

Economic value added (EVA) as an indicator for financial decisions: An Application to the Province of Santa Elena, Ecuador

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This paper analyses the need to use alternative methods to the traditional accepted techniques applied in investment analysis for associative groups. This paper exposes that the technique economic value added (EVA) can contribute to measure other aspects involved in financial decisions for associative groups omitted in traditional indicators of project evaluation, net present value (NPV) and internal rate of return (IRR) such as i) evaluation of the productive activity of the associated strategies popular and solidarity economy ii) quantifying the profitability generated by the implementation of the project, iii) identifying the main impacts generated by implementing the creation of the company and iv) the identification of the economic value added. This tool permits the employment of probabilistic scenarios, in order to simulate changes in the input parameters for determining when the EVA tends to zero, making a comparative analysis with the NPV. It is used to calculate the weighted average cost of capital (WACC) market financial returns because you cannot get or inefficient conduct the study by estimating the beta for the CAPM method because Ecuador has not data from the stock exchange. We execute an application of this method a processing plant for the production of salt in Jose Luis Tamayo, situated in the Province of Santa Elena, Ecuador.

Economic value added (EVA), net present value (NPV) and internal rate of return (IRR), Santa Elena Peninsula, Ecuador

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1. Introduction

Business development in the Province of Santa Elena has been significant in recent years, companies and associated groups have gained strength due to various factors that have helped to converge these activities in the province, one of the variants has been the development of popular and solidarity economy strategies, who have improved the living conditions of the population.

The objective of any economic entity either company, corporation, association groups, is the generation of wealth; otherwise it could not distribute profits, increase the value of the shares, or could not reinvest in social responsibility. A company creates value if the return on investment is greater than the cost of capital, if instead the return on investment is less than the cost of capital, value is destroyed.

This paper shows the application of economic value added (EVA), as a tool to evaluate an investment proposal, as an alternative method to the traditional indicators such as are the net present value (NPV) and internal rate of return (IRR), through a case study in the development and marketing of products derived from the salt in the parish Jose Luis Tamayo, Canton Province of Santa Elena Salinas. The difference between using the updated NPV and EVA to evaluate investment is that the former compares the amount to be invested with future cash flows that generate investment. Instead, using the EVA does not follow that investment income before taxes after interest (UAIDI) includes the deduction of annual depreciation on investment.

This research aims to propose an alternative investment for three associative groups are: i) the White Mountain Association, ii) Magdalena 4 and iii) Magdalena. We want to evaluate the productive activity partners, evaluate strategies popular and solidarity economy, quantify the yield generated the development and marketing of salt as raw material, through the economic value added to determine if it is creating value for the owners pass the salt mines of the status quo to a situation where profit margins are what you want to contribute to development. The research tests the hypothesis that "The Economic Value Added (EVA) is a financial indicator to decide the creation of the company."

2. Economic value added as an indicator for financial decisions

There are indicators for the evaluation of traditional projects such as Net Present Value (NPV), and Internal Rate of Return (IRR), a study of John Graham and Campbell Harvey (2001) on the use of different techniques and models set forth in the "financial theory of the firm" by 392 executives from a wide range of North American companies and its main conclusions were: "large companies rely strongly on present value techniques and the asset pricing model of capital, while small businesses are relatively at ease using the criterion of recovery period". However following the new trends an alternative method is the Net Present Value (NPV) is presented below:

2.1 Definitions of Economic Value Added (EVA)

According to (Gitman, 2007 p. 417) EVA is a popular measure used by many companies to determine whether an investment (proposed or existing) positively contributes to the wealth of the owners. The application of EVA requires using the weighted average cost of capital (WACC)

Calculating the Economic Value Added (EVA) is an effective tool which allows to know if a company creates or destroys failing value for its owners, managing to go far beyond traditional measures to evaluate the overall performance management or an organization.

Although the EVA and value generation have emerged as developments of the past decade, the economic and financial theory has approached these concepts quite some time.

For (Oriol Amat 1999), the EVA can be defined as "what remains once have been deducted from income, all expenses including the opportunity cost of capital and taxes, all costs, including the opportunity cost of capital and taxes". In other words, EVA is what remains once all expenses have been addressed and satisfied a minimum return expected by shareholders. Therefore, a company creates value when the return generated exceeds the opportunity cost of shareholders.

