

Contents

Data mining of transactional data for sales of dairy products Julian Vasilev	3
Research on the evolution of controlling tasks and their delimitation from audit tasks Costantin Roman, Aureliana-Geta Roman, Elena Meier, Mihaela Mocanu	13
Franchise's place within sustainable development matrix: an institutional economics approach Ion Pohoată, Oana-Ramona Socoliuc	27
Sensory experience – between the tourist and the marketer Mihail-Cristian Dițoiu, Aurelia-Felicia Stăncioiu, Nicolae Teodorescu, Lucian-Florin Onișor, Anamaria-Cătălina Radu	37
Covering the social costs of market failure – the unsub of the value added Teodora I. Dinu, Cătălin D. Dumitrică	51
Determinants of capital structure: comparison of empirical evidence for the use of different estimators Aviral Kumar Tiwari, Raveesh Krishnankutty	63
How can Africa attract different forms of capital flow: theoretical perspectives Nyankomo Marwa	83
Legal and practical aspects of the associations between the city of Bucharest and the large collectivities territorial – actuality and perspective Cezar Corneliu Manda, Cristina Elena Nicolescu	97
Psychological biases and the capital structure decisions: a literature review Tekin Bilgehan	123
The role of “after school” units in Romania’s rural areas Mihai Păunică, Adrian Anica-Popa	143
Is cash conversion cycles optimum in Turkish listed food-beverage firms? Filiz Konuk, Feyyaz Zeren	153
Comparative analysis of the financial discount rate and of the net present value of a public investment project throughout its life Bogdan Ioan Cojocă	165

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Data mining of transactional data for sales of dairy products

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Abstract. *The purpose of this article is to find out the most important factors for sales of dairy products. Transactional data for sales are used. This article is published for the first time. The results of the analysis will show how transactional data may be used for data mining. SPSS is used to analyze the data. Statistical methods (such as independent samples t-test, Chi-square tests, Mann-Whitney U test, one-way ANOVA test) are applied to find dependencies. We suppose that the quantity of sales depends on the year, month, group, item and average price. At the end of the study we found out that “year” and “group” are factors which mostly influence the quantity of a sale. Factors “month”, “item” and “average sale price” do not affect the quantity of a single sale. Mathematical formulas are derived to predict the quantity of a future sale on the basis of independent variables such as year and group of stock.*

Keywords: sales analysis, dairy products, SPSS.

JEL Classification: C81.

REL Classification: 10B.

1. Introduction

Sales analysis is a common technique adapted in practice. POS systems generate thousands of transactions monthly. All these transactions may be used to analyze data. The simplest way of analysis is to report sales on a yearly, monthly or quarterly basis. A more detailed view allows drilling down the transactional data. Pivot tables or crosstab tables may be produced when grouping the sales on two factors – for instance month and year. Grouping may be done by customers and products. All these reports use simple SELECT queries for extracting data within database management systems (DBMS).

Select queries may be also used for grouping of data. Grouping of data allows the end user to generate custom aggregated reports. Usually one variable (or more variables) is used for grouping and another variable (variables) is used for summarizing data. The first variable (the first group of variables) may have text values (for instance EAN, customer name, and month). The second one (the second group of variables) must have numeric values in order to make calculations – using the function SUM, AVERAGE, STDEV or another one.

The technique for grouping transactional data allows confidential data to be hidden. Summarized values do not show the values of each transaction. They also do not show the number of transactions.

Data mining is a well-known technique for analyzing datasets. The purpose of the application of data mining is to find dependencies within data which may not be marked or highlighted by simple select queries and sales reports.

2. Recent research on sales analysis

Sales analysis is an interesting theme during periods of crisis. Different authors focus on specific aspects and particular methods. Some articles (Cheng et al., 2013) focus on sales performance. Other articles (Celik et al., 2013) focus on specific methods – for instance panel data analysis. Contemporary instruments such as neural networks are used to predict food demand (Huang, 2013). Sales for the past 6 months are used to predict future sales. A recent article (Azad et al., 2013) focuses on the factor analysis of dairy products. The last cited paper investigates factors such as salesman qualification, motivation, personality and content motivation. Our research does not cover behavioral aspects of sales force automation. Other articles treat another product, group of products or specific type of business.

Factor analysis is a well-known method applied in sales in the sphere of customer loyalty (Hanzaee et al., 2013). Our paper extends the possibilities of the factor analysis. A group of authors (Spadoni et al., 2014) use factor analysis to assess the applicability and impact of private food standards. They classify food companies into groups by a qualitative investigation based on in-depth interviews. Factor analysis is used (Giritlioglu et al., 2014) to develop an instrument to evaluate food and beverage service quality in spa hotels. Customer expectations are evaluated.

Seasonal fluctuations are studied in many papers (Parvathi et al., 2013). Elgin-Stuczynski (2014) surveys dairy farmers' lay knowledge of climate change and the adaptation strategies they have implemented to respond to climatic and economic drivers. All respondents make changes to their dairy business. Few farmers study seasonal fluctuations in temperatures. Most of seasonal fluctuations are caused by climate (Sada et al., 2014). This study is based on a household survey. Rainfall and temperature data are collected from Department of Hydrology and Meteorology within Kathmandu valley and analyzed to understand the climatic trend.

Food industry is widely discussed (Qiao et al., 2013). The quality of economic growth depends mainly on produced foods. Dairy products have an interesting marketing behavior (Ryzhyk, 2013). This study focuses on dairy products in Ukraine. Since we have only data for one Bulgarian company, this paper makes conclusions which are specific for one dairy products distributor. Agribusiness products are vital for humans. That is why some researchers investigate agribusiness producers (Knecht, Srodon, 2013). Holubek et al. (2013) presented an empirical investigation and an economic analysis of low-input farming systems.

Transactional data for sales is sometimes used for the supplier selection criteria (Kar and Pani, 2014). They want to find the critical factors for selecting suppliers. Fuzzy analytic hierarchy processes are used to analyze data from 188 firms. The adoption of e-transaction systems and e-procurement platforms are important evaluation criteria. Sales data usually omit out-of-stocks. A group of authors (Joachim et al., 2014) analyze the effects of retail out-of-stocks from a Service-Dominant (S-D) logic view. They analyze supply chains in retail market. The focus is on fast-moving consumer goods. They calculated the novel costs of an out-of-stock. They give new ideas for business alignment of manufacturers to retailers.

3. Dataset used for data mining

Transactional data are summarized in a table.

Table 1. *A part of the dataset used for data mining of sales data*

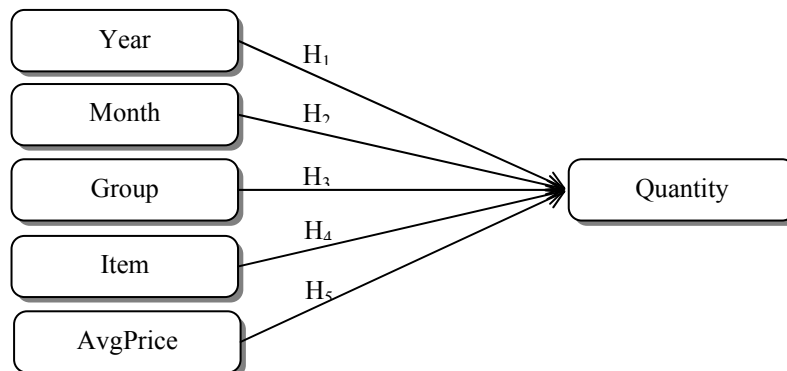
Year	Month	group	item	Quantity	Value	AvgPrice
2012	4	1	7	110	40.29	0.3663
2012	4	1	8	321	117.57	0.3663
2012	4	1	14	75	33.86	0.4515
2012	4	1	15	50	22.57	0.4514
2012	4	1	126	8	7.50	0.9375
2012	4	1	128	1	0.43	0.4300
2012	4	2	101	54	5.11	0.0946
2012	4	2	102	120	43.44	0.3620
2012	4	2	103	10	2.13	0.2130
2012	4	2	106	14	2.56	0.1829
2012	4	2	108	70	17.89	0.2556

Internal article number is used instead of the EAN. 559 records are used for our dataset. The initial transactional dataset consists of more than 40 000 records. By grouping data for year, month, group and item, the sum of quantity, the sum of value is calculated. The average price is calculated by dividing the last two columns. Because of grouping data, 561 records are used for our dataset. The dataset consists of data starting 2012, April and ending January 2014. Before transferring data from Excel to SPSS it is a good idea to change the decimal symbol from point to comma in Control Panel.

4. Defining hypothesis

We suppose that the quantity of sales is the dependent variable. All other variables are independent variables.

Figure 1. *Initial model for data mining transactional data*



Our prediction for the quantity of sales may be formulated in five hypotheses.

H1: The quantity of sales depends on the year.

H2: The quantity of sales depends on the month.

H3: The quantity of sales depends on the group.

H4: The quantity of sales depends on the item.

H5: The quantity of sales depends on the average price of sales.

Statistical methods have to be used for accepting or rejecting the five hypotheses. SPSS is used for analyzing the dataset and testing hypothesis (Gujarati, 2004). All the data in our dataset have numeric values. That is why the dataset is prepared to be transferred from Excel to SPSS. No other transformations or computations have to be made. In SPSS, 7 variables are defined according to each column of the table (containing the dataset). It is very important to give a correct measure for each variable. Variables “group” and “item” are on a nominal scale. Variables “year”, “month”, “quantity”, “value”, “AvgPrice” are on an interval scale.

5. Analyzing sales data

5.1. Testing H1 – does the quantity of sales depends on the year

By using descriptive statistics and Chi-square tests a check for dependency may be made (Analyze/Descriptive Statistics/Crosstab). Since both variables are on an interval scale, the Pearson coefficient may be used. The Chi-square test shows Pearson Chi-square value of 900.899 which is statistically not significant (Asymp. Sig. 2-tailed is 0.039). The comment below the Chi-square test table says that 99.5% of the cells have expected count less than 5. **Now we can reject H1. The quantity of sales does not depend on the year.**

To make another check for the dependency of quantity of sales on the year, the dataset may be filtered by choosing cases for 2012 and 2013 (Data/Select cases; if year<2014). 26 cases are not selected. The selected cases contain data for 2012 and 2013. The independent samples t-test may be applied to check the influence of the year on the quantity of sales. But before that another check has to be made.

Quantities must have a normal distribution. The one-sample Kolmogorov-Smirnov test is executed (Analyze/Nonparametric tests/1-Sample K-S). The one-sample Kolmogorov-Smirnov test shows the Kolmogorov-Smirnov Z value 8.059. It is statistically significant (Asymp. Sig. 2-tailed is 0.000). The values in the column “quantities” have a normal distribution.

Now we may continue with the independent samples t-test (Analyze/Compare Means/Independent-Samples T test). The grouping variable is “year” and the test variable is “quantity”. The confidence interval is set to the default value of 95%. The Levene’s test for equality of variances shows the value of F-test 27.063 with significance of 0.000 ($0.000 < 0.05$). It means that equal variances are not assumed. The t-test for equality of means shows the value of -3.268 with Sig. (2-tailed) 0.001 ($0.001 < 0.05$). The t-test shows that there are significant differences between the means of two groups (year 2013 and year 2014). **Now we can accept H1. The quantity of sales does depend on the year.**

A nonparametric test “Two-independent-samples test” may be made. The test type is Mann-Whitney U test. The value of Mann-Whitney U test is 28345. It is statistically significant (Asymp. Sig. 2-tailed is 0.009). The nonparametric test confirms our conclusion – **we may accept H1. The quantity of sales depends on the year.**

The one-way ANOVA test (Analyze/Compare Means/One-Way ANOVA) shows the F value of 8.196. The test has a significance of 0.004 ($0.004 < 0.05$). It shows that the quantity of sales depends on the year. **We may accept H1.**

Initially we rejected H1. But the three following tests showed that we may accept H1.

5.2. Testing H2 – does the quantity of sales depend on the month

Sales do have seasonal component. So we may expect the sales to depend on the month. Again descriptive statistics is applied. The Chi-square tests shows the value of the Pearson chi-square value of 4420.541. It is not statistically significant (Asymp. Sig. 2-sided is $0.122 > 0.05$). The comment below the table says that 100% of the cells have expected count less than 5. **We may reject H2. The quantity of sales does not depend on the month.**

5.3. Testing H3 – does the quantity of sales depend on the group

The groups of dairy products are: packed liquid milk and yoghurt. The group of product may have a significant influence on the quantity of sales.

First, a Chi-square test is done. The Pearson Chi-square value is 430.217 with asymp. Sig. 2-sided 0.258 ($0.258 > 0.05$). The Pearson Chi-square value is not statistically significant. Moreover the comment below the table shows that 99.3% of the cells have expected count less than 5. **We reject H3. The quantity of sales does not depend on the group.**

Second, the independent samples t-test is done. Since there are two groups of stock keeping units (SKUs), its application is appropriate. The grouping variable is “group” and the test variable is “quantity”. The confidence interval is set to the default value of 95%. The Levene’s test for equality of variances shows the value of F-test 151.139 with significance of 0.000 ($0.000 < 0.05$). It means that equal

variances are not assumed. The t-test for equality of means shows the value of 9.980 with Sig. (2-tailed) 0.000 ($0.000 < 0.05$). The t-test shows that there are significant differences between the means of two groups (group 1 “liquid milk” and group 2 “yoghurt”). **Now we can accept H3. The quantity of sales does depend on the group.**

Third, the nonparametric test “Two-independent-samples test” may be made. The test type is Mann-Whitney U test. The value of Mann-Whitney U test is 13593. It is statistically significant. Asymp. Sig. 2-tailed is 0.000 ($0.000 < 0.05$). The nonparametric test confirms our conclusion – **we may accept H3. The quantity of sales depends on the group.**

Fourth, the one-way ANOVA test shows the F value of 51.598. The test has a significance of 0.000 ($0.000 < 0.05$). It shows that the quantity of sales depends on the group. **We may accept H3.**

Initially we rejected H3. But the three following tests showed that we may accept H3.

