

CAPITAL BUDGETING: THE ROMANIAN UNIVERSITY PROFESSORS' POINTS OF VIEW

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ABSTRACT. This study aims at validating the points of view of the Romanian finance university professors regarding capital budgeting. The study is original and important in the same time, taking into consideration that their opinions, due to their vocation of educators, may represent the starting point for debates on the most suitable methods and techniques used in the practice of this field. It can be noticed that the dominant points of view converge to the recommendations of the main reference works in the domain of corporate finance. Hence, indicators like net present value, internal rate of return or profitability index are the most preferred. Among the techniques of risk quantification, the sensitivity analysis is considered as the most suitable, followed by the Monte Carlo method and the scenarios technique. As for the discount rate used for the investment projects analysis, the most numerous respondents recommend the weighted average cost of capital.

Secondly, this study brings some insights on the profile of the university professors with competences in the field of capital budgeting. We can derive the conclusion that their education level is high, most of them having accomplished their university studies with a curricula adequate to the principles of a market economy. More than half of the respondents also have investments consultancy activities.

Motto:

"The ideologies based on false premises may become true and there are moments when the usual rules do not apply, and the abnormal becomes normal".

George Soros

1. INTRODUCTION

The present study aims at identifying the main options of the finance professors regarding capital budgeting. Secondly, the study provides details on the profile of university professors working in domains related to capital budgeting. Therefore, the authors conducted a questionnaire research on an important number of university professors having competences in this domain.

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The paper may have a fundamental role in a few directions. Firstly, the answers of the questioned university professors may serve for orientation in the practice of capital budgeting, by presenting the dominant opinions in this field. The study is original; there is no similar research regarding Romanian finance university professors' points of view, although such opinions were integrated in studies made on international samples (Fernandez and del Campo, 2010).

The choice of a sample of finance university professors is not by hazard. It allows, on one hand, to eliminate supplementary problems in the data interpretation related to an insufficient knowledge of the concepts used in the questionnaire. Hence, the results will show exclusively the importance accorded to certain techniques or indicators used in the financial practice (see, in a relatively different context, Doran et al., 2010).

Also, the points of view collected from university professors may serve as an inspiration source and, maybe, as a debate subject, for the practitioners. Hence, the study can provide valuable points of view regarding the most suitable methods and techniques to be used in order to solve different given practical issues. Thus, Dunn (2009) uses a sample of corporate finance university professors in order to find out whether the management and financing planning methods used by small enterprises are suitable. The conclusion is that the majority of the respondents are in favour of the methods and techniques used in the big companies management, however pointing out on the necessity of adapting them to the needs of financial planning and management of small companies.

On the other side, the use of a sample of professors is motivated by their quality of forming practitioners. The identification of eventual inconsistencies in applying certain concepts and theories can be a starting point in improving some procedures used in the financial practice. A very interesting paper in this sense is Fernandez (2009) on the use of volatility coefficient beta in estimating the discount rate for different categories of investments. The study bases on a questionnaire addressed to 2510 professors from 65 developed and emerging countries. It identifies an inconsistency regarding the estimation of the cash flows generated by an investment project based on subjective hypotheses and the estimation of the discount rate which can be computed, in the view of the majority of the finance university professors, by a well-known mathematical formula where the beta coefficient is taken from reference studies on the market. Thus, the mechanism does not allow to adequate the discount rate to the hypotheses used in order to estimate the future cash flows. This conclusion shows the necessity of improving the procedure transmitted to students regarding the estimation of the discount rate, as well as the teaching techniques used in order to give to the following economists the perception needed to deal with the discount rate issues adequately.

The remaining of the study is structured as follows. In section 2, the general profile of the Romanian corporate finance university professors is described. Section 3 contains the recommendations of the professors regarding capital budgeting. Section 4 concludes the study.

2. THE PROFILE OF THE ROMANIAN CORPORATE FINANCE UNIVERSITY PROFESSORS

This study focused on the university professors in the economic field, having competences in corporate finance and teaching in Romania. In this section our aim is to describe the educator's profile (in higher education) of people studying capital budgeting. We mention that, for reasons not always relating to professional aspects, presently there are numerous disciplines in the curricula of Romanian universities, mainly dealing with the same issues, but having different denominations – Direct investments and their financing, Investment management, Corporate financial policies, Corporate finance etc. Obviously, these disciplines have an alternative character. It is to be mentioned that all these disciplines deal with the issues treated in Corporate Finance courses in North-American universities.

The data were collected by transmitting questionnaires to university professors teaching in the field of capital budgeting. There is a relatively integrated community of these university professors, explaining the high number of respondents. The sample was not built on probabilistic foundations, so the significance the results cannot be quantified. However, due to the large

number of respondents comparatively to the potential number of university professors, the results can be taken into account for the purposes of this study.