For (Percy Olivares Vilchez 2000), "economic value added is the residual amount that remains after you have deducted from income, all the expenses, taxes and the cost of capital and own external resources that have been invested in assets".

The economic value added is positive when the company has generated a return that exceeds the opportunity cost of shareholders, therefore, value is created. When the economic value added is negative, it means that the company has not generated a return that exceeds the cost of capital to the shareholders, and therefore the value is being destroyed.

The first notion of EVA was developed by (Alfred Marshall 1890) The Principles of Economics: "When a man is engaged in a business, its earnings for the year are excess revenues received during the year on their payouts. The difference between the value of the plant, inventories, etc., the end and the beginning of the year is taken as part of its inputs or as part of their payouts, according to whether there has been an increase or decrease in value. What remains of their profits after deducting interest on capital at the current rate, it is usually called its start or administer benefit".

The EVA concept is a variation of what has traditionally been called "residual income or profit", which was defined as the result that capital. There have been a number of advantages of the indicator and use EVA has several defenders. Thus (Koller and Meteache 1997) note that "The EVA is a financial measure to assess the performance powerful professional but compensation effects may be incomplete and you have to combine it with others." (Arthur Andersen 1997) indicates that the analysis of historical data shows that "EVA is closely related to movements in stock prices".

The name of EVA is a registered trademark of the consultant, Stern Stewart & Co., who in their advertising says: Forget EPS (earnings per share), ROE and ROI.

The true measure of the performance of your company is EVA, (Fernández 1999), p. 209. This may be one reason for the popularity of the EVA, such as name, above other denominations. Another aspect that has influenced their use is the development of the concept but as a management vision more than just a financial indicator. The concepts loosely related to each other and all manifest the applicability of Eva to make decisions.

2.1.1. Calculation of EVA

$$EVA = C * (ROA - WACC)$$

C: Capital (Liabilities + equity of the company).

ROA: Return on assets

WACC: Weighted Average Cost of Capital

Where:

$$WACC = ip * (passive / active) * (1 - t) + ipt * (equity / assets)$$

ip: cost of liability

t: rate of income tax

ipt: cost of equity (if the country is used FRR)

2.2. Traditional Indicators project evaluation

There are approximately twelve financial indicators that are most commonly used.

According to a study by John Graham and Campbell Harvey¹³ as shown in the table below (# 1).

However for the Ecuadorian case is very different, requiring public and private entities in the project presentation analyzing financial indicators are the Net Present Value and Internal Rate of Return that have become traditional indicators for evaluating them, however it has been shown by a study by¹⁴ Pasqual, Joan, Perez, María José, a brief analysis of the existing literature and practice between professionals and experts, shows that there are still major gaps in the knowledge of the characteristics of NPV and IRR, and misconceptions in the interpretation of the results that they yield and sometimes not intuitive. Also a controversy persists about the correct standard sterile to use, the NPV or IRR (Brealey, Myers, 1985), as if it were criteria complementary rather than substitutes. The advantages of NPV versus IRR when used as an objective function are well known and, as decision criteria are equivalent in terms of quality, but differ in how to measure desirability. As the NPV quantifies the goodness of a net absolute project and IRR provides a crude relative index, the use of either approach will be more appropriate to the case you have in hand.

¹³ 2001 conducted a complete study gave the use of different techniques and models listed in the "financial theory of the firm" by 392

¹⁴ False anomalies of the Civil Present Value Pasqual Neto, John UAB Tarrío, Jose Antonio Perez, University of Barcelona, María José, Universidad Carlos III.

Methods	Using
Internal Rate of Return (IRR)	75,61%
Net Present Value (NPV)	74,93%
Required rate of return	56,94%
Recovery period	56,74%
sensitivity analysis	51,54%
earnings multiple	38,92%
Discounted payback period	29,45%
Real Options	26,59%
Accounting Rate of Return	20,29%
Simulation / Value at Risk (VAR)	13,66%
Profitability Index	11,87%
Adjusted Present Value	10,78%

Table 1

2.2.1. Net Present Value (NPV)

The Net Present Values is the best method known and generally accepted by project evaluators. It measures the profitability of the project in monetary values that exceed the desired profitability after retrieving entire investment.

