

# Capital budgeting in practice: a methodological framework for financial forecasting

## Summary

The general objective of this article is the construction of the capital budget in the context of financial budgeting. Its mission is to define short- and long-term capital investment items necessary to execute a capital structure in a future period, using methods specific to financial economics, and constituted in a flowchart for solving this type of budget. This concludes with the methodological conception of the four financial budgets. The notion of time, in a long- and short-term structure, leads to the determination of fixed and working capital items as future requirements of the productive unit. This requires specific instruments for future evaluation in the production process of these units. This integrates sources of financing and resource contributions in the classic modalities: bank financing, bond and/or stock issuance, and the contribution to define the cost of the investment expressed in monetary terms. For this reason, tools are used for the future evaluation of financial variables. These instruments will allow for the assessment of integrative proposal initiatives within a sound system, one that responds to the investment function and its impact on the production process in an environment of uncertainty. The financial budget concludes, and thus, students or novices are introduced to the functioning of these instruments for future evaluation and to their methodology. This is part of the financier's basic knowledge in higher education, with the minimum competencies necessary for undergraduate education to be meaningful.

**Keywords:** financial budget, capital budget, fixed capital, working capital, total cost of the investment project

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## Introduction

This publication, the result of a research project, explores the topic of corporate financial budgets and is the second part of the article "Financial Budgets: Instruments for Future Evaluation," detailing the capital budget or the structuring of a future investment plan. (Pereira & Soo, 2025) "A budget is defined as the formal expression of plans, goals, and objectives of management that covers all aspects of operations for a designated time period.<sup>1</sup> Future investments periodically made by corporate production units involve the use of financial instruments. Among financial budgets, the capital budget is applied for this quantification. It is the result of a financial logic that estimates fixed and working capital items under a model that also assesses figures in monetary terms for each of the interventions in future investment items, identifying figures for term loans, lines of credit, and/or other types of financing sources.

A real challenge for the undergraduate or novice student. The estimation of fixed capital and working capital items, and their practical application as a method for determining investment levels for an upcoming period or year, constitutes an important competency for students in financial work. This typology is integrated into the forecasting process by integrating economic and financial variables as a valid method for defining multiple components of specific items, from the perspective of the functioning of the productive unit. The justification of the research, the general and specific objectives, the methodological framework and materials, the results and discussion of the research are presented in logical order, and then the topic of corporate financial budgets is developed. A model was developed in an innovative approach to financial economics. In addition, a flowchart was added as a teaching tool for the preparation of corporate financial budgets.

## Justification of the research: the construction of the process, the system

The research develops financial budgets, namely: capital budget, operating budget, finance budget, and financial projection. The

importance of financial budgets lies in their ability to conduct a future economic and financial evaluation of productive units. This will allow for decisions regarding the investment of scarce productive resources in new projects or the expansion of a specific productive activity. The methodology for future projections is incorporated quantitatively, followed by the relevant qualitative analysis. For financiers, and especially for students in the financial field, knowledge of these financial instruments is extremely useful for their professional work upon completion of a bachelor's degree in either Finance and Banking or Investment and Risk. The aforementioned programs include a subject called financial budgeting. Therefore, this research contributes to the curriculum and the achievement of its competencies, allowing financiers to master a methodology for constructing financial budgets in order to conduct a future evaluation of the productive unit.

## General and specific objectives

**General objective:** Conduct research on financial budgets, the primary function of which is the future evaluation of the productive unit.

- I. Develop a coherent methodology for each type of budget.
- II. Detail the functioning of each financial budget in particular.
- III. Detail the relationship between the types of corporate and public financial budgets.
- IV. Link financial instruments, economic and financial evaluation, and decision-making.