The sample included 43 persons (48.8% women and 51.2% men, with an age of 38.65 years in average and 34 years in mode) providing answers to the questions proposed. They were representative also from the point of view of didactic degrees. Hence, 32.6% are professors, 25.6% are senior lecturers (associate professors), 18.6% are lecturers (assistant professors), 18.6% are teaching assistants, 2.3% are junior teaching assistants and 2.3% are associated teachers.¹ According to the educational system requirements in Romania, which make conditional the obtaining of the degrees of professor and senior lecturer by possessing a Ph.D. degree, 76.7% of the respondents have a Ph.D. degree,² the rest of them being Ph.D. students.

The difference between 76.7% of the respondents having the Ph.D. degree and 58.1% being professors or senior lecturers is given by the lecturers and teaching assistants having the Ph.D. scientific degree. These figures show that the majority of the university professors in the sample have a high degree of education and specialization.

Regarding the experience in the high education system, the distribution of the sample in experience intervals is the following: 39.5% - less than 10 years, 37.2% - between 10 and 19 years, 7% - between 20 and 29 years, 11.6% - between 30 and 39 years and 4.7% - 40 or more than 40 years. It is to be mentioned that even the main part of the respondents have didactic degrees of professors and senior lecturers (58.1%) and Ph.D. in economics (76.7%), most of them have an experience of less of 20 years (76.7%). This indicator can be an estimator for the fact that most of the university professors in this field attended their university courses after the Romanian Anti-Communist Revolution of 1989, so having a curriculum adequate to the market economy principles.

Regarding the universities covered by the sample, the majority of the respondents teach at Bucharest Academy of Economic Studies (65.11%). The sample is completed by university professors from Babeş-Bolyai University in Cluj Napoca, West University of Timişoara, Craiova University, "Dunărea de Jos" University in Galaţi, Al. I. Cuza University in Iaşi, Lucian Blaga University in Sibiu, Petru Maior University in Târgu Mureş and Transylvania University in Braşov.

Also, the main part of the respondents (69.8%) obtained their Ph.D. degree or are Ph.D. students at Bucharest Academy of Economic Studies. Other universities where several respondents obtained their Ph.D. degree are Babeş-Bolyai University in Cluj Napoca (7%), West University of Timişoara and Craiova University (5% each). The list is completed by Al. I. Cuza University in Iaşi, Dunărea de Jos University in Galaţi, Lucian Blaga University in Sibiu and the Technical University of Civil Engineering of Bucharest.

Regarding the practical experience in consultancy along with the teaching activity, 55.8% of the respondents declared realizing or having realized investments consultancy activities.

It is to be mentioned that the respondents teach also other numerous disciplines in universities curricula. For exemplifying: (1) disciplines strictly related to Corporate finance (Direct investments and their financing, Corporate financial management, Corporate finance, Financial analysis, Financial management, Corporate financial policies, Small and medium enterprises financing, International corporate finance, Investment financing policies in the context of EU accession, Investments efficiency); (2) other disciplines of micro-finances (Business valuation, Financial markets, Taxation, Real estate valuation, Portfolio management, Empirical finance, Risk management, Corporate governance, Business risk management, Capital markets, Prices

¹The Romanian denominations for these academic ranks are: *profesor universitar*, *conferenţiar universitar*, *lector universitar*, *asistent universitar*, *preparator universitar* and *cadru didactic asociat*. Our translation is usual, but is, of course, disputable, because of the differences between the required conditions for these ranks from country to country.

²The Ph.D. degree is compulsory also for the lecturer degree, but sometimes a delay of maximum 4 years is allowed from the moment of obtaining the lecturer degree by competition, in which period the person has to obtain the Ph.D. degree. In the opposite case, the person cannot bear the lecturer degree anymore.

and competition); (3) other financial disciplines (Basic finance, Public finance, European finance, International investments, Quantitative methods of budget analysis, Fiscal theories and policies, Public institutions finance, Insurance and reinsurance, Exchange risk management, Money and credit, Financial markets and institutions); (4) other economic disciplines (Controlling, Innovation management, Project management, Competitiveness and technological change management, Risk in investments and European affairs, Economic modelling, International Financial Reporting Standards).

3. THE UNIVERSITY PROFESSORS' RECOMMENDATIONS IN THE FIELD OF CAPITAL BUDGETING

Considering the objective of the questionnaire – which is to identify the main options of the finance university professors regarding capital budgeting –, it includes questions on the relevant indicators for the selection of direct investment projects, on the risk quantification techniques in investment projects analysis, and on the model/methodology recommended for the estimation of the discount rate.