To do this, calculate the present value of all future cash flows projected from the first period of operation and subtracts the total investment expressed at time zero. If the result is greater than zero, show how much is gained by the project, after recovering the investment, the rate i , which is required to return to the project, if the result is zero, indicating that the project reports exactly rate i , which wanted to get after recovering the invested capital and, if the result is negative, it shows the amount needed to win was desired rate recovered after the investment.

$$NPV = \sum_{t=1}^H \frac{PC_t}{(1+r)^t} - I$$

PC_n : Project cash flows in the respective periods

I_0 : Initial investment at time zero.

i : Discount rate, minimum attractive rate of return

H : Evaluation Horizon (years)

2.2.2. Internal Rate of Return (IRR)

A second evaluation criterion is the internal rate of return (IRR), which measures profitability as a percentage. Is the discount rate that equates the equivalent of an alternative cash inflow (revenues or savings) to the equivalent value of cash outflows (expenses, including investment costs) Is also defined as the discount rate that makes the $NPV = 0$. This means that to find the IRR of an investment project that lasts H year, you should calculate the IRR with the following expression:

$$\sum_{t=1}^H \frac{PC_t}{(1+IRR)^t} - I = 0$$

PC_n : Project cash flows in the respective periods

I_0 : Initial investment at time zero.

IRR: Internal Rate of Return

H : Evaluation Horizon (years)

3. Application case study of economic value added (eva): creating a processing plant for the production of salt in jose luis tamayo.

3.1.Presentation

After studying the current situation of small associated salt producers in parish Jose Luis Tamayo, we propose the creation of a plant to process the salt by which alternative will give a new business and source of income because in partners first instance will be guaranteed the sale of raw materials in addition to the creation of new jobs, fairer prices, there will be the presence of intermediaries.

The proposal is structured in four stages, the first a market analysis which will be detailed in supply, demand, prices, marketing of salt products, the second stage a technical study which will determine the optimum size of the plant, its location, investment in machinery equipment and technology, personnel, and the last stage evaluation using traditional indicators of project evaluation and testing of the hypothesis that the Economic Value Added, also serves to evaluate these initiatives, in addition determine whether the company is creating value.

3.2. Financial study

For financial treatment was based on the estimation of demand in this case by the market study was able to estimate local demand.

Although revenues to be gained from this would be few significant, therefore the market opens national level as do companies that operate locally, thus making the project budget, estimating the traditional indicators for project evaluation and economic value added.

For the study took into account some assumptions that will be detailing each of the points. The sales plan development is carried out considering the average price of the 3 products that have better reception at home.

Below is an analysis of budgets, production costs both raw materials, direct labor and indirect production costs, and working capital, are 10-year projections as project evaluation horizon, income statement , cash flow and calculation of economic value added.

Capital Structure: It was considered an initial investment between \$ 312,766.07 corresponding to physical works, property, plant and equipment plus deferred assets which must manage via autonomous governments 30% of the total investment and the difference via a loan National Finance Corporation.

Variable	Amount
Deferred Asset Investment	3.500,00
Working Capital	29.295,07
Fixed Asset Investment	178.886,00
Physical Works	101.085,00
Total investment	312.766,07

Table 2

Partners should give a financial contribution of \$ 93,830 which corresponds to 30% of total investment, and the difference corresponding to 70% by debt, whose value is \$ 218,936, 10-year loan with an interest rate of 9 , 5%.

3.2.1. Traditional Indicators project evaluation

3.2.1.1. Discount rate

To determine the rate to discount the NPV in project cash flow, we used the rate of 12% (social rate) used by national financial corporation, and to discount the investor flow rate was used 25.2% market financial returns from mining and quarrying (salt) obtained from the consolidated financial indicators for 2010 because in the country there are no stock price data of similar companies in the market alone to obtain the model Price Rating of Financial Assets and Capital (CAPM).

3.2.1.2. Performance calculation using the NPV

It is the difference between the amounts of total revenues and expenditures brought to present value, indicating the additional value obtained, after having recovered the investment and costs. The NPV represents the net income generated by the project during these 10 years of life and in this case is expressed in dollars, and it can be considered as the return on invested capital. It is a method by which future profits are transferred to current values, assuming a 12% rate in this case is 262,930.40, this indicates the investment is profitable initiative.