5.4. Testing H4 – does the quantity of sales depend on the item

SKUs are very important for the sales of dairy products. Sometimes some SKUs are sold at minimum profit for the sake of making sales of other dairy products. It may be argued that the appropriate list of SKUs produced and sold may bring maximum profit and maximum customer satisfaction. Since items are nominally scaled only the Chi-square test may be done. The Pearson Chi-square value is 20244.922 with asymp. Sig. 2-sided 1.000 ($1.000 > 0.05$). The comment below the Chi-square tests says that 100% of the cells have expected count less than 5. So the Pearson Chi-square coefficient is not statistically significant. **We reject H4. The quantity of sales does not depend on the item (SKU).**

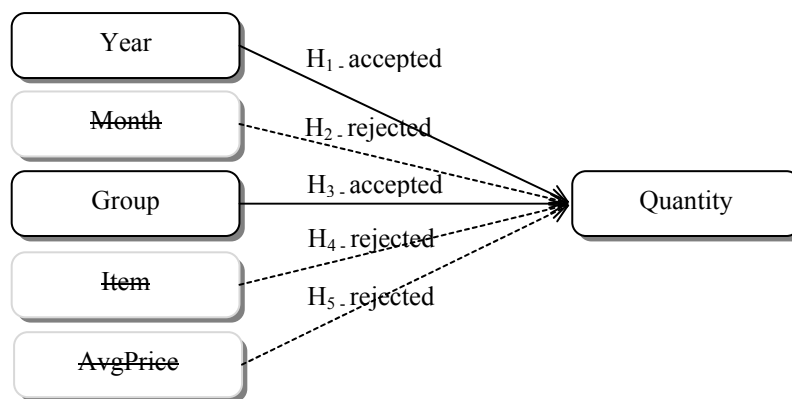
5.5. Testing H5 – does the quantity of sales depend on the average price

The average price is calculated by dividing the total sum of sales on the total quantity of sales. The microeconomic theory says that with the increase of the price quantities also increase. This postulate is in the basis of the well-known supply and demand curves model. It is an adequate reflection of the supply curve. Goods with low elasticity (such as dairy products) react differently. Sometimes an increase or decrease of the price does not affect sales. All these sentences are only predictions. They have to be checked by applying statistical methods. The average price is on an interval scale. So the appropriate statistical methods will be applied. The Pearson Chi-square is 163682.985. Asymp.sig. 2-sided is 0.000. The comment below the Chi-square tests table is that 100% of the cells have expected count less than 5. So the conclusion is the following. **We may reject H5. The quantity of sales does not depend on the average price.**

6. Final remarks. Discussion

The statistical tests on the dataset of sales show that hypotheses H1 and H3 are accepted and hypotheses H2, H4 and H5 are rejected. The quantity of sales does not depend on the month, item and average price. The quantity of sales depends mainly on the year and the group. The quantity of sales surely depends on other factors, not included in our model. The final view of our model is the following.

Figure 2. Final model for factor estimation for sales of dairy products



Our research continues with checking all available one-factor models (linear, logarithmic, inverse, quadratic, cubic, compound, power, growth, exponential and logical). The dependent variable is “quantity”. The independent variable is “year”. The constant is included in the equation (Analyze/regression/Curve estimation). The highest R-square value is 0.016. It is very low. ANOVA tables show that some models are adequate, others – not. So the conclusion is that there is not a functional dependency between the year and the quantity of sales. The dependency may not be expressed by a mathematical formula. The check for the one-factor dependency may continue by excluding the constant in equation. The power and the exponential function have the highest R-square value of 0.836. The two models are adequate (according to the ANOVA tables). The unstandardized coefficient B (in both models) is statistically significant.

The first equation (the power function) for predicating quantity of sales is the following:

$$\text{Predicted quantity} = \text{Year} ^ 0.758 \quad (1)$$

For year 2014, the predicted quantity of sales is $2014^{0.758} = 319.50$.

Since the quantity of sales varies from 1 to 40 000, the predicted value by the power function is nearer the lower bound.

The second equation (the exponential function) for predicating quantity of sales is the following:

$$\text{Predicted quantity} = \exp(1)^{(0.758 * \text{Year})} \quad (2)$$

For year 2014, the predicted quantity of sales is $2.71828^{(0.758*2014)} = 420.73$.

Since the quantity of sales varies from 1 to 40 000, the predicted value by the exponential function is nearer the lower bound.

Different products have different diapason of sales (upper and lower interval for quantity of sales). These two predictions are quite rough and they are not relevant to a specific SKU. These two predictions have an error of 17.4%. It means that other factors affect the quantity of sales.

Since the group of items has an influence on the quantity of sales similar one-factor models may be constructed and tested. The independent variable is “group”. Models are checked with constant in equation and excluding constant in equation. ANOVA tables are generated. By including the constant in equation the highest value of R-square is 0.249 for the power, growth, logistic and exponential function. By excluding the constant in the equation the S function has the highest value of R-square 0.873. The ANOVA test shows that the model is adequate. The unstandardized coefficient B is 6.826. It is statistically significant. The comment below the coefficients table is that the dependent variable is $\ln(\text{Quantity})$.

The equation is the following:

$$\text{Predicted quantity for group} = \exp(1)^{(6.826/\text{group})} \quad (3)$$

The predicted quantity for group 1 is: $2.71828^{(6.826/1)} = 921.50$.

The predicted quantity for group 2 is: $2.71828^{(6.826/2)} = 30.36$.

So we may conclude that we are 87% sure that the average quantity of sales for SKUs in group 1 “liquid milk” is 922 and for group 2 “yoghurt” is 30. We are not absolutely sure because other factors are influencing the quantity of sales.

Conclusions

Sales of dairy products do not depend on the average price of products. With the increase and decrease of price, sold quantities do not change. Adding new items to the SKU list or removing some of them does not affect sales. The consumption of dairy products is not influenced by the month. We may expect comparatively constant sales with low levels of standard deviation. The quantity of sales is mainly affected by the year and the group of stocks. Future research may focus on time series analysis of sales using the same initial dataset consisting of transactional data for sales.

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Research on the evolution of controlling tasks and their delimitation from audit tasks

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Abstract. *The management decision process is becoming increasingly complex in the current stage, characterized by shorter product life cycles, increasingly higher variety of products and services, rapid changes in technology, low predictability of customer preferences and a larger number of markets and distribution channels. The increasingly large-scale application of financial reporting based on the International Financial Reporting Standards (IFRS) causes debates on the relation between external accounting (financial accounting) and internal accounting (management accounting, controlling, internal reporting). The purpose of this article is to present the evolution of controlling tasks in a public or private entity and to delimitate them from those of audit. The main structural differences between controlling and audit as well as the advantages and disadvantages of integrating internal and external accounting are hereby identified.*

Keywords: controlling, auditing, planning, accounting information, management approach, integrated accounting.

JEL Classification: M21, M41.

REL Classification: 14B, 14I.

1. Introduction

The increasingly larger scale application of financial reporting in accordance with International Financial Reporting Standards causes debates on the relation between the external accounting (financial accounting), internal accounting (management accounting), controlling and internal reporting. The purpose of this paper is to discuss two concepts that have not yet received the proper attention in the scientific Romanian literature: controlling and “management approach”. The fundamental idea behind these concepts is to use information generated by internal accounting in financial reporting and to provide investors with an overview of the company “through the eyes of management”. Such an approach reduces information asymmetry, promotes transparency and communication, reduces external reporting costs and ultimately helps boost confidence on the capital markets.

The present article presents the important role played by accounting information in the decision-making process of the management and other decision makers outside the company as a result of internal and external accounting data harmonization. The article is structured as follows: the first section briefly presents the methodological approach; the second section discusses the role of accounting information in the management decision process, its advantages and drawbacks. The following two sections deal with external accounting, respectively internal accounting as sources of information for controlling, management and external users. Subsequently two perspectives are presented: controlling and audit. The critical analysis section identifies the main structural differences between controlling and audit, brings arguments and counterarguments concerning their fitness for purpose.

2. Methodological approach

In terms of methodology, this paper provides a critical and comparative analysis of two possible connections between external and internal accounting: “management approach” and integrated accounting. The differences between the two approaches are presented, together with the advantages and disadvantages generated by their implementation. For the purposes of this research, a literature review has been carried out, based especially on the Germanic area, where the contributions related to controlling have a longer tradition.

Companies should be constantly looking for new resources to gain customers’ trust, as Cînda et al. (2010) argue. Financial reporting is one of the strategies used by companies to gain trust and legitimacy. In this context, the accounting information has specific advantages and disadvantages. First of all, one of the

advantages is that the accounting information uses the formalization in data collecting and reporting, creating a common language through which the members of an organization can communicate. Galbraith (1973) notes that formalization allows the sharing of information through a smaller number of symbols, facilitating the coordination between the different departments that must provide input for the decision making process.

Secondly, the accounting information can help managers to better understand their tasks and to reduce uncertainty before making decisions (Chong, 1996). On the one hand, uncertainty represents a lack of information compared with the informational needs in making decisions. On the other hand, uncertainty is even greater when managers are less able to foresee the consequences of their actions. Burchell et al. (1980) discusses the various roles of information in decision making, depending on the level of uncertainty.

With the help of accounting information, the financial impact of each option available for the decision maker can be quantified, so that the manner in which the objectives could be achieved can be evaluated and ultimately, better decisions can be taken.

3. Evolution of controlling tasks

The turbulences and uncertainties of the modern business environment have made professional management at the beginning of the '70s to resort to strategic planning, to the use of *early warning systems*. Even since the '80s the specialized literature has been discussing about the relation between the concepts of strategic planning and strategic controlling (see, for example, Pfohl / Zettelmeyer, 1987, p. 164).

Recent years have also seen the increase in requirements regarding normative management, a balanced assessment of economic, environmental and social aspects and of corporate social responsibility. Following the consequences of the financial crisis from 2007-2008, the attention has focused mainly on the latter and has revived the discussion regarding the professional internal controlling.

Figure 1 presents the ten stages (of development) of the management systems and, thus the evolution of controlling tasks.

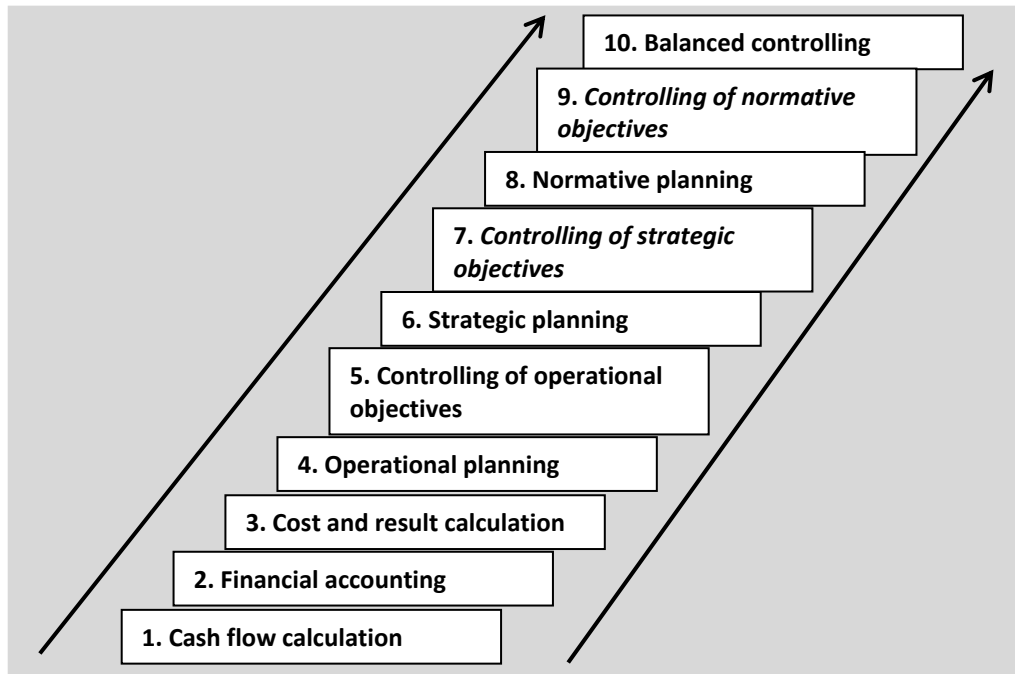


Figure 1. Evolution of controlling tasks (Source: Mann, 1988, p. 56)

Cash flow calculation

Managing an organization based on liquidity, respectively on the cash register, is *the simplest form of management* and is currently used only by private households.

Financial accounting

Ever since the Middle Ages, through double entry bookkeeping a successful management system has been developing, used in companies for documentation purposes and, equally, for planning and decision making. Currently, financial accounting and annual financial statements are no longer enough as they lack future vision. Only a planned balance sheet and, by logical connection, a planned profit and loss account and a planned cash flow can eliminate this shortfall (Eschenbach and Siller, 2014, p.87).

Cost and results calculation

Cost calculation (management accounting) has the task of recording costs and outcomes (income) from the operational activity. The calculation of costs and actual results, using a structure that is *not influenced by external standards* and whose utility is assessed entirely by the management, complements the management accounting system in terms of content, however the company's future orientation and steering possibilities occur only by carrying out costs and results calculations.

Operational planning

Operational planning mainly includes individual activity plans and the budget, with its components, represented by the planned profit and loss account, planned cash-flow and planned balance sheet for one financial period.

Controlling of operational objectives

Operational planning requires the control over the operational budget. Controlling however is more than a simple combination of planning and control. The controlling of operational targets should ensure a functional system of result analysis, alignment of operative objectives, planning, coordination and information, plan implementation and control over budget execution.

Strategic planning

Strategic planning mainly includes planning of strategy (strategies) at company level. Strategic planning requires a controlling of operational targets in order to assess strategy effectiveness on the basis of profitability indicators (productivity, operational result or company result).

Controlling of strategic objectives

Strategic planning requires strategic control, monitoring of the effectiveness of various strategies. Assessing the effectiveness of strategies in relation to its effects in the form of costs and results indicators, i.e. through financial accounting, is overdue. Controlling of strategic targets must ensure a functional system of analysis of competitors, opportunities and risks, company strengths and weaknesses, the development and implementation of strategies and the control of their effectiveness, before all these aspects are reflected upon the annual financial statements, costs and results calculation and cash-flows.

Normative planning

The normative planning stage is concerned with the content of the company mission, the way it respects its values and ethical standards, the organizational culture and the conflict resolution culture. The results are brought about by the people who will be involved in the normative business approach not only as “result providers”, but also as representatives of values and reasons.