In order to establish the relevant indicators in investment projects analysis, the respondents were asked to rank (from 1, the minimal rank, to 8, the maximal one) for a range of indicators inventoried by the literature as suitable for project selection. The most relevant indicator was considered the net present value, followed by the internal rate of return and the modified internal rate of return. The classification of the indicators and the average rank of each of them are depicted in table I.

Table I. Average rank of the indicators used in investment projects analysis

Indicator	Average rank
Net present value (NPV)	6.63
Internal rate of return (IRR)	5.96
Modified internal rate of return	5.05
Dynamic (discounted) payback period	4.74
Profitability index	4.74
Annual equivalent cost	3.48
Accounting rate of return	3.02
Static (not discounted) payback period	2.90

In fact, 51.2% of the respondents consider the net present value as the most recommended indicator, followed by internal rate of return (20%) and profitability index (16.3%). It is to be noticed that the dominant point of view is the same as the recommendations in reference works in the field in USA (Ross, Westerfield and Jaffe, 2008), but also in Romania (Stancu, 2007).

The choice made by the Romanian university professors in favour of the net present value as the most important indicator in capital budgeting, although it is sometimes difficult to explain to a person not having a solid economic and financial background, is an argument for this indicator, fact confirmed also by the international financial literature.

The internal rate of return, preferred by the investors due to its practical significance (it is easier to be understood by a non-specialist) was chosen in the second position on the scale of relevance. However, 20% of the respondents considered internal rate of return as the most important indicator in the analysis of direct investments projects, probably taking into account that it is the most often demanded by the investors.

The choice of the modified internal rate of return in the third position confirms the interest of the university professors to provide a measure of the practical results obtained by the investors, or their wish to bring a solution to practical issues of the investors regarding the anticipation of the project results. The modified internal rate of return can be defined as an annual effective

rate of return considering that the cash flows generated by the project are reinvested according to the best opportunity available at the moment of their payment.

The profitability index, although having a high informative power, is considered the forth most important indicator in investment projects analysis, although 16.3% of the respondents chose it as the most relevant. The dynamic payback period, important from the perspective of estimating the period necessary in order to cover the costs of the project is also cited as one of the important indicators in selecting the investment projects.

The other indicators, the annual equivalent cost, the accounting rate of return and the static payback period are considered as having a lower informative power due to the fact that they have a limited applicability (the annual equivalent cost) or that they ignore some financial principles such as the time value of money (the accounting rate of return, the static payback period), hence providing only a vague image of the results of the investment projects analyzed.

The results of the present paper converge to those of numerous international studies realized on samples of companies of different sizes and from different industries (for a synthesis of these studies, see Magni, 2005). It can be noticed a constant rise of the percentage of the people using discount methods (mainly the NPV): 57% (Klammer, 1972), 63% (Gitman and Forrester, 1977), 86% (Moore and Reichert, 1983), 92% (Poterba and Summers, 1995), 96% (Ryan and Ryan, 2002).

Graham and Harvey (2001) questioned 392 financial managers in US and Canadian companies and found out that the NPV is always or almost always used in new investment projects valuation by 74.9% of the respondents, while the IRR is used by 75.7%.

In order to classify, according to the relevance criterion, the risk quantification techniques, the respondents were invited to rank from 6 (the maximal value) to 1 (the minimal one) a range of risk quantification techniques. The most relevant was considered the sensitivity analysis. The classification of these techniques and the average ranks obtained by each technique are listed in table II.

Table II. The rank average of risk quantification techniques

Method	Average rank
Sensitivity analysis	4.62
Scenarios technique	3.73
Monte Carlo method	3.51
Decision tree	3.51
Real options	3.00
The risk is already dealt with in the discount rate	2.90

It is to be mentioned that 44.5% of the respondents consider the sensitivity analysis as the most recommended technique, followed by the Monte Carlo method (11.6%).

It also is to be noticed that 20% consider as optimal to quantify the risk of the project by the discount rate chosen. However, the majority of the respondents ranked modestly this technique, this being the reason for its obtaining the lowest rank between the six mentioned techniques (2.90). Taking into consideration the risk of the project by the estimation of the discount rate implies to introduce in the analysis some highly subjective hypotheses. Although preferred by 20% of the respondents, it is ranked in the last place due to the need, confirmed by the university professors, as well as by practitioners, to introduce techniques in order to limit the subjectivity degree of the hypotheses used.

Among these, the most often used according to the results of the questionnaire is the sensitivity analysis. A possible explanation is that a bigger importance is accorded to the reduction of the degree of uncertainty induced by the hypotheses used in the analysis, considering, probably that the risks due to the macroeconomic evolution are taken into account adequately by the estimation of the discount rate.