## Methodological framework and materials

The methodology considered the creation of models for each of the financial budgets, including each type of budget with a learning framework based on specific process flowcharts for the preparation of the four financial budgets. It is outlined in two types of programs, for word processing and spreadsheets of financial information: Word and Excel. Case studies are developed, and the future financial evaluation of each type of budget is modeled in a synchronized

design. The quantification system is incorporated in each chapter for a comprehensive understanding of the valuations, and details are added in the annexes. Also, from the beginning of the research planning to each of the progress reports, the achievements are detailed, providing precise monitoring of the completion of the research, which is now finalized.

## Research results and discussion

Financial budgets should be considered an integral part of a chain of variables, ensuring that they contain systematic elements where estimates flow into the effectiveness of predictive analysis. This provides an understanding of corporate financial budgets and the contribution of research. This approach guides the student or novice in these matters to an understanding of models, which form an analytical structure in order, from the capital budget to the operating budget, then from the operating budget to the financial budget, and finally, to carry out the economic, financial, and technical evaluation through financial projections. This approach guides the financial analyst on the path to understanding how to define the estimates of a set of financial figures, in a logical order, that provides an effective response for today's decision-making regarding debt and equity financial instruments (bank financing, bond and stock issuance, etc.), which will be executed in the coming years. This is the importance of this research, based on the creation of models for estimating future financial variables: Predictive analysis in its essence, in which flowcharts are inserted into the estimation process of each financial budget, defining how to specify the qualitative assessment in the coming years.

## Corporate financial budgets

The following summary reflects the results of the research.

The topic is approached from an economic perspective: Financial budgets are the instruments used by economists and financiers when visualizing the future of the productive unit, both qualitatively and quantitatively: next month, semester, year, five-year period, etc., in making decisions for the continuity of the productive unit or the corporate enterprise.<sup>2</sup>

### Past economic-financial evaluation

When conducting an economic-financial evaluation, the figures recorded in the financial reports must be reviewed in order to understand the performance of previous years. Corporate production units need information on their performance to determine whether they have achieved favorable results, i.e., profits, or, on the contrary, have suffered losses due to their operations at the end of a given period. Since the primary objective of production units is to maximize profits, it is important to use tools that provide timely and reliable information for decision-making. Financial statements will help provide a better view of the production unit's financial situation, its resources, results obtained, cash flows, profitability generated, among other aspects relevant to operations and financial management.

### Future economic and financial evaluation

In the constructivist framework of future economic thinking, it is important to propose systems that allow for the development of criteria regarding the performance of financial variables in the near future (short, medium, and long term). It is considered a *sine qua non* or *sine quibus non* rule that the figures for variables estimated in future periods be as close as possible to the reality achieved in those periods. It is the effectiveness of the quantification, the method, the periodic adjustment for environmental situations, and, finally, the previous: the

correct decision-making, not as an administrative tool, but rather, the results as conclusive measures to provide a solution to the productive process scheme in the corporate economic unit. This involves the use of economic and financial tools, which are continuously used to drive the productive apparatus, determining the execution of the investment cycle through a look at the future: The role of the economist-financier in the microeconomic environment.

## Projection methods

Typologies represent value instruments for estimating figures on the behavior of a range of variables related to the production process of the corporate enterprise. Multiple techniques, systems, methods, etc., can be used to achieve a reasonable criterion for economic and financial forecasting in the matter or routine of quantification, as an instrument that defines short- to long-term values. According to undergraduate and graduate teaching, time series, least squares, nonlinear trends, seasonal variations, autocorrelation, etc., are used (For the capital budget, the techniques mentioned above do not apply, which are necessary for the other three types of budgets. When the companies are operating and expanding their productive activity, prior quantitative information on financial variables from previous years will be required. The matter that leads to reflection is related to quantitative judgments in the definition of the correct measurement process, because what is projected lies in the precision, in the effectiveness of the figures and in a periodic assessment of the environment, which leads to an accurate, secure and most reliable opinion as a reality in the analyzed future.