Controlling of normative objectives

It must ensure a functional system of analysis of the strengths and weaknesses of the company’s culture and management, of opportunities and threats, as a result of changes in moral requirements, alignment of normative objectives, development and implementation of normative structure and mission statement and the control of their effects, before they produce effects on the operational and strategic control.

Balanced controlling

Balanced controlling represents the highest level in the controlling development process and aims to integrate and balance (approximately) the three levels of controlling taking into account the normative, strategic and operational elements. Periodically, the compatibility and balance between the three plans (normative, strategic and operative) is being examined and a correlation is made, such as:

- Are the representation of moral values, the company's mission statement and the strategy up to date?
- How can the structural measures included in the company's mission statement be implemented?
- How can the objectives and operational indicators be derived from the company's mission statement?
- What are the effects produced by the operational decisions, respectively by the employees' conduct in the operational activity, on the strategic and normative positions? (Eschenbach and Siller, 2014, p. 88).

4. Delimitation between controlling and accounting tasks

Controlling has a special relation with accounting because it resulted from accounting and it cannot fulfill its tasks in the absence of accounting data.

Accounting is structured into external accounting (financial accounting) and internal accounting (management accounting). Both are database systems for controlling and therefore, must match the controlling standard in terms of quality. In the working process, controlling needs financial and management accounting data under the following circumstances:

- Controlling needs data from receivables accounting to evaluate the provision for depreciation of receivables (risk of insolvency);
- Controlling needs the balance sheet for the calculation of operational indicators;
- Controlling needs the fixed assets registry as an auxiliary tool for checking the investment plan;
- Controlling needs data from management accounting to identify the breakeven point;
- Controlling needs the process costs for benchmarking;
- Controlling needs data related to profitability calculations per segments of sales in order to advance proposals for product range optimization.

Figure 2 presents the essential characteristics of the internal and external accounting, in relation to controlling.

Figure 2. *Accounting versus controlling*

Criteria	External accounting	Internal accounting	Controlling
Operating mode	Based on numbers	Based on numbers	Based on values, strategy, numbers and recipients
Focus	Numbers must be accurate	Numbers must be accurate	Numbers must be transformed into measures
Timeframe	In relation to the past	Future/past oriented	Future oriented
Orientation	On documents and decisions	On documents and decisions	On decisions
Principles	Accurate accounting principles	—	Controlling principles
Culture	The numbers are reported	The numbers are reported	The numbers are reported, explained, and "sold"
Deadlines	Exact	Exact	Approximate, but in time
Priority	Accuracy has priority over timeliness	Accuracy has priority over timeliness	Timeliness has priority over accuracy
Language	Specialized language	Specialized language	Specialized language translated into the recipient's language
Legal basis	Yes, normed structure	No, no norms	No, no norms
Output (examples of deliverables)	Lists of accounting balances, personnel accounts, list of assets, annual financial statement	Costs calculation, costs allocation, calculation of result at the end of or during financial period	Reports, proposals of measures, checks, planning system
Recipients	Owners, creditors, customers, tax authorities, suppliers, auditors, management, controlling	Owners, management, supervisory bodies, employees responsible for controlling	Owners, management, supervisory bodies, accounting employees
Stipulations	Accounting Law, Company Law, IFRS, tax laws, etc.	Organized according to the specific of each company	Organized according to the specific of each company

Separating the results calculation between internal and external accounting is an impediment for managing the company. In order to provide relevant and consistent financial data to third parties (external users) detailed explanations are required in the activity reports (for example, the method of calculating actual and planned indicators requires organizational efforts and creates complexity in the internal mechanisms of settlement).

For this reason, group level accounting tends to standardize internal and external accounting, especially through IFRS. At the same time however, the businesses operating at an international level must continue to take into account the various frameworks and local accounting rules.

5. Delimitation between controlling and audit tasks

Auditing represents a subsequent check of completed operations, made by people that are not directly or indirectly dependent of the process or responsibility area that is monitored.

In Figure 3 we present the most important features of internal audit versus controlling.

Internal audit and controlling are elements of the monitoring system (internal control system, see Schneider, 2000, p. 68).

Figure 3. *The delimitation between internal auditing and controlling*

Criteria	Internal audit	Controlling
Beneficiary	The company's management, supervisory bodies	Management structures from all levels
Activity basis	Position delegated by management, audit plan	Position delegated by the management
Duties	Selective, based on issues and audit plan	Selective, based on need
Organization	Functional position	Preferably operational position (hierarchical, of line organization)
Main objectives	Control and monitoring	Complementing the management
Relationship with company structures	Independent of process	Integrated in process
Tasks	Preservation of wealth, compliance	Increasing wealth
Time of action	Ex-post	Ex-ante, ex-nunc (for the future)
Working method	Examination, control, proposal of measures	Planning, regulation, coordination, control, proposal of measures
Key aspects of consulting	Orientation towards the internal control system	Orientation towards business
Recipients	Management, supervisory bodies, auditors, controlling	Management, supervisory bodies, auditors, employees, internal auditing
Stipulations	Article 160, paragraph 2) Company Law	None
Principles	Audit Standards	Controlling principles

The internal control system aims to ensure compliance, functional and economic safety of records, processes and operational assessments on the basis of integrated controls during or subsequent to processes.

The internal control system comprises all the measures aimed at ensuring the assets of an entity, at guaranteeing the accuracy and reliability of accounting data and at supporting compliance with business policy (Hoffmann, 2000, p. 171).

The most important *components of an internal control system* are mainly:

- goal-oriented activity;
- alignment of objectives and tasks according to the principle: tasks = skill = responsibility;
- clear organizational principles;
- transparent processes;
- clear instructions and work processes;
- system inherent controls;
- control cycles (plan-do-check-act);

- separation between the structures that formulate instructions, the ones that implement them and the ones that record them (functional separation);
- double check principle (preferably: triple check principle);
- regular audits (audits of standardized terms) for compliance with the internal control system.

While it is an integrated part of the internal control system, the highest priority from internal audit's perspective, as an independent process, is the check, monitoring and evaluation of the effectiveness and proper functioning of the control system.

The main aspects of checking (auditing) have changed during recent years and have developed and expanded as a result of the permanent growth in the complexity of the organizational environment.

Internal consultancy

The next stage of the extension of internal audit is represented by internal consultancy.

The knowledge, experience and know-how of the employees working in audit must be used to offer management consultancy. The difference from controlling is that the main task of controlling is information processing and analysis. The task of internal auditors is mainly to offer consultancy based on audits (see Hannemann et al., 2008, p. 656).

In order to carry out the audit tasks under optimal conditions, a close cooperation is required between internal audit, the organization, IT department and controlling. *The cooperation* between auditors, controllers and management can be outlined as follows:

- controllers inform internal auditors about significant deviations, thus being able to trigger special checks;
- internal auditors offers consultancy on the main aspects to be checked during the planning of checks, together with controllers;
- the checks carried out by the internal audit are finalized with reports on undesired deviations and with improvement proposals. However, due to the fact that the audit activity is not periodical and there is a large time gap between the audit and the implementation of the recommended measures that are often time consuming, controlling should offer support to the internal audit;
- controlling in itself is a subject of audit (for example, the audit of controlling usefulness, effectiveness, etc.)
- in companies where, due to reduced size, a stand-alone internal audit department is not economical, external specialists can be used, such as

auditors, or controlling can assume the most important functions of internal audit; also top management and/or supervisory bodies monitor controlling's work.

Financial audit

Financial audit is the past-oriented evaluation of the relevance, reliability and compliance of accounting records, taking into account the functionality of the internal control system and the objectives agreed by management. The accounting data represent the basis of examination, the results and processes are the object of investigation (see Hoffmann, 2000, p. 177 and seq.)

Operational audit

The increase in decentralization and in the international interconnection of organizations call for a higher degree of focus on a unitary, overall, process evaluation vision from the internal audit.

Operational audit represents a future-oriented, independent and systematic evaluation of operational activities, aimed at increasing profitability, reaching the objectives and complying with management's directives. Also in this case, the evaluation basis is represented by accounting data. The operational audit's goal is to identify the errors, gaps and weaknesses in the internal control system, the lack of plausibility and the irregularities, and to recommend corrective and improvement measures.

Such a process oriented check is no longer intended as an isolated examination, for example a comparison between actual and baseline, but as an evaluation of the organizational structure as a whole and of the effectiveness of the coordination, regulation and control mechanisms.

These measures will be the basis for system improvements regarding individual examination objects, specific fields of activity or the entity as a whole (see Krey, 2001, p. 55).

Frequently, however, even expanding the audit activity to operational audit is proven to be insufficient in the case of operational processes and organizational structures with a high degree of complexity, as is the case, for example, of international organizations. These have complex systems of planning, information, communication and coordination. This situation leads to the concept of management oriented audit approach – namely management audit.

Management audit

Management auditing serves the management as support for business policy. In this context also the systematic evaluation of second and third level managers is taken into account, detecting to what extent the company's objectives have been met or not.

6. Critical analysis

In the following we will discuss the advantages and disadvantages brought about by the “management approach” vision; the advantages and disadvantages of a full integration of internal and external accounting and the differences between “management approach” and integrated accounting.

Choosing a “management approach” has both advantages and disadvantages (described below in accordance with Wagenhofer, 2006). First of all, among advantages we count the fact that the information that is reported is considered to be the most relevant by management. Secondly, the costs of obtaining data are reduced, because no additional data is needed for external reporting. Thirdly, the information reported can be easily verified from the outside, because the financial auditor must only examine whether the data matches internal reporting.

The disadvantages of the “management approach” include, in terms of external accounting, the reduced comparability of data – different companies generally use different indicators. In terms of internal accounting, a major disadvantage is that internal reporting can be negatively affected. For example, the company might be tempted to internally report other information than the one that would actually be optimal, only for preventing external users to receive such information. Last but not least, of the design of the internal accounting system has to also take into account its potential external effects.

Similarly, Funk and Rossmanith (2008) mentions arguments for and against the integration of internal and external accounting. In terms of internal accounting, implementing an integrated accounting is welcome for several reasons. First of all, the major benefits belong to capital market oriented companies, because the integration of internal and external accounting in compliance with IFRS contributes to the improvement in communication and management for these companies. Not only at the level of the entire company, but also at the subordinated levels of management, integrated accounting through the controlling divisions contributes to the development of plans that are appropriate for achieving the financial objectives communicated externally. At the same time, through integrated accounting, with the help of controlling specialists, the management becomes more capable to discuss with investors and external analysts, can motivate past evolutions and explain forecasted ones. Also for unlisted companies, integrated accounting can be an equally effective possibility of communicating the financial information, both for immediate and strategic goals.

However, there are several counter arguments for the full integration of internal and external accounting in the context of financial reporting in accordance with

IFRS. These counter arguments result from the conceptual perspective of the International Financial Reporting Standards, oriented on the decision making of foreign investors. Thus, in certain cases, the provisions regarding accounting and valuation in accordance with IFRS can contravene internal reporting requirements. There is also a risk that managers, precisely because of the implementation of a “management approach” under IFRS regulations, will try to distort certain internal information that will be transmitted to external accounting and will become the basis of their future evaluation (Roman/Mocanu, 2011).

The two perspectives presented, the management approach and the integrated accounting, are structurally different, these differences being highlighted by Funk and Rossmann (2008). Unlike the management approach, where the use of specific internal information for external financial reporting is mandatory, the integration of internal and external accounting represents controlling’s decision regarding the internal reporting of the result. While in the management approach, the information provided by controlling is exported in external accounting, in the case of integrated accounting internal and external results must be matched as much as possible and as far as it is relevant from an economical point of view (Roman and Mocanu, 2011). Through the management approach, internal accounting becomes an information source for external accounting. Therefore, the indicators used primarily for objectives of the internal accounting acquire a double role, being also used in external accounting.

7. Conclusions

The decision process of management is becoming more complex in the current context, characterized by shorter product life cycles, an increasingly variety of products and services, rapid changes in technology, low predictability of customer preferences and a higher number of markets and distribution channels. This paper has debated the role of information offered by the external and internal accounting in the decision making process of the management and also of external users. Two perspectives have been presented on the meeting points of external and internal accounting: the so-called management approach and the integration of internal and external accounting. The management approach requires management to include the information obtained from internal accounting in the financial reports presented to investors and other external users. Thus, the company is presented “through the eyes of management”. On the other hand, the key feature of integrated accounting is the match between the result calculated in internal accounting for planning, coordination and control tasks (controlling attributes) and the result published in external accounting. Both perspectives have advantages and disadvantages, and the discussions regarding the difficulties of

implementing one or the other remains open. The data and information generated by accounting (internal and external) and controlling represent the raw material for auditors, crucial for the audit mission.

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Franchise's place within sustainable development matrix: an institutional economics approach

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Abstract. *The aim of this article is to emphasize the major contribution of franchise, as hybrid institutional arrangement and governance structure, on the mechanism of sustainable development. Transaction costs illustrate a permanent obstacle which hinders healthy, long-term development. Using the theoretical tools of the New Institutional Economics we admit that, placed between the market and the firm, mixed governance structures are able to limit all these costs. Among them, franchise is the closest to the optimal model. Considering its profound social and economic valences franchise might be considered a vector of sustainable development.*

Keywords: franchise, transaction costs, governance structure, sustainable development.

JEL Classification: Q01, O43, O17.

REL Classification: 13C.

1. Introduction

Sustainable development is a subject of great interest with a deep impact on economic analyses. Beyond identifying the sources to generate progress and prosperity the attention of economic theory was focused more recently on the achievement of such goals in a particular context of awareness and improving some severe disruptions such as: environmental pollution (Shqau, 2012, p. 1535), limited availability of natural resources threatened by depletion, inclusively the holistic rate of demographic expansion. Policies oriented to sustain economic growth, the conservation of natural resources, thus improving the quality of life become nodal aspects that are to be met in the building process of sustainable development (United Nations, 1987, pp. 2-3).

