will find demand for their securities in the capital market only when their investment opportunities ensure an efficient allocation of those resources demanded by the corporation.

Rather than exclusively maximizing shareholder value, there are authors who advocate the joint maximization of the value of shareholders and the value of bondholders as the sole criterion consistent with a stable equilibrium.

When there is a separation of ownership and control of the corporation, it surely may occur that managers will not be identified with the interests of shareholders.

However, the general management of the corporation will accept the criterion of maximizing shareholder value to the extent that the systems of incentives and penalties set by the market will motivate the behaviour of managers to take as almost self-interest of shareholders to maximize value of the company.

It is possible to say that Corporate Financial Economics is concerned with evaluating the combined effect of financial decisions on the objective of increasing shareholder value.