The Monte Carlo method and the scenarios technique are the following most important techniques of risk modelling used in investment projects analysis. The decision tree method is perceived as having a lower importance, probably because of the high subjectivity characterizing its application, while the real options, although they offer valuable information regarding the evolution of the investment projects, are useful for testing particular hypotheses such as the abandonment or the option of postponing the implementation of the project.

The worldwide practice is also in favour of the sensitivity analysis, used by 51.54% of the respondents, according to the study of Graham and Harvey (2001) made on a sample of US and Canadian managers, while the real options are taken into account only by 26.59% of them.

Another study made by Bain & Company in 2000, on a sample of 451 senior executives in over 30 industrial branches, tried to rank 25 managerial instruments, based on how often they are used by the managers (cited in Vintilă, 2009). In this list, the real options were ranked in the 24th position, being used only by 9% of the respondents. The perspectives of this instrument weren't optimistic either, the number of the managers having used the real options in the past being higher, but they renounced due to the sophisticated mathematical insights and the lack of simplicity and transparency of the real options technique. Hence, the dropdown rate for the real options was of 32%, the instrument standing on the third position according this criterion, compared to the average of 11% for all de managerial instruments considered.

Moreover, Graham and Harvey (2001) showed that the quantitative approach in capital budgeting did not improve significantly; however, the managers became experienced in using qualitative managerial instruments. The US and Canadian companies continued to commonly use simple valuation techniques (such as internal rates of return based on accounting information), rarely estimations based on the specific risk of the project, and almost never the real options.

The practitioners in the top American companies (a sample of 205 financial managers in Fortune 1000 CFO) use in capital budgeting, along with the "basic" instruments, 13 "supplementary" instruments (Ryan and Ryan, 2002). The preferred instruments are the sensitivity analysis (used by 85.1% of the respondents) and the scenarios technique (66.8%), the real options being in the end of the list, only 11.4% of the respondents using them.

In order to establish the model/methodology recommended for the estimation of the discount rate, the respondents were asked to choose one or more of 7 possibilities (this is why the sum of the percentages listed in table 3 is higher than 100%). The weighted average cost of capital is recommended by 50% of the respondents as a model for estimating the discount rate. The list of the models chosen is shown in table III.

Table III. Models for estimating the discount rate

Model	Percentage of respondents
Weighted average cost of capital	50.00%
Risk free rate + Risk primes (the Build-up model)	35.71%
The average rate of return for similar projects	28.57%
CAPM	16.67%
The average interest rate of the credits contracted by the company	9.52%
The average interest rate for deposits (on the market)	7.14%
Infation rate	4.76%

Again, it is to be noticed that most of the respondents adapted their recommendations to those of the international references (see Ross, Westerfield and Jaffe, 2008). Hence, 50% of them are in favour of the weighted average cost of capital as discount rate for capital budgeting. The Build-up model is also recommended by a significant part of the respondents (35.71%), as well

as the estimation of the discount rate as opportunity cost of capital based on the average rate of return for similar projects (28.57%).

Although, it is to be mentioned that almost 10% of the respondents use the interest rate of the credits granted to the company as discount rate. In the context of a still reduced degree of investors' financial education, a possible explanation can be the high confidence in the ability of the banks to correctly estimate the risk of the investment projects, due to their expertise in the field. The other measures can be considered as input data in estimating the discount rate, but cannot be, by themselves, accurate.

Regarding the weighted average cost of capital, there are also numerous international studies (for a synthesis, see Jagannathan and Meier, 2002) attesting its widely use as discount rate in capital budgeting: 61% (Brigham, 1975), 46% (Schall, Sundem and Geijsbeek, 1978), 83% (Gitman and Mercurio, 1982), 93% (Bierman, 1993; Bruner, Eades, Harris, and Higgins, 1998).

Starting from the premise that the investors anticipate correctly the risk of the project and, on this basis, estimate correctly the required return through the weighted average cost of capital, the main risk factor to be dealt with is the risk of the hypotheses considered in the analysis or the operational risk of the project.

Regarding the recommendations offered for the rate of return required by the shareholders, only 86.01% of the respondents answered this question. The opinions are mainly in favour of the Build-up model, starting from the risk free rate and adding different risk primes, or in favour of a market model (CAPM). Many of the respondents refer to the subjectivity of the first and restrained applicability of the other in practice.

4. CONCLUSIONS

Most of the university professors having competences in capital budgeting have a performing professional profile. Hence, the majority accomplished the university courses after 1989, with curricula according to the market economy principles. Furthermore, their education level is high.

It is to be noticed that the opinions given by most of the respondents are similar to the recommendations of the international specialty financial literature.

These results are useful for the practitioners in the domain of investment projects analysis, providing information on the indicators and techniques suitable for capital budgeting and on their adequacy to the particularities of Romanian economy.

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