According to François Perroux, sustainable development is “a combination of mental structures and social population changes that allows continuous cumulative growth of the global gross domestic product” (Perroux, 1982, p. 32). The author stresses that such changes of the mental structures and social habits precisely allow the expected growth, able to transform the particular progresses in a social general progress. His ideas are on the same wavelength with the vision proposed by P. Guillaumont that also nominates the changes of mental structures and social behavior as determinants of sustainable development (Guillaumont, 1985). The necessary adjustments for promoting sustainability are not deprived of costs, especially, transaction costs. In such circumstances, the entire economic or social activity needs to be projected on new coordinates of higher efficiency.

Trying to answer the question: which way of organizing economic activity serves best the principles and requirements of sustainable development?, we notice that the theoretical tools of the NIE, based on Oliver Williamson’s theory of governance structures illustrates a nodal landmark. From this perspective, we observe that, located at the interference of market and firm, mixed governance structures capture the benefits of both, the internalization of economic activity at the firm level and its placement in the market area, respectively.

Issues like the common establishment of resources, specific contractual relations and highly competitive environment are features able to enhance the viability of mixed structures (Ménard, 2003). Among them, franchise is considered as closest to the optimal hybrid in the light of internal equity, transparent conduct between parties, symmetrical distribution of information, implicitly the perpetual learning processes that it involves. Given the motivation and efficiency which supports its fair relational process franchise is entitled to a special place within sustainable development matrix.

2. Transaction costs – the hidden part of sustainable development

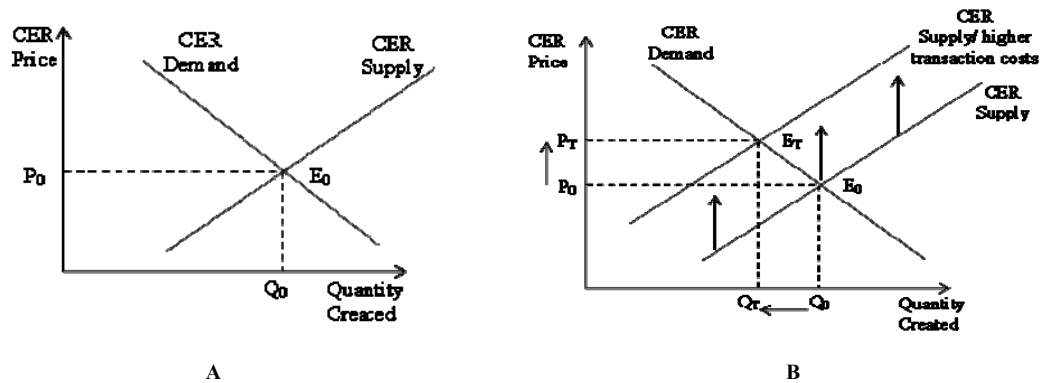
The concept of sustainable development captured the forefront attention after the normative goal proposed in the report of the World Commission on Environment and Development, from 1987, entitled *Our Common Future. From One Earth to One World*. The new directions of development were strictly connected with attention paid to the conservation of natural resources and the improvement of the quality of life (Tsekos, 2013).

The costs associated with research activities or identification and implementation of such measures illustrates, in terms of the New Institutional Development (NIE), transaction costs. Kenneth Arrow defined them as “the operation costs of an economic system” (Arrow, 1969). We consider two types of transaction costs. On the one hand, there are *ex-ante costs*, those of projecting, negotiating and protecting the agreement for sustainable development, as fees imposed for the emission of certain products (Tudor, 2012). On the other hand, there are *ex-post costs* that might take various forms, from assessment and supervision of transaction partners’ conduct, to the pursuit or retrieval of any damage arising from failure to comply with contractual rules (Williamson, 1985).

The provisions of the Kyoto Protocol underline an important example for both hypostases. As a legal instrument, it supports sustainable development in terms of attention paid to emissions control of greenhouse gases. The limitation of pollution under the principle of “common, but differentiated responsibilities” is not avoiding the problem of transaction costs despite the proposed mechanisms (United Nations, 1997).

Certified emission reduction (CER) credits attest the existence and manifestation of transaction costs. They might be seen as “part of emission reduction’s price that cannot be attributed to the physical process of removing greenhouse gases from the atmosphere” (McCloskey, Joseph, 2005) as highlighted in Figure 1 below. Furthermore Chadwick, in turn, stresses that their negative impact is affecting sustainable development mechanism by increasing the costs of certificates creation and expanding the costs associated to their trading process between nations (Chadwick, 2006).

Figure 1. Transaction costs implications on certified emission reduction's price



Source: McCloskey, A., Joseph, T.J. (2005). "Reducing Transaction costs of the clean development mechanism", *Workshop in Applied Earth Systems Policy Analysis*, Columbia University, p. 261.

A situation illustrates the hypothetical assumption of zero transaction costs. The equilibrium is reached in E_0 point, which corresponds to a quantity Q_0 of greenhouse gases removed from the atmosphere. If we take into consideration the real situation B, where the mechanism of sustainable development implies the existence of transaction costs, we might notice that such costs are able to induce an upward displacement of the supply curve to the right, while the demand curve remains unaffected. The new equilibrium point will be reached in E_T , corresponding to a higher level of prices regarding the creation of certified emission reductions and a smaller amount of greenhouse gases removed from the atmosphere. Extrapolating all these aspects at the level of sustainable development measures there is a critical need to identify a solution for minimizing transaction costs.

3. The nexus between franchise and the social dimension of sustainable development

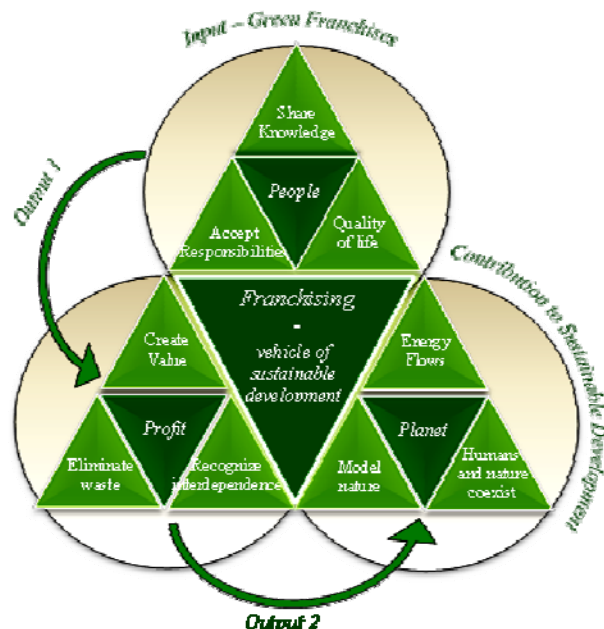
Requirements raised by sustainability are in accordance with the theoretical tools of the NIE vision. The settlement of the antinomy sustainable development – transaction costs has its correspondent within Williamson's governance structures. His theory nominates transaction as *basic unit of economic analysis* (Williamson, 1998) and economic governance as nodal condition for the optimal allocation of resources and the increase of economic efficiency, respectively. Tangentially to market and firm, Williamson particularizes a third form, *the hybrid structure* (Williamson, 1996) a self-contained structure which borrows features from both areas. From a general perspective, the main aspects of differentiation between the governance structures are referring to the intensity of incentives and the level of administrative control, on the one hand, and the types of specific adaptability and contractual elements, on the other hand (Williamson, 1991), as emphasized in Table 1.

Table 1. *The defining features of governance structures*

Attributes	Market	Hybrid (Franchising)	Hierarchy
Instruments	++	+	0
▪ Incentive intensity	0	+	++
▪ Administrative controls			
Performance attributes	++	+	0
▪ Adaption (A)- autonomy	0	+	++
▪ Adaption (C) -cooperation	++	+	0
Contract law	Classic (legal)	Neoclassic (relational)	Subordination
++ (strong); + (semi-strong); 0 (weak)			

Source: Own adaption after Williamson, O. (1991). „Comparative Economic Organization: The Analysis of Discrete Structural Alternatives”, *Administrative Science Quarterly*, Vol. 36, No. 2, p. 279.

Hybrid structures, namely the franchise, enjoy a moderate level of incentives and administrative control; it adapts to new circumstances combining autonomy and cooperation. Through the contractual relationship the franchise promotes cooperation and mutual support acting downwards transaction costs. From such perspective its contribution is therefore oriented to facilitate sustainable projects. In order to achieve a better placement of franchise within the area of sustainable development, we would like to highlight some attributes which recommends it as an antidote to the problem of transaction costs, as highlighted in Figure 2.

Figure 2. *The contribution of franchise to sustainable development*

Source: Personal adaption after Mock, T., Wernke, T. (2011). „Sustainable Land Development Initiative – The Universal Principles of Sustainable Development” Triple Pundit, available at <http://www.triplepundit.com/2011/02/universal-principles-sustainable-development>.

The first aspect which connects franchise with the social sphere of sustainable development concerns its *contractual structure* itself, projected to be viable. We consider the *neoclassical* pattern of *contract*, with numerous clauses designed to reduce uncertainty, opportunistic behavior, thus transaction costs. Franchise specific flexibility derives from the *incompleteness of contractual framework*, which furnishes the general cooperation action area, but also the necessary openness for the ex-post adjustments (Llewellyn, 2009). Thus, subsequent amendments are allowed without paying additional costs.

Another advantage lies on the pattern of relational contract which serves as *self-regulation element* (Ménard, 2004). In other words, beyond the identity of the involved parties, the franchise is based on a deep commitment designed to ensure the *continuity of contractual relations*. The cooperation of the parties becomes the guarantee of transparency and internal equilibrium indispensable for viable projects. Franchise involves the exploitation, not the transfer of intellectual or industrial property rights. Based on the *residual rights of control* the franchisor is protected and may correct any opportunistic intentions of its franchisees. Placed between the market and the firm franchise brings a notable contribution to the social and economic dimensions of sustainable development, due to its internal balance, harmony and relational sustainability. The entrepreneurial model of franchise allows the assimilation and expression of all components required by sustainable development. For the beginning, we consider the contribution brought to the social sphere.

As shown in the Figure 2, the peak of the pyramid, *share of knowledge*, goes directly to the substance of the relationship between the franchisor and the franchisee. Know-how circulation and the experience acquired by the franchisor ensure the social sustainability of franchise as a governance structure. Beyond its internal equilibrium, the longevity at the market level depends on franchisor's ability to fold the new requirements. Taking into consideration that the prestige of any franchise requires network homogeneity and ethical conduct, this hybrid form of governance implies *acceptance of responsibilities*. There is a mix between franchisee autonomy and the acceptance of coordination for maximizing the economic, environmental and social benefits. Obviously, a careless franchise system in terms of social or environmental responsibilities will lose *reputation*. Therefore, the success of any franchise network is based on two major coordinates: attention paid to the quality of goods and services and higher responsibilities with regard to generated effects on social and natural environment. This is the proper way to acquire the necessary credibility for a sustainable business, worthy of being followed by the rest of economic agents.

Franchisee success feeds the economic benefits of the franchisor by paying regular royalties. From this perspective eliminating waste in the act of resource consumption and production emphasize a permanent concern of the parties.

Beyond that, franchise as a governance structure remains dedicated to sustainability through the interdependence which occurs between contractual parties. On the one hand, the franchisee is subordinating to the claims of the business owner, as disposes of an entrepreneurial pattern previously tested which guarantees the success. On the other hand, the economic benefits of the franchisor and its fame are dependent in a certain extent on the franchisees activity. Due to the attention paid to economic profitability, achieved through sustainable measures, the franchise will inherently contribute to the sustainable development of the society to which it belongs.

Transition to the efficient means of production and consumption, renewable energy sources and innovations illustrates an indispensable component of entrepreneurial activities animated not only by the profit maximization, but also by their sustainability. From this point of view we admit the placement of franchise on the new coordinates of ecological dimension. According to Harvard Business Review, the commitment to sustainable practices is not a barrier to profitability, but rather a source of reducing costs and increasing revenues. The internalization of ecological advantages is providing a higher competitiveness (Globe Foundation, 2010). In such context franchise underlines its characteristic flexibility and provides, once more, the evidence of viability. Statistics show that the number of franchisors who have made deliberate efforts in order to reduce the negative impact on the environment is constantly expanding. Economic practices that have made the successful transition to “green economy” exceeded 5.2 trillion US\$ in 2010 (Franchise Direct, 2010). In the context of global warming and the measures taken to reduce this risk through the amendments to Kyoto Protocol in December 2012, from the Doha conference on climate changes, the attention paid to ecological sphere has significantly increased. In response to these aspects, there are two major forms of manifestation of the eco-franchises globally: *franchises which directly contribute to environmental protection* and those *which involve the use of advanced technologies and environmental practices* (Franchise Direct, 2010).

The adoption of new technologies and gaining competitive advantages in terms of environmental practices awarded franchise with a major contribution to stimulating a responsible behaviour in the human-nature relationship. Its increased mobility allows the propagation of mechanisms able to ensure geographical sustainable development through franchisees. By its inner nature franchise might

be considered a real vehicle of sustainable development, phenomenon which requires an extensive process of institutional change, mainly, of formal institutional area. Although the results in terms of institutional response to sustainability issues tend to remain poor, franchise, as an optimal hybrid has the capacity to induce cooperation at the level of intent and effects (Connor, Dovers, 2004). So it might be perceived as a tool for reducing transaction costs, but also as a transmission channel of sustainability principles (Gunderson, et al., 1995).

4. Conclusions

The attention paid to the preservation of natural resources in order to keep them alive for future generations brought the principles of sustainable development on the same wavelength with the path dependency idea proposed by the institutional economist Douglass North. From such perspective sustainability implies a strong moral weight, according to which, the capabilities of each society to build its future is strictly dependent on the genetic heritage, natural resources in this case. Like any global project, sustainable development cannot be achieved without the ubiquitous transaction costs. In this context, there is a profound need for identifying a solution to this problem.

Oliver Williamson nominates the hybrid governance structures. We nominate a particular structure: franchise. On the one hand, aspects such as knowledge transfer, reputation and the acceptance of responsibilities, or the inner relational equilibrium provided by contractual valences strengthen franchise's contribution to the improvement of social sphere, required by sustainable development. Furthermore, as a hybrid governance structure, franchise allows the reduction of transaction costs and waste in resources consumption, encouraging economic efficiency. On the other hand, the attention paid to the environmental preservation through transition to alternative energy sources, technological innovations able to facilitate energy efficiency and permanent care for the ecological dimension, highlight franchise's ability to support the fundamental area from the "trophic chain" of sustainable development. All these particular aspects convert franchise into a vector of sustainable development due to the attention paid not only to economic, but also social and environmental spheres.