## Economic-financial variables

The estimates to be made include economic and financial variables through the time function, that is, in terms of future value, present value, and the terminology of interrelated variables, such as real value. Thus, future value is defined as the estimated value in a projection or forecast of a set of variables, all related to the activity of a productive unit.<sup>2</sup> Present value refers to these variables at their current value, that is, their real value. It is deduced from the interplay of value analysis that present value is the real value of a given economic-financial variable. Economists and financiers also use present value to estimate the real value of a variable. Similarly, there are values for past periods, which refer to variables from a previous period, that is, a preceding period: last year, last semester, last month, etc.

## The capital budget

This section introduces the financial budget: the design of a financial instrument that integrates the necessary investments for the operational continuity of the production function in the context of a corporate enterprise. The future development of the productive unit reflects a practice of periodic intensity, hence the requirement for the use of a financial instrument, the so-called capital budget. It can also be referred to as: Structuring an investment plan.

### Structuring an investment plan

The capital budget is one of the four financial budgets and its purpose is to define, in quantitative terms, a specific level of investment for a future period. The capital budget is defined from an economic-financial perspective: It is a financial instrument that estimates current fixed capital and working capital needs, the total cost of the project, and sources of financing, with a focus on execution for the coming years.

Its structure is detailed by:

- I. Type of capital
- II. Duration of the investment: Short and long term
- III. Type of instrument to obtain the financial resources to be used
- IV. Contributions to the investment
- V. Cost of the financial resources
- VI. The investment time horizon

Four questions will be asked to illustrate the importance of this financial budget for corporate production units:

- I. What is the level of investment that a production unit must make in the next three years to increase its production capacity by 40%?
- II. How much does a corporate company intending to establish itself in the country invest?

III. What investment will a production unit with eight branches and plans to open two branches per year require over the next two years?

IV. What percentage of the investment would the corporate production unit contribute to the total investment to be made?

The answers to the previous questions are demonstrated by the use or management of a specific financial instrument model, which is shown in Type 1.

### Capital budgeting methodology

A Word document can be used, in which case the quantification method is manual. If an Excel document is used, formulas are added and each of the variables involved in the instrument is estimated. Knowledge of Excel is essential for students or those new to the subject. A Google Sheet can also be used, or if not available, formulas are used, as in the Excel document.

### Type I - Excel Document

Capital Budgeting			
1. 1. Structuring an Investment Plan			
	Total	Bank Financing	Entrepreneur
	%	%	Contribution
			%
<b>a. Fixed Capital</b>			
<b>Subtotal Fixed Capital</b>			
<b>b. Working Capital</b>			
<b>Subtotal Working Capital</b>			
<b>c. Total Project Cost (or Total Investment Plan)</b>			
<b>d. ANALYSIS</b>			
The total project cost amounts to US\$, of which US\$ corresponds to fixed capital investments and US\$ corresponds to working capital investments.			
The bank financing consists of a term loan with a __ term, interest of %, in the amount of US\$, and a line of credit in the amount of US\$ for __ days.			
The total contribution amounts to US\$, the fixed capital contribution of US\$, and the working capital contribution of US\$.			

Source: Prepared by Hugo Pereira

The valuation process for the aforementioned financial instrument is explained by the development of a corporate company, which was considering establishing, for the following year, three additional sales points, to the six that were in operation, that is, it was planning to grow by 33.33% based on the number of branches within two years, when said sales points would enter into operation. The investment requirements would be estimated in thousands of US\$: Fixed capital, detail, Buildings for 2,100, Machinery and Equipment for 1,200, Transportation equipment for 360, Technological equipment and others 340. The working capital items had been budgeted as follows: Inventories for 3,000 and other working capital needs for 1,000. The corporate company would contribute 10% of the investment.

The starting point was an optimistic outlook for the fulfillment of the corporate production unit's strategic growth plan and its overall objective: increased profits and decreased costs, during each fiscal year (each year).