3.2.1.3. Performance calculation using the IRR

The internal rate of return is the rate of return on money obtained from the project, and is that rate that equates the present value of the income stream, with the present value of cost flow, unlike the VAN where you have to consider a rate in the IRR must be determined. In this case the internal rate of return of the project is the result of 27.61% is greater than the discount rate which tells us that the Effort investment is profitable.

3.2.2. Application of EVA

The correct calculation of the total resources on which demand a certain capital cost per use to carry out the operation of the company.

The way they are applied for determining the EVA is the following

$$EVA = Capital (ROA - WACC)$$

It is important to clarify the concepts used, it should be understood as "capital" to all resources used by the company to generate its activities (liabilities and equity) and capital cost (c *) represents the value of the cost of those resources. Now based on financial indicators, profitability can be expressed as the profit before interest and after taxes (UAIDI) (excluding financial expenses not duplicate in the cost of capital) from the capital.

Sources of Funding	Value	Allocation	CC	WACC
Foreign capital	218.936	70%	10,15%	5,54%
Own Capital	93.830	30%	(25,2%)	7,56%
Total stockholders' equity	312.766	100%		13,10%

Table 3

The company has a 70% debt and 30% equity of the weighted average cost of capital is 13.5% taking into account financial market returns.

	Year 1	Year 2	Year 3
Operating income	79.882	84.262	89.294
Income Tax	22%	22%	22%
Profit after taxes	62.308	65.724	69.650
Capital (Total assets)	337.356	364.383	393.562
ROA	18%	18%	18%
WACC	13,10%	13,10%	13,10%
Eva	18108	17983	18086

Table 4

According to the data shown, the company creates value, in turn verifies that the project is profitable.

3.2.3. Comparing EVA with traditional measures

According to (Valencia, 2011) when analyzing the project evaluation process commonly relates to the use of performance indicators, usually the Net Present Value, Internal Rate of Return (IRR) and sometimes referred to Economic Value Added (EVA). The Net Present Value concept is to measure the generation of wealth when an investment is made through a project, ie methodical approach is similar to the EVA.

Both measure wealth generation or creation of value, the difference lies in their application, the NPV measures the value of a project in a horizon inter-temporal (time horizon in this case 10 years) while the EVA measures the value in a period of time. In addition, the NPV is an indicator of profitability in the investment analysis and approach is economical, while the EVA is a financial performance indicator associated with the accounting aspects but the fact that in this case the company creates value openness that the initiative is cost effective too. It tests the hypothesis that the "Economic Value Added (EVA) is a financial indicator to decide the creation of the company." For verification purposes EVA was calculated for a time horizon of 10 years, and are updated with the rate of Weighted Average Cost of Capital (WACC) the results were:

$$PVEVA = \sum_{i=1}^{10} \frac{EVA_i}{(1 + WACC)^i} = 90.384,06$$

The company during the 10 years creates value.

4. Conclusions and recommendations

4.1. Conclusions

We confirmed the hypothesis that the Economic Value Added is a financial indicator for decision-making in this case the company creates value, creates wealth.

It was conceptualized to EVA, and evidenced by expert judgment that match and validate this as an alternative indicator for the evaluation of projects.

Economic Value Added is a financial indicator to decide the creation of a company; in this case, the company is creating value significantly.

In investment analysis have many evaluation indicators, among them are the net present value that provides aggregate wealth generated by an investment project.

Both the NPV or EVA complement, first one showed the wealth generated and the other value creation in both it can be concluded that the investment is profitable initiative

The initiative was profitable investment, in the case of partners should implement the project and that they move from status quo to a situation where their lives improve

4.2. Recomendaciones

To further studies of the economic value added technique, they must consider probabilistic scenarios in order to identify which are the values of input parameters (variables) that make the EVA tends to zero and which can get those limits.

The indicators of both the NPV and IRR, due to its effectiveness and particularly for their continued use has shifted to the use of EVA, but it is essential to include this indicator for decision making because it gives an approximation of the value added can generate investment initiative decreasing risks in making decisions.

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