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Sensory experience – between the tourist and the marketer

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Abstract. *In order to influence the decision making process in tourism, and to keep account with the “tough” competition environment in the current economy, destinations find themselves “fighting” more and more for the attainment of an image as favourable as possible in the mind of the tourist. It is for this reason that the marketer projects the image identity and develops contact points, so that, through the application of suitable stimuli, the tourist will have a memorable sensory experience through the stages of pre-consumption, actual consumption and post-consumption of the travel product. The purpose of the present article is to evaluate the sensory experience of the tourist – a possible instrument for reducing the gap between projection and perception, as well as for imagining the travel product.*

Keywords: experience, sensory experience, contact points, sensory dimensions, destination.

JEL Classification: M31.

REL Classification: 14G.

1. Introduction

In the present economy, value progression is acquired by starting from the extraction of raw materials and their processing, and continues with the production of goods and service delivery, to end through the “staging” of experiences, so that the marketer can assure added value and a competitive position for his/hers organization, as it is known that an experience becomes memorable for the consumer as it succeeds in efficiently “seducing” his/hers senses, so that it satisfies its needs in a personalized manner (Pine II and Gilmore, 2010, p. 61). The experiences that the consumers “live” through create “connections at different brain levels”, which can result in waking up positive emotions towards the brand with “each client/company interaction” (Hill, 2010, p. 61). Experiences engage the senses, the emotions and the thoughts of the consumer, drawing him into a social activity or interaction, or just “taking him into another world” (Govers and Go, 2009, p. 17). In this context, the organization that handles the marketing, and the management for a destination respectively, should control sensory experience, as the “supremacy of the emotional factor in relation with the rational in the travel product purchasing decision” (Stăncioiu, 2004, p. 23) is recognized by a huge proportion of specialists.

Trevisani (2007, p. 95) considers that marketing should identify an interface capable of producing emotions, having a role in influencing the consumer’s purchase decision, and sensory experience can represent exactly such a kind of interface between the tourist and the destination. An argument is brought both by the direct relation between the emotion and the senses that have been provoked (according to “emotional reaction = provoked sense x positive reaction x emotion”), and by the increase in the solidarity degree that the consumer exhibits, as well as by the value perceived according to the number of senses involved in the development and the delivery of the product, these being (in ascending order): seeing, hearing, smelling, tasting and touching (Lindstrom, 2009, p. 214).

Throughout the whole experience (pre-consumption, actual consumption and post-consumption), the tourist experiments sensations and emotions that can lead, at the end, to the development of some strong and unique connections with the destination. The reunion of such connections constitutes the image of the destination, the sensory experience being the element that can “bring together” the image perceived by the tourist to the identity projected by the marketer, an experience that is analysed in the present study.

The micro-destination Dobrogea, situated in the South East of Romania, is composed of the Constanța and Tulcea counties. Dobrogea, together with the other micro-destinations (Banat-Crișana, Bucovina, Maramureș, Moldova, Muntenia, Oltenia, and Transylvania) make up macro-destination Romania (1),

with its sensory audit realized in previous articles, the purpose of the present series closing article being to evaluate sensory experience at destination level.

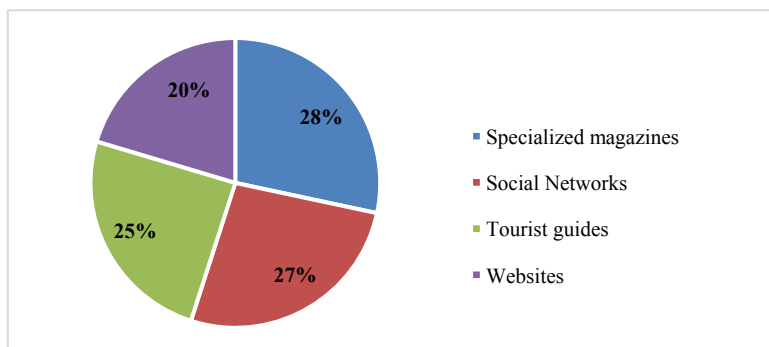
2. Methodological framework

The study was realized between March and August 2013 on a sample of 360 respondents (with 77% women and 23% men), aged between 20-24 years, with higher education or in progress, and coming from all the regions of Romania. The purpose of the research was the evaluation of sensory travel experience at the level of the micro-destination Dobrogea, following on a research realized in October-December 2010 – January 2011, on a sample of 1887 young people with a similar profile with the subjects of the current research, and which had as its purpose the “identification of the measure in which resident perceptions from different regions of Romania on micro-destination Dobrogea help to construct its identity in the development of the destination’s marketing strategy” (Stăncioiu et al., 2011).

Respondent opinions on the sensory experiences lived in Dobrogea are relevant, as 91% of them have visited the destination. The main reason for which the respondents have visited micro-destination Dobrogea was represented by the following types of tourism: leisure, recreation and rest tourism (53.4%), visits to relatives and friends (16.5%), balneary tourism (13.9%), cultural tourism (10.1%), business and professional tourism (5%) and other types of tourism (1.1%). On the other hand, the main reasons for which 9% of the subjects did not visit the destination were: lack of material resources (44.1%), lack of interest/motivation (17.6%), insufficient time (14.7%) insufficient information on accommodation facilities (8.9%), do not know (14.7%). However, considering that the 85.9% of respondents that have visited the destination intend to revisit it, we can safely say that they have been satisfied by the overall experience they have had here.

The tourist experience starts from the pre-consumption stage, when his/hers first contact with the destination takes place (at an imaginary level), in the terms of a mental experimentation of the travel product, on the basis of the information received and the storage in time from different sources. This way, in order to document themselves on micro-destination Dobrogea, tourists have consulted, according to the research results, the following sources of information, as presented in Figure 1.

Figure 1. *Information sources on micro-destination Dobrogea used in the pre-consumption stage by the tourists*



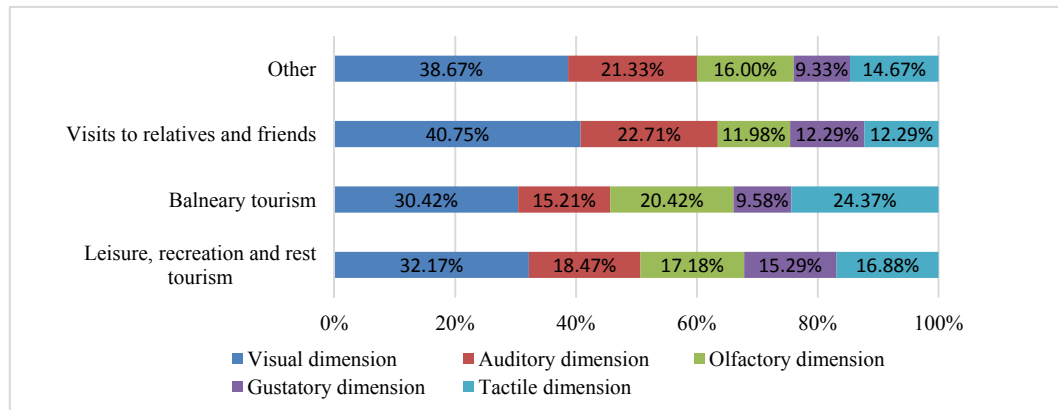
The first aspect that can be observed regards the sources of information is the balanced percentages for each source, according to the degree of trust placed in them by the tourists, when they are searching for information about the destination (Figure 1).

The second important aspect, which can be observed in Figure 1, is represented by the high degree of trust placed by tourists on the information coming from social networks (27%), which is normal considering the respondents' age. In this context, we can deduce that points of view coming from friends, exposed on social networks, become almost as important in delivering destination information as specialist opinions published in travel magazines, highlighting their influence and the high degree of subjectivism in acquiring information regarding a destination.

However, no matter the sources of information used by tourists to document themselves regarding a certain destination, information content remains essential, and it should, preferably, stimulate every consumer's sense, allowing him to mentally experiment the place, so that the gap between the identity projected by the marketer and the image perceived by the tourist is reduced.

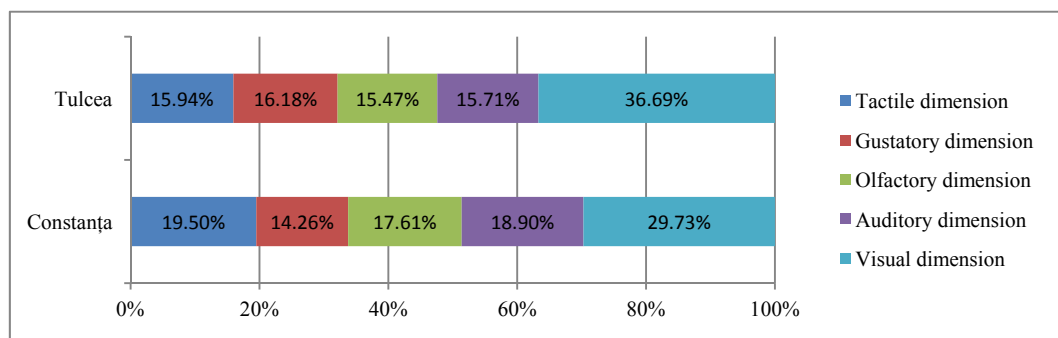
Following on, the marketer should evaluate the types of tourism through a sensorial process (Figure 2), as they can constitute one of the main reasons for choosing a destination in the pre-consumption stage, and also one of convergence elements of all the contact points that "make up" the destination, during the actual consumption stage. This way, efficient natural and anthropic resource management can be achieved, in full correlation with the elements of sensory identity and the "in situ" experience lived by the tourist, ensuring the development of sustainable competitive advantage. Therefore, tourism types could constitute "support columns" in destination selection.

Figure 2. *Sensory dimensions that tourists associate with main types of tourism practiced in micro-destination Dobrogea*

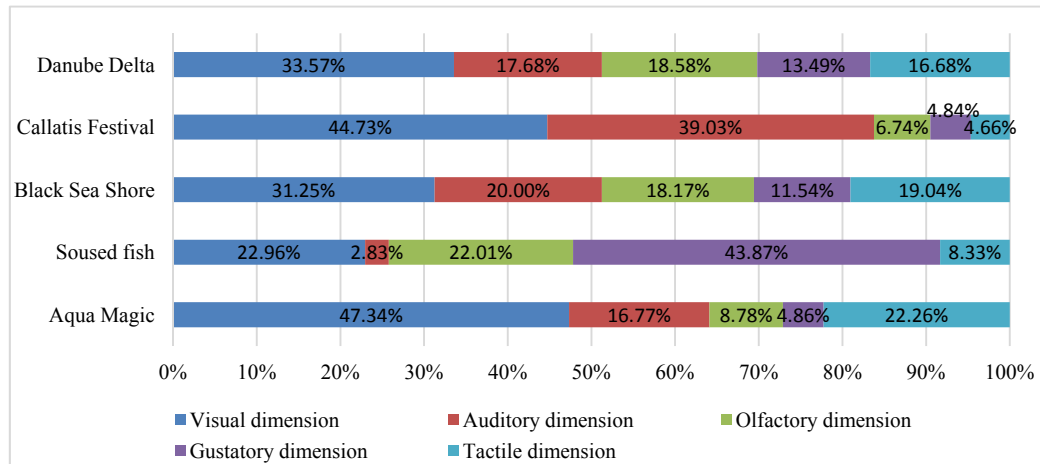


As micro-destination Dobrogea includes Constanța and Tulcea counties, each of them being a destination in its own right, at this level (local) the sensory analysis that the marketer carries out should deliver back relevant information on keeping the perceived quality of the regional travel product (Figure 3). Correlating the sensory analysis of the types of tourism with sensory analysis, at a local level, of destinations that are part of the micro-destination (“vertical” assessment), it can be developed a monitoring instrument for the tourist experience that can be useful in managing total quality for the travel product at region level.

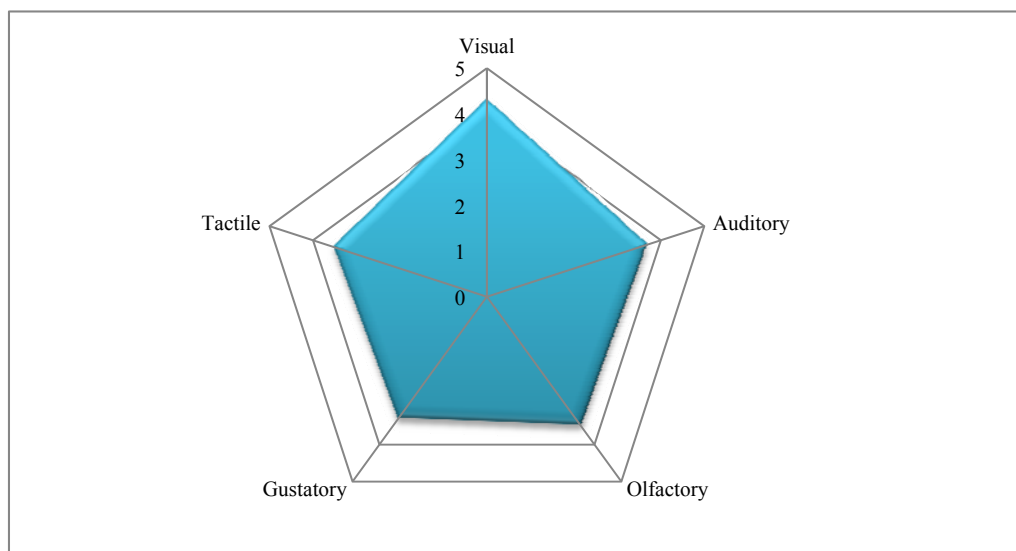
Figure 3. *Sensory dimensions associated with the component counties of micro-destination Dobrogea*



From the tourist perspective, through his/hers experience, the destination can be summed up by a multitude of contact points. For this reason, the sensory evaluation that the marketer realizes must also contain the analysis for these points of contact (Figure 4) for the purpose of ensuring a memorable sensory experience for the tourist.