The risk level for this type of investment was low; therefore, a 10% contingency allowance was established (considering that when the financial resources were to be invested next year or in subsequent years, there could be changes in the costs of the investment items estimated for the current year, with the maximum margin for changes established by corporate governance). The establishment of contingency allowances is necessary to guarantee the execution of the investment, since there is no control over prices or any minor adjustments to investment items in coming years or in the future, when the investment is made. In this way, the risk of price or minor adjustments to an investment is covered. The financial resources will be modeled through bank financing.

### Fixed capital variables

Fixed capital items in a future investment, estimated in the capital budget, are those whose economic asset lifespan is greater than one year and are comprised of fixed assets. The fixed assets of a productive activity consist of land together with buildings (buildings, warehouses, construction in general, and infrastructure construction for electrical, stormwater, irrigation systems, etc.), machinery and equipment, including technological equipment, rolling stock, and any other fixed assets that are tangible and have a lifespan greater than one year.

Fixed capital or working capital items are related to:

- I. Medium and long-term, due to their duration
- II. Term loans, for financing productive assets in the corporate production unit or in smaller business activities.

### Working capital variables

Working capital would be composed of economic goods or services with a duration of less than one year, that is, current assets such as inventories, general and administrative expenses, and production costs. Los instrumentos de deuda-capital para realizar una inversión, por estar constituidas por financiamiento bancario, emisión de bonos y emisión de acciones. Working capital may also include the costs of organizing the production unit and any other short-term expenditure required for its operation. An example would be unforeseen events resulting from price increases or eventualities in operational performance, as long as they affect the items indicated in the previous paragraph.

The components of working capital are related to:

- I. Short-term, due to their duration

- II. Lines of credit or overdraft facilities, as these are banking products with terms of less than 365 days

### Total project cost or total investment cost

To understand the methodology for estimating the variables mentioned in this section, requirements are observed in the valuation process. The sum of the cost of fixed capital and working capital establishes the monetary value of the total investment project. When corporate investments are made, the company's contribution to the investment is an essential variable, both for fixed capital and working capital requirements. It is expressed in monetary value as a percentage of the total investment. It could generally be 5% to 20% of the investment depending on its financial resources or liquidity capacity at the time of the credit negotiation, a situation that will be agreed upon between the parties.

### Classic financial products - capital budget

In the design and preparation of the Capital Budget and in subsequent developments, three financial instruments are considered to raise funds for a given level of investment, namely: Financing through two banking products: the issuance of securities: bonds and stocks.

### Bank financing

This tool is used in a broader sense, for corporate production units, large, medium-sized, small businesses and pymes. The curriculum for the Bachelor's Degree in Finance and Banking and the Bachelor's Degree in Investment and Risk at the Faculty of Economics includes the subjects of Banking Regulation and Operations and Financial Law, which encompass all the regulations related to the three instruments detailed above.

### Capital budget calculation for bond and stock issuance

The course begins with the capital budget model, with the implicit understanding that the novice or student must have knowledge of how to use Excel (Google Sheet) and Word documents. The estimation process uses the case information provided in section 6.2.