Figure 4. *Sensory dimensions associated with micro-destination Dobrogea at contact point level*

From a sensory point of view, micro-destination Dobrogea presents the following profile (Figure 5 – sensogram), well-balanced on all sensory dimensions. This sensory profile is developed better than those that have been analysed in previous articles concerning micro-destination Muntenia (Stăncioiu et al., 2014a), Transylvania (Dițoiu et al., 2014), and Oltenia (Stăncioiu et al., 2014b), and more than that, it can be affirmed that tourists that visit micro-destination Dobrogea take part in a holistic and uniform experience, that “centres” on the consumer and engulfs him/her during product delivery, stimulating his/hers senses.

Figure 5. *Sensory profile for micro-destination Dobrogea*

During the actual consumption stage (“in situ”), the tourist directly interacts with the destination in certain contact points. For this reason, identifying these points and “preparing” them, so that they meet tourist demand, represents an important stage that the marketer should take account of in developing the travel product. From a practical sense, the management and marketing of a complex product, like a destination, can only be realised in this context, of managing and marketing contact points. The marketer should classify these contact points, so that he can easily operate with them (in the sense of delivering the sensation of a unitary and integrated experience at product level to the tourist). One of the classification possibilities (subjective as it is) would be distributing each contact point in one of the following categories: transport, accommodation, food, attractions, activities, and others, like auxiliaries, according to the main service offered; however, as it can be inferred, there is no clear delimitation of delivered services, not even at destination level, which can lead to a unique classification for specialized literature. A possible solution, proposed by the authors, is to distribute the contact points to the following categories: visual experiences, auditory experiences, olfactory experiences, gustatory experiences and tactile experiences.

Distribution to a certain category is done according to the dominant sensory dimension that is associated by the tourist with a certain contact point. Of course that, in a category, at the level of each contact point, all the sensory dimensions can be analysed, so that point can deliver an optimal experience for the tourist, but at destination level, in order to “close up” as much as possible the projected identity with the perceived image in the collective mind, through sensory experience in situ, the convergence of contact points at dominant sensory dimension level remains essential, “covering up” the gap between the stimuli managed by the marketer (emitter) and the sensory information perceived by the tourist (receiver).

As far as micro-destination Dobrogea is concerned, according to respondent opinion (Table 1), the perceived visual experience is positive, containing elements that lack negative impressions, with which the tourists associate the destination on the visual dimension. Among the contact points identified for micro-destination Dobrogea it can be extracted the Danube Delta, Constanța and Mamaia, which can also represent local level destinations. On the other hand, The Black Sea dominates this dimension, while the only attraction that can become a visual signature for Dobrogea is the Casino in Constanța.

Table 1. *Visual elements “composing” the visual experience for micro-destination Dobrogea*

		% of total column		
		Of which		
	Visual elements	Total	Men	Women
	Base	360	83	277
1	Black Sea	29,7	31,3	29,2
2	Danube Delta	11,7	9,6	12,3
3	Black Sea Coast	6,9	7,2	6,9
4	landscape	3,9	1,2	4,7
5	beautiful	3,1	2,4	3,2
6	beach	2,8	2,4	2,9
7	Danube	2,2	2,4	2,2
8	Casino in Constanța	1,9	0,0	2,5
9	water	1,7	3,6	1,1
10	Constanța	1,7	0,0	2,2
11	Mamaia	1,4	1,2	1,4
12	The sea and Danube Delta	1,4	2,4	1,1
13	blue	1,1	1,2	1,1
14	good	1,1	1,2	1,1
15	pleasant	1,1	1,2	1,1
16	Others	25,6	27,7	24,9
17	Does not exist/Do not know	2,8	4,8	2,2

The auditory experience that the tourists have experimented in micro-destination Dobrogea includes a negative element – the “noise”. With the exception of this element, the auditory experience is a positive one for the tourist. The sound of the waves dominates the auditory dimension (Table 2), but respondents could not identify a single auditory identity element, specific to the destination.

Table 2. *Auditory elements “composing” the auditory experience in micro-destination Dobrogea*

		% of total column		
		of which		
	Auditory elements	Total	Men	Women
	Base	360	83	277
1	wave sound	28,1	32,5	26,7
2	Seagulls	8,6	6,0	9,4
3	music	6,7	0,0	8,7
4	sound of the Danube	4,2	2,4	4,7
5	quiet	2,8	0,0	3,6
6	club	1,7	2,4	1,4
7	pleasant	1,7	2,4	1,4
8	noise	1,4	0,0	1,8
9	water	1,1	1,2	1,1
10	concert	1,1	0,0	1,4
11	beautiful	1,1	1,2	1,1
12	sea coast	1,1	0,0	1,4
13	Mamaia	1,1	1,2	1,1
14	birds	1,1	2,4	0,7
15	Others	26,9	30,1	26,0
16	Does not exist/Do not know	11,4	18,1	9,4

Tourists associate micro-destination Dobrogea with the salty smell of the sea, from the olfactory experience perspective. For this reason, olfactory elements they perceive like “sea smell”, “salt”, “sea breeze”, “salty water” together with “fresh”, “clean air” and “aerosols” constitute a positive experience for those who have visited the destination (Table 3), on the other end being the “algae” element, considered to be an exponent of a negative olfactory experience. At the same time, from Table 3, it can be observed that respondents have not perceived a potential olfactory element that can, in time, become an olfactory signature at micro-destination level.

Table 3. *Olfactory elements that “compose” olfactory experience in micro-destination Dobrogea*

			% of total column	
			Of which	
	Olfactory elements	Total	Men	Women
	Base	360	83	277
1	sea smell	13,1	10,8	13,7
2	algae	5,6	4,8	5,8
3	fish	5,3	2,4	6,1
4	fresh	4,4	3,6	4,7
5	salty	4,7	6,0	4,3
6	sea breeze	4,2	3,6	4,3
7	Danube Delta	2,2	3,6	1,8
8	pleasant	2,2	2,4	2,2
9	clean air	2,8	2,4	2,9
10	aerosols	1,4	3,6	0,7
11	sea coast	1,4	1,2	1,4
12	wine	1,4	0,0	1,8
13	salt water	1,1	3,6	0,4
14	good	1,1	1,2	1,1
15	Others	33,6	27,7	35,4
16	Do not exist/ Do not know	15,6	22,9	13,4

Gustatory experience is associated with the “fish” element, supported by “fish soup”, “anchovies”, and “fish products” (Table 4). However, the elements that can, in time, become olfactory signatures according to Table 4, are “Dobrogea pies” or “Dobrogea goulash”.

Table 4. Elements that “compose” gustatory experience in micro-destination Dobrogea

			% of total column	
			Of which	
Gustatory elements			Men	Women
Base			83	277
1	fish	19,7	10,8	22,4
2	salty	5,6	6,0	5,4
3	fish soup	3,1	4,8	2,5
4	Anchovies	3,1	8,4	1,4
5	good	2,5	1,2	2,9
6	ice cream	1,9	0,0	2,5
7	food	1,9	0,0	2,5
8	fish products	1,9	1,2	2,2
9	sea fruits	1,7	1,2	1,8
10	Dobrogea pies	1,4	1,2	1,4
11	Dobrogea goulash	1,4	0,0	1,8
12	wine	1,4	3,6	0,7
13	tasty	1,1	1,2	1,1
14	sea	1,1	3,6	0,4
15	salt	1,1	0,0	1,4
16	Others	37,5	32,5	39,0
17	Do not exist/ Do not know	13,6	24,1	10,5

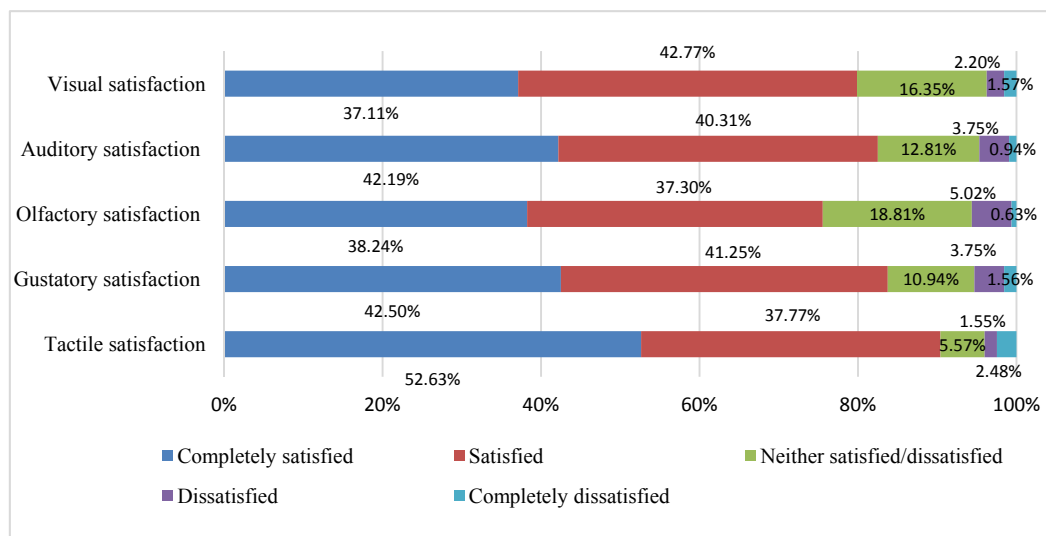
As it was expected, tactile experience (Table 5) is dominated by the “sand” element; however, not even in this it can’t be determined an element that can become a tactile signature for micro-destination Dobrogea.

Table 5. Elements that “compose” tactile experience in micro-destination Dobrogea

			% of total column	
			of which	
	Tactile elements	Total	Men	women
	Base	360	83	277
1	sand	19,7	18,1	20,2
2	sea water	10,3	10,8	10,1
3	warm	7,2	3,6	8,3
4	sea breeze	5,3	2,4	6,1
5	temperature	4,4	3,6	4,7
6	humidity	3,1	2,4	3,2
7	sea coast	1,9	1,2	2,2
8	good	1,1	0,0	1,4
9	pleasant	1,1	1,2	1,1
10	coarse	0,8	1,2	0,7
11	Danube Delta	0,8	0,0	1,1
12	soft	0,8	1,2	0,7
13	shells	0,8	0,0	1,1
14	Others	26,7	31,3	25,3
15	Do not exist/ Do not know	15,8	22,9	13,7

After actually experiencing the destination, the tourist enters the post-consumption stage, when he/her evaluates the whole experience, realizing if his/her needs have been fulfilled or even surpassed. Figure 6 depicts tourist satisfaction for each sensory dimension at micro-destination level.

Figure 6. Tourist satisfaction on each sensory dimension concerning experiences in micro-destination Dobrogea



Although, overall tourist experience in micro-destination Dobrogea is positive, as we came up from assessing sensory experience (Figure 6), the lack of some sensory identity elements (for the auditory, olfactory and tactile dimensions), which, in time, could become sensory signatures for the destination, can be interpreted as superficial experimentation/recognition for the destination by the tourist on one side, and as a failure by the marketer to develop the brand destination platform and in-situ contact points to support the brand by delivering an unique, memorable experience on the other.

From the consumer's perspective, the travel experience supposes both an accumulation of information, an "acquaintance" with the travel product through the three stages (pre-consumption, actual consumption and post-consumption), and a testing (experimentation) of the product in the consumption stage, while the sensory experience has at its base the whole perceptive process, starting with the quality and quantity of the received sensory information, which could have an hedonic effect over the short-term on the tourist, by treating ("spoiling") his senses, and by resulting in certain thoughts, emotions and actions that will develop by forming associations, memories regarding the destination.

From the marketer perspective, tourist experience during all the stages represents an indicator for identifying the way the tourist interacts with the destination, so that it can take the most efficient measures in order to strengthen the product during each stage and to ensure the quality promise previously made. On the other hand, sensory experience gives the marketer a measure of the quality perceived by the tourist for the destination, which can be managed at marketer monitored stimuli (sensors) level, and a management solution for contact points, namely for the destination in a restrained sense, in full correlation with the projected identity and the image perceived by the consumer.

3. Conclusions

Sensory experience – a destination positioning tool – represents the interface between destination identity and image, between the “putting the product on the stage” and its consumption. This way, even from pre-consumption stage, the tourist realises his/hers first interaction with the destination, imagining how the holiday will be. In this moment, the image “takes” a first form in the mind of the tourist, and if it is taken into account the fact that it represents a reunion of associations concerning the product then, through the communication of identification elements for each sensory dimension, the image of the destination can become clearer (more specific), stronger (more intense), differentiating from the competition and, at the same time, supporting the tourist in forming some “closer” to “staged” product reality expectations. Therefore, communicating sensory identity elements helps the marketer “fix” the first destination contact points in the mind of the tourist, presenting the experience that is waiting for him. In other words, the tourist finds out in this way about the attractions that he will be able to see, about the music and local dances, and also about the existence (or not) of a language barrier, about the natural or artificial perfumes he will sense, but also about the foods and drinks that he will savour or the people he will meet and the activities he will experiment. Starting with this moment, the tourist is “prepared” to live a unique and memorable experience, while the marketer is ensuring a first measure of control for the perceived quality of the destination.

During the actual consumption stage, the tourist experiences the destination, in the sense of interacting with each programmed point of contact. Any take-off from the pre-established contact point model can lead to a negative experience for the tourist and implicitly to the deterioration of the destination image. This way the destination image formed in the pre-consumption stage will suffer certain modifications, in accordance with the positive, neutral and negative experiences of the tourist. This is why treating the senses of the tourist, “spoiling” them with the purpose of inducing the appearance of pleasant sensations and strong emotions

has as its result the development of beautiful memories and by so, taking a distinct place in the consumer's mind. For the tourist, no matter the motivation, everything is sensorial matters. It can be taken into account:

- a) The visual dimension (what the tourist sees in the transportation vehicles, in the hotel room, the natural and anthropic attractions, destination landscaping, etc.);
- b) Auditory dimension (what the tourist hears starting from the language spoken at the destination, music and specific dances, the information received from the travel guide and to the quiet and noise levels in the destinations);
- c) Olfactory dimension (what the tourist smells, from certain plants, specific foods, artificial perfumes and destination air quality);
- d) Gustatory dimension (what the tourist tastes from the local gastronomy in direct association with restaurant/destination atmosphere);
- e) Tactile dimension (what the tourist feels, from the comfort offered by the hotel matrices to the texture (destination landscaping) that he/her "can" touch, activities and events in which he/her is involved, the local clothes he buys, the souvenirs, etc.).

During the post-consumption stage, the destination image formed in the mind of the customer stabilises, in the sense of taking a final form. However, the term "final" should not be interpreted in a definitive manner, as it is possible that throughout the life of the tourist the image will suffer further modifications, due to certain powerful experiences that concern the destination. On the other hand, if the marketer has succeeded in providing the tourist that unique experience that was promised in the pre-consumption stage, through the "staged" product, then he/she has ensured destination positioning, developing a number of links in the long-term memory of the consumer. Occupying a bigger space in the memory of the consumer with associations with the destination represents both a guarantee of maintaining positioning, as well as a trigger, once with the repetition of stimuli application and even with just its remembrance, of the pleasant moments lived at the destination, which can be followed by the appearance of the desire to revisit the destination, of the desire to purchase destination specific products or to recommend the destination.

In conclusion, the sensory experience offers benefits to the tourist, through the sensations and emotions that are felt and the memories that are created, as well as a perception of quality "closer" to the marketer projection regarding contact points and the product characteristics. On the other hand, it ensures a destination marketing and product quality monitoring tool for the marketer.

The current research presents certain limits due to the individual sensory evaluation of the senses, which does not happen in reality, as the sensations that

are felt cannot be completely isolated, so that the final result represents a combination of these sensations.

Future directions aim at testing a sensory model at local destination level, through implementing a sensory marketing plan, in order to determine the real impact that sensory experience can have over tourists or over the developed product.

Note

- ⁽¹⁾ The present article represents the last “episode” of a series regarding the sensory audit of macro-destination Romania.

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Covering the social costs of market failure – the unsub of the value added

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Abstract. *The article presents some of the conclusions of a larger research project aiming at creating a map of the decisions on negative externalities in the regional development and collaborative governing framework.*

The present regional development models that are focused on the sustainable development (human sustainability, social sustainability, economic sustainability, environmental sustainability) represent the result of the mechanisms quantifying the negative externalities costs on the local authorities' level. The negative externalities represent an assigning criterion based on the subsidiarity principle, especially with regard to the "beggar thy neighbor" policies, namely the environmental pollution, and this provision is in itself a reason for the national economies to act in case of negative externalities. The public decision on covering the negative externalities, taken in accordance with the economic approach of subsidiarity pertaining to the multilevel governance provides a balanced solution for all the interested parties – citizens, economic agents and the government (who are designing a map for covering the social costs raised by the negative externalities, which must be in accordance with both the national and European decisions, but, at the same time, suspending this map whenever it is in conflict with these decisions cannot be an answer, thus leaving the social costs uncovered).

Keywords: regional development, market failure, public administration, social costs.

JEL Classification: H5, H7, R5.

REL Classification: 7D.

Introduction

Regional development arose from the efforts of both economists and of those charged with planning, regional development policy becoming one of the most important and most complex policies of the European Union status arising from the fact that when it comes to its objective⁽¹⁾ of reducing economic and social disparities among different regions of Member States, the European Union acts upon some significant areas for development, such as economic growth and SME sector, transport, agriculture, urban development, environmental protection, employment and training, education.

In terms of regional development⁽²⁾, strictly conceptual, in contemporary economic theory there was often a tendency of net separations between micro and macroeconomics.

The problems of the individual consumers' behavior or the firms' behavior and their interaction in the market were often treated in isolation from the behavior of macroeconomic aggregates and economic functioning as a whole.

There is however a significant range of issues lying between these two extremes, which demanded an integrated view of the two approaches, and of the problems of the regions, including those of local communities, i.e. addressing the spatial scale of economy.

Thus emerged the investigation area of the regional economics, strictly linked to the regional development process as a fundamental subject in the regional science.

The research blockstart

Regional economy aims to find answers to a number of issues raised by the nature of the factors that determine the results of economic activities and the employment degree in a region. Answers had to be found on differences between some regions and what are the reasons why some regions have more pronounced growth rates compared to others.

It should be noted that regional economics analyzes both interregional and intraregional relations, existing in local economies. Hence the necessity of distinguishing between regional economics, focused on the region as a clearly delineated entity, with consideration of the reports mentioned and economy of urban, rural localities as resulting from its very name, deals with the issue of socio-economic development of localities, through the elements making up the locality as a system and its specific functions.

The regional economics has, as the main reason of its existence, the need to provide a theoretical and methodological rational basis, scientific for the strategies and regional policies, i.e. to establish a coherent set of goals and ways to ways for mitigation of regional disparities in the overall economic and social dynamics, and for identifying appropriate measures and instruments for fulfilling the settled objectives.

The problem of mitigating regional imbalances and in general to support regional development processes reappears in Europe lately, as a major concern both in the literature and in the analysis destined to substantiate the economic and social policy measures.

Explanations of growing interest for such concerns are maintaining – sometimes worsening – imbalances arising in the previous periods, or a new perception on them in the current economic, social and political context, in Central and Eastern Europe.

Current interest in regional issues is determined by the need to address and to solve in the national economic policies the difficulties generated by restructuring and reform processes in the developed countries of Western Europe. Concerns in regional policy field have intensified as a result of problems in relation to the processes involved in economic and political integration

Regional issues, interregional and intraregional disparities and imbalances in levels of economic development of the countries of the European Community (and not only) have appeared in history as a result of uneven geographical development (Iuhas, 2004, p. 57).

Neo-classical economic theories suggest that regional disparities exist only temporarily, and the elimination of these discrepancies might be achieved by adjustments of price and salaries, by movements linked to both the labor market and the capital market, the market mechanism that would make possible the decreasing of these differences from economic activities. The success of the market mechanism in eliminating regional disparities depends crucially on the existence of price competition condition and negligible transport costs and total mobility of labor and capital. If these powers are not met, then a concentration of economic activity, prosperity and employability of the labor force in some regions might appear, while in other regions slowing economic growth, unemployment, lower living standards could appear. Therefore, if the market mechanism is not controlled, it can lead to a spiral effect in which developed regions present the most favorable conditions for companies as well as the existence of a developed infrastructure, a concentration of highly qualified staff, available support for

services, leaving to their choice the opportunity to increase or not the economic advantage towards the underdeveloped regions.

Theorists such as (Lazonick, 1984, Glasmeier and Fuellhart 1991, Maskell and Malmberg, 1995), sought to implement existing concepts⁽³⁾ to describe the phenomenon of divergence of the growth paths from one territory to another. The serious interregional disparities at EU level due to the complexity of the process of European economic integration can only be mitigated by the application of integrated regional policy measures.

First, three approaches were incorporated with the main purpose to analyze the economic growth disparities among regions, i.e. neoclassical⁽⁴⁾ approach, the one focused on exports and the theory of uneven development.

The only theory that establishes a link between the development of a region and its features is the theory of uneven development⁽⁵⁾. It considers that the increase process is basically and always uneven, totally contradicting the neoclassical theory⁽⁶⁾. Through its effect of amplification the endogenous growth of incomes creates differences between areas and regions, which cause a circular and cumulative causation process.

A series of studies (Armstrong and Wickerman, 1995) indicate two different trends recorded in regional development in the European Union: mitigation and increased regional disparities, respectively convergence and divergence in regional development, which succeeded at different points in time.

Undoubtedly, the simplest explanation of regional disparities is the diachronic type regions traversing a series of stages in the development process, stages that do not start simultaneously for all regions.

It is actually a dual process of divergence followed by convergence process as follows:

- national development is first polarized and then integrated;
- within each region, the development is first concentrated in a small number of centers before it broadcasts (in the beginning interregional integration only links centers in different regions);
- progressive decentralization within urban units is performed for the benefit of the peripheries (Pușcașu, 1997, p. 16).

Actions to achieve regional policy, developed for specific⁽⁷⁾ territories, require a high degree of coordination, vertical and horizontal, administrations and improving cooperation between public and private bodies” (Barca et al., 2005, p. 2).

The implementation of regional policy measures at the local level requires their correlation with existing trends at the following levels:

- European for establishing the actions and overall objectives;
- national for adapting the general actions to the national context, and to monitor their implementation, and providing administrative assistance;
- regional with a fundamental role in project selection, resource allocation, and monitoring their implementation;
- Locally with a role in involving local actors, projects drafting and promoting their implementation;

This raises the obligation of cooperation and collaboration at interregional, regional as well as national/European level for implementation of integrated and efficient regional development measures.

Therefore it is recommended that all regional development policy instruments should serve the national economic policy of each EU Member State to reduce existing disparities among the living standards of citizens of the Union⁽⁸⁾.

Going in depth

The overall objective is to identify the specific elements of the current economic system that destabilize the public market and lead to the production (almost always) of too much “something” (pollution) and too little “something else” (research) – suggesting an alternative way of organizing the economy. The intervention on such a market can occur both in case of a failure, and if the markets are efficient, but the project has been mainly focused on the intervention generated by market failure (failure of competition, public goods, externalities, incomplete markets, information failure, unemployment, inflation and imbalance).

Research hypotheses

To achieve the overall objective of the project, two derived hypotheses have been formulated:

1. *In the public sector, the decisions are facing both problems specific to the private sector (efficient allocation, productivity, performance) and problems solely raised by the public sector (supply of public goods and services, collective choices, externalities), which puts more pressure on economic policies, forcing them to swiftly adapt.* For example, the dilemmas of the public decision maker (what will be produced, how is going to be produced, for whom will be produced and how are these decisions made (Stiglitz, 1999, p. 14) should integrate the influence of each variable, whether contextual (organizational culture, strategy, management, law etc.) or those affecting the efficiency of decision-making

(economic and social status, technical parameters, etc.). The answer to the first question (What will be produced?) lies in the allocation of resources, and it is often underlined in the literature using the production possibilities frontier (PPF). The second dilemma must seek resolution in the combination of the factors of production (labor, land, capital) found by the government policies (an environmental policy may affect the choice of technology and a fiscal policy can impact the use of labor). The aim of this production is defined by the distribution, in turn influenced by the fiscal policy, social policy or public goods produced to meet the needs of certain groups (the free rider problem).

2. The inability of individuals to cooperate is emphasized in the context of the increasing complexity of the social systems, thus forcing the economic policies to adapt, aiming at the government's intervention in the market's economic functions in order to correct its negative effects. For example, the public decision making on the market's distribution function is heavily influenced by the political factors (aiming to reach equity), more than it would be by the other stages of the decision-making process, like knowing the public sector activities and its organization (the financing method, expenditures and taxes on central and local level), or like the anticipation of consequences (the effects of a tax (rising prices, cutting wages), raising the retirement age) or the evaluation of alternatives (Matei, 2006, p. 63). These steps apply to all the public decisions of the other functions, for example, the allocative function as its specific public decisions aim at the government's intervention in the market's allocative function to correct its negative effects, the consequences' anticipation stage turns out to be important (emphasized by the forecasting or strategic models) (Matei, 2003, pp. 26-27).

Testing the hypotheses

The entire research developed around the case of negative externalities, as part of the six situations where markets are not Pareto efficient – (1) The failure of competition, (2) public goods (3) externalities, (4) incomplete markets, (5) failure of information and (6) unemployment, inflation and imbalance – primarily due to its timeliness and intense debate that was triggered in the EU-27 (Community guidelines on State aid for environmental protection 2008/C82/01; Treaty establishing the European Community (Nice consolidated version) – Part Three: Community policies – Title XIX: Environment – Article 174 – Article 130r of the EC Treaty – (Maastricht consolidated version) which establishes the polluter pays principle (PPP), and so on) and, secondly, because of the sensitivity of the best known negative externalities (pollution). Its extremely sensitive feature, which actually allows the intervention, refers to both sides of a failure. One is that the

best possible outcome was not achieved followed by the need to act, and the other is that the actors are not able to cooperate.

To substantiate the importance and timeliness of the problem, our goal was to firstly review the research in the field of the economic policies on inefficient markets' intervention, choosing the institutions' alternative actions on both regional and central or local level. The market failure customizes this research, due to its role in the current economic crisis and its effects. Basically, the project aimed to establish certain guidelines that could be used in the future to expand the research on the other five directions of market failure, previously unexplored by this research, which aimed to analyze the negative externalities (cross-border) as an assigning criterion based on the principle of subsidiarity, with particular reference to the "beggar thy neighbor" policies, i.e. air or water pollution and trade protection (Pelkmans, 2003, p. 5).

A similar situation can be also found in the decision-making context of the function of stability, which occurs in case of macroeconomic imbalances such as inflation, unemployment, economic downturn, trade balance deficits and balance of payments deficits etc. (Ailenei, 2002, p. 29). In turn, the public decisions on regulatory function aiming to reduce the monopolistic tendencies or, in the context of this research, the negative externalities, refer to setting limits on discretionary behavior and freedom of individuals, by imposing rules (through a functional legal system), thus underlining the stage of the decision-making process pertaining to knowing the public sector activities and the organization.

In terms of innovation, the project firstly drew attention on the cause and only after on the solution. In other words, the adverse method was used, and, as a consequence, after a thorough analysis of the negative externalities, namely pollution, it provides a better regulatory solution. The adverse method required a clear analysis of the negative externalities, so that the decision makers know what they are dealing with when they draw the public policies and implement decisions in order to reduce the phenomenon. Look first at the cause, not at the solution. The research in this field showed that the current policies emphasize the solution (fiscal policies, multilevel governance) (Blank, 2010; Pelkmans, 2003, pp. 54-55; Termeer et al., 2010; Ostrom, 1990; Dietz et al., 2003; Dinu et al., 2004, pp. 142-146 ; Molle, 2009, pp. 34-42; Miron, 2002, pp. 453-465), and not the cause (negative externalities) (Martinas et al., 2010, pp. 104 -110; Pelkmans, 2003, pp. 53-54) .

The targeted impact was on public decisions on national fiscal problems triggered by the need to solve the problem of negative externalities, namely the eco – duties (such as environmental taxes) (Matei and Dinu, 2014). The government's

intervention is seen as a remedy only if it provides a net benefit, which surpasses the costs of intervention. Otherwise, the need for action becomes the need to justify the inaction.