### Flowchart No. I

Capital Budget Construction Process	
Stages	Actions
I - Cell Format	<ul style="list-style-type: none"> <li>&gt; It is verified that the cell format is in number with 0 decimal places.</li> </ul>
II - Valuation of Contributions	<ul style="list-style-type: none"> <li>&gt; The total investment contribution, the bank financing contribution, and the entrepreneur's contribution are included in percentage terms.</li> </ul>
III - Investment Items to Fixed Capital	<ul style="list-style-type: none"> <li>&gt; Fixed capital items are entered in the first column.</li> <li>&gt; The percentage of unforeseen expenses is then estimated and included.</li> </ul>
IV - Investment Items in Monetary Terms and Subtotal Fixed Capital	<ul style="list-style-type: none"> <li>&gt; Each fixed capital investment item is quantified in the second fixed capital column.</li> <li>&gt; The fixed capital column is then totaled.</li> </ul>
V - Company Contribution to Fixed Capital, Column 4	<ul style="list-style-type: none"> <li>&gt; It is located in the fixed capital subtotal, column 4.</li> <li>&gt; The figure for the 10% employer contribution is obtained, which appears on the same line, column 2, and is entered.</li> <li>&gt; The productive unit's contribution is then distributed among the fixed capital investment items, column 4.</li> </ul>
VI - Bank Financing, Fixed Capital, Column 3	<ul style="list-style-type: none"> <li>&gt; The contribution from column 4 to fixed capital is deducted from the investment items in column 2 and entered in column 3.</li> <li>&gt; Next, column 3, fixed capital, is added. The resulting sum is entered. This figure is the amount of the term loan.</li> </ul>
VII - Working Capital Estimates	<ul style="list-style-type: none"> <li>&gt; Repeat the process from steps 3 to 6 for fixed capital with the working capital items. At the end, the bank product in column three, working capital, is the amount of the credit line.</li> </ul>
VIII - Total Project Cost Estimates, Bank Financing, and Company Contribution	<ul style="list-style-type: none"> <li>&gt; The fixed capital and labor in columns 2, 3 and 4 are added to obtain the variables indicated in phase No. 8.</li> </ul>
IX - Analysis Clearance	<ul style="list-style-type: none"> <li>&gt; □ Last action, the qualitative and quantitative analysis is carried out, in absolute and percentage terms, of the capital budget prepared.</li> </ul>

Source: Prepared by Hugo Pereira



Annex 1 shows the budget prepared for the case, in the Excel document. The flowchart and the aforementioned tools allow the instructor to approach capital budgeting creatively. The student is also able to model the capital budget, using the process as a guide for financial teaching.

### Securities: bond issuance and stock issuance

The sources of financing for bond and stock issuances were not analyzed because, based on the examples provided, bank financing estimates use almost the same methodology as the one presented. These instruments are regulated, like bank financing, but are generally used by corporate companies to obtain financial resources based on a high level of investment. Therefore, they are less widely used than bank loans.

### Content and form of prospectuses

The prospectus is a legal document that compiles all the characteristics and relevant information about the securities, so that investors can form a clear opinion before making their investment decision. (Superintendencia General de Valores (SUGEVAL), n.d.) Agreement 3-2017 shows the contents of the Prospectus regarding the information required for the securities to be registered and the applicant (Agreement 3-2017 of the Superintendencia del Mercado Seguranc a de Panam a, n.d.).<sup>3-31</sup>

### The application of this methodology in the classroom

The impact is applied and analyzed in the classroom by developing or modeling future evaluations, using the capital budget for the corporate production unit in a specific case. Under this simulation, the student constructs the capital budget for a specific future period. This is how the professor assesses the student, thereby diagnosing the student's mastery of the set of techniques necessary for estimating the capital budget. "At this point for people who are not financial experts we will apply the Capstone Simulation as a finance teacher. Capstone is reputed to be the one of the best-known business educational simulations on finance. Simulations provide an unparalleled means of injecting interactivity into the classroom" (ec.europa.eu/programmes-YOUTH, ERASMUS+ STRATEGIC PARTNERSHIP FOR) It is also supported by the theoretical framework that helps the student understand and determine how these variables are quantified in a corporate company, based on its productive activity. This is the purpose of the comprehensive management of the tools described above. The professor's role is to teach financial knowledge from a conceptual perspective and how to put financial instruments into practice in future evaluations. Furthermore, it is essential that the professor construct a detailed project so that the student, step by step, through the corresponding assignments, is ready to develop their corporate project and conduct the economic and financial evaluation of the case assigned in the first week of class. A complete financial framework for creative thinking throughout the semester. This way, the teacher can evaluate the knowledge acquired and its impact in the classroom.

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### Conflicts of interest

The author declares there is no conflict of interest.

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