The research finish line and future challenges

The result of the research presented a decision-making map for this particular market failure (namely, the negative externalities, or spillovers), making use of certain instruments supplied by multi-level governance approach and by the principle of subsidiarity, so that the link between the costs and benefits of an environmental policy is strengthened. This map, referring in fact to a specific methodology, ensures a correspondence between the procedural part of the decision-making (correlating the national and the European level) and the formal part, which can be easily found in the formula weighing the elements behind the social costs (Matei and Dinu, 2014).

The *challenge* was to review both the field literature and the case studies on ecoduties on both national and European level, as a result of *actions* like establishing the fiscal rules, either by giving into the bargaining power of the negative externalities' 'producer', or into the bargaining power of the negative externalities' 'consumer', thus reaching the *result* of maintaining the regulation costs to a minimum, so that the market failure does not turn into a regulation failure.

The future research shall go in depth of all the six market failures that this research established in the beginning, namely the public decisions on the intervention triggered by market failure. Therefore, the decisional map will similarly be drawn for all – (1) failure of competition, (2) public goods (3) externalities, (4) incomplete markets, (5) failure of information and (6) unemployment, inflation and imbalance – and it will provide a set of case studies that can easily be discussed during seminars as they focus on up to date situations.

The research methodology

The investigation methods and instruments were selected in order to allow a better testing of the hypotheses. In fact, all the derived hypotheses (four in total – see Appendix) were integrated through the *zoom in* method, from a broad image provided by the economic theory on subsidiarity connected with the multi-level governance, to a narrow image of national public decisions on negative externalities.

The first three derived hypotheses were tested by appealing to a methodology consisting in a broad bibliographical research so that the reasoning behind the project is clearly underlined. Moreover, the research uses the direct observation and field text analysis on public decisions in the tax and environmental field.

The qualitative research has been greatly improved by using the search engines provided by the Legislative Council of Romania and EUR-Lex, which allowed us to better correlate the national public decisions with those taken on a European Union level, going in depth of the adoption process, motivations and application deadlines. At the same time, the data was collected from the national statistics institutes.

The fourth hypothesis involved an interpretative work of the results and analyses of the previous stages. The used methodology also involved a qualitative research and mainly took the form of short targeted interviews. The interviewees were selected from all three fields that the public decision on negative externalities aims at: the citizens, the economic agents and the public administration.

Notes

- (1) The proposed objective was to understand and to characterize the processes of growth in the regions.
- (2) Should we perform a terminology analysis of the concept, some experts associate regional policy in terms of action, the notion of “spatial planning”. In some countries for example in France this term has acquired an economic content, while in other countries it corresponds to terms such as “spatial organization” in Germany; “natural planning” in England; “Territorial organization” in Spain, with an exclusively spatial term connotation. In the official international texts especially within the European Union and OECD on regional policy, the general term “regional development” is used to remove ambiguity, estimating that it “covers” broadly regional policy coordinates.
- (3) Neoclassical, Keynesian, neo-Marxist, monetarist conceptions have represented the economic landmarks that contributed to understanding and streamlining the process of regional development.
- (4) In the late nineteenth and early twentieth centuries, economic thinking was dominated by the neoclassical school. Although the regional economy problems have not been revised by the school, it managed to influence some researchers that have addressed regional issues, such as G.H. Borts and J.L. Stein.
- (5) In the early 1960s a number of theories of uneven development such as core-periphery were highlighted, among the most important representatives of which are John Friedman, Stiard Holland and Gunar Myrdal. The basic idea of development theory as a chronological differentiation was formulated by Nobel laureate for economics, Gunar Myrdal.
- (6) Neoclassical theory is based on the idea of a world where competition is perfect, the factors of production are highly mobile and profits and utility are maximized to explain why regional growth is the result of different forces. The main conclusion of the neoclassical conception is

that market mechanisms provide the most efficient allocation of resources and that any intervention distorts the system, removing it from the market optimum, which is not desirable.

- (7) Within specific territories “D areas” are covered as well which are defined as strictly delineated territorial geographical areas, facing major economic, social and educational problems.
- (8) V.R. Ionescu, Gabriela Marchis (2006), *Community and regional development strategies*; Editura Fundației Academice Danubius, Galați, p. 45.

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Appendix

- 1) The economic theory of multilevel governance specific to the European Union, with its core consisting in the subsidiarity principle, puts more pressure on national distribution decisions, which also includes the integration costs, although it interferes in all state's functions and their particular decisions.
- 2) For the principle of subsidiarity to be applied in the European Union environmental field, the EU should be competent in the field of the environmental policy.
- 3) Although the integration has led to a single market, it cannot be considered to be governed by a single authority such as is the case in a federation, but it is still a fact that it has to deal with cross-border issues.
- 4) The negative externalities (cross-border) is an assigning criterion based on the principle of subsidiarity (the Treaty establishing the European Community (Nice consolidated version) – Part One: Principles – Article 5 – Article 3b – EC Treaty (Maastricht consolidated version)) in particular with regard to the “beggar thy neighbor” policies, namely air pollution, and this provision is, in itself, a reason for the national economies to act in the event of certain negative externalities. The public decision on negative externalities coverage, taken in accordance with the economic approach of the subsidiarity specific to the multilevel governance provides a balanced solution for all the stakeholders – the citizens, the economic agents and the government (which make a map to cover the social costs created by the negative externalities and which must be in accordance with both national and European decisions, but, at the same time, pending this map when it is in conflict with these decisions is not an answer, as it leaves the social costs not covered).

Determinants of capital structure: comparison of empirical evidence for the use of different estimators

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Abstract. *This paper briefly tries to define the fundamentals underlying capital structure theories and evaluates whether some a priori assumed macroeconomic determinants can be related to the leverage parameters of interest examined in the paper. For this purpose, we conduct an empirical research that covers 90 selected firms traded on the BSE Stock Exchange. For the empirical analysis panel data methodology has been applied. The study period is 2002-2009. Our main results reveal that there is a negative and statistically significant relationship between non-debt tax shields and size and debt and there is a positive and statistically significant relationship between growth and ratio of fixed assets to total assets debt.*

Keywords: debt, dynamic panel estimators, static panel models, capital structure, BSE stock exchange.

JEL Classification: C23, G32.

REL Classification: 11B.

1. Introduction

The root of the modern capital structure theory arises from the seminal paper by Modigliani and Miller (1958) popularly termed as the MM theory. The MM theory states that, based on the assumptions of the an absence of brokerage, tax and bankruptcy costs, investors can borrow at the same rate as corporations and they would tend to have the same information as management about a firm's future investment opportunities. The MM theory proves that under some restrictions, a firm's value would be unaffected by its capital structure and thus assumes that earnings before income tax would not have been related to the use of debt, leading to the inference that capital structure may be irrelevant. Despite the fact that some of the fundamental assumptions of the theory were unrealistic in the eyes of investors and other economic agents, the MM theory was generally accepted and subsequent research focused on relaxing some of its assumptions in order to develop a more realistic approach. In this sense, Modigliani and Miller published another paper in 1963 considering some of the criticisms or deficiencies of their theory and relaxed the assumption⁽¹⁾ that there were no corporate taxes. Further, other assumptions were later relaxed to build the trade off theory, which suggests that a firm's target leverage is determined by taxes and costs of financial distress and thus the interest payments tend to be tax deductible making debt less expensive than the use of equity financing. Further developments in the same line were made with the development of pecking order theory of Myers (1984). It states that firms prioritize their sources of financing - from internal financing to equity issues, according to the law of least effort, or of least resistance, preferring to raise equity as a financing means of last resort. Hence, internal funds are likely to be used first, and only when they are depleted will the firms realize new equity issues. This theory maintains that businesses adhere to a hierarchy of financing sources and prefer internal financing when available, and debt is preferred over equity if external financing is required. The theory suggests that the firms consider external finance if and only if internal finance has not been sufficient. In case of using external financing, the firms issue the cheapest security first so they start with debt, and then possibly apply hybrids such as convertible bonds, and going to equity only as a last resort. In contrast to the trade-off theory, there is no well-defined target leverage ratio in the pecking order theory: the debt ratio varies when there is an imbalance between internal funds and real investment opportunities. In this study, we have attempted to identify the critical factors affecting the capital structure of Indian firms. For the purpose of analysis, a panel model has been estimated for the years 2002 to 2009. The study finds a negative and statistically significant relationship between non-debt tax shields and size and debt. There is a positive and statistically significant relationship between growth and ratio of fixed assets to total assets debt.

The paper is organized as follows. The next section discusses about some possible determinants of the capital structure of the firms and provides empirical evidences. The third section briefly deals with the estimation methodology and data source. The fourth section presents the results, whilst the discussions on results have been presented in section five. The last section concludes the paper.

2. Literature review and macroeconomic determinants of the capital structure

The empirical literature suggests a number of factors that may influence the financial structure of firms. For example, Harris and Raviv (1991) suggest that the leverage of firms tends to be affected by fixed assets, investment opportunities, advertising expenditures, the possibility of bankruptcy, and profitability and uniqueness of the product. Salawu (2006) revealed that ownership structure and management control, growth and opportunity, profitability, issuing cost, and tax issues associated with debt are the major factors influencing bank's capital structure. Following Rajan and Zingales (1995); Banerages, Heshmati and Wihlborg (2000) and Bevan and Danbolt (2001) we have taken company size, profitability, tangibility, growth opportunities and non-debt tax shields as the possible determinants of capital structure. We discuss the relevant literature for each of these variables below.

The nature of a firm's assets has an impact on capital structure. Tangible assets are less subject to informational asymmetries and usually they have a greater value than intangible assets in the event of bankruptcy. In addition, moral hazard risks are reduced when the firm offers tangible assets as collateral, because this constitutes a positive signal to the creditors. Creditors can sell off these assets in the event of default. Hence, the trade off theory predicts a positive relationship between measures of leverage and the proportion of tangible assets. However, empirical evidence relating to this are mixed. For example, Bradley et al., (1984); Rajan and Zingales (1995); Kremp et al., (1999) and Frank and Goyal (2002) find leverage to be positively related to the level of tangibility. However, Chittenden et al., (1996) and Bevan and Danbolt (2001) find the relationship between tangibility and leverage to depend on the measure of debt applied. Further, managers of highly levered firms will be less able to consume excessive perquisites, since bondholders more closely monitor such firms. The monitoring costs of this agency relationship are higher for firms with less collateralizable assets. Therefore, firms with less collateralizable assets might voluntarily choose higher debt levels to limit consumption of perquisites (Drobetz and Fix, 2003). Hence, the agency model predicts a negative relationship between tangibility of assets and leverage. Firms with more tangible assets have a greater ability to secure debt.

Alternatively, Grossman and Hart (1982) argue that the agency costs of managers consuming more than the optimal level of perquisites is higher for firms with lower levels of assets that can be used as collateral. The monitoring costs of the agency relationship are higher for firms with less collateralizable assets. Consequently, collateral value is found to be a major determinant of the level of debt financing (Omet and Mashharance, 2002). From a pecking order theory perspective, firms with few tangible assets are more sensitive to informational asymmetries. These firms will thus issue debt rather than equity when they need external financing (Harris and Raviv, 1991), leading to an expected negative relation between the importance of intangible assets and leverage.

The trade-off theory predicts an inverse relationship between size and the probability of bankruptcy, i.e., a positive relationship between size and leverage. However, the pecking order theory of the capital structure predicts a negative relationship between size and leverage that is larger firm exhibits increasing preference for equity relative to debt. Further, as mentioned by Shapiro and Titman (1985) and Castanias (1983), that because of bankruptcy risk, managers would not likely to use debt choice. However, since larger firms have a chance to be more diversified, they have relatively little bankruptcy risk (Titman and Wessels, 1988). Warner (1977) suggests that bankruptcy costs would be higher for smaller firms. Research evidences for this variable are also ambiguous (Drobetz and Fix, 2003). For example, Friend and Hasbrouck (1988), Crutchley and Hansen (1989) and Berger et al., (1997) report a positive relationship between firm's size and leverage, whilst Feri and Jones (1979) suggest that firm's size has a significant impact on leverage even though the sectoral decisions have been observed to vary among industries. Rajan and Zingales (1995) argued that larger firms tend to be more diversified and fail less often, so size may be an inverse proxy for the probability of bankruptcy. Large firms are also expected to incur lower costs in issuing debt or equity. Thus, large firms are expected to hold more debt in their capital structure than small firms. The measure of size used in this paper is the natural logarithm of net sales similar to the approach followed by Drobetz and Fix (2003). They discuss the logarithm of total assets as an alternate; however, they accept the net sales as a better proxy for the measure of size.

The trade-off theory suggests that firms with more investment opportunities have less leverage because they have stronger incentives to avoid under-investment and asset substitution that can arise from stockholder-bondholder agency conflicts (Drobetz and Fix 2003). Therefore, this theory predicts a negative relationship between leverage and investment opportunities. In the similar line, Jensen's (1986) free cash flow theory suggests that firms with more investment

opportunities have less need for the disciplining effect of debt payments to control free cash flows. Nevertheless, the pecking order theory supports a positive relationship. According to the pecking order theory, debt typically grows when investment exceeds retained earnings and falls when the investment is less than retained earnings. The empirical evidence regarding the relationship between leverage and growth opportunities are also mixed, suggesting the operation of both theories. For example, Titman and Wessles (1988), Barclay and Smith (1996) and Chen et al., (1997) find a negative relationship between growth opportunities and the level of either long-term or total debt. Similarly, Rajan and Zingales (1995) also find a negative relationship between growth opportunities and leverage. They suggest that this may be due to firms issuing equity when stock prices are high. As mentioned by Hovakimian et al. (2001), large stock price increases are usually associated with improved growth opportunities, leading to a lower debt ratio. However, Bevan and Danbolt (2001) find a negative relationship between growth and long-term debt, but find total leverage to be positively related to the level of growth opportunities. On the other hand, Beran and Danbolt (2001) find short-term debt to be positively related to growth opportunities.

Profitability plays an important role in leverage decisions. In the framework of trade-off theory, agency costs, taxes, and bankruptcy costs push more profitable firms toward higher book leverage. This is due to, first, decline in the expected bankruptcy costs when profitability increases and Second, the deductibility of corporate interest payments induces more profitable firms to finance with debt. In a tradeoff theory framework, when firms are profitable, they prefer debt to benefit firm the tax shield. In addition, if past profitability is a good proxy for future profitability, profitable firms can borrow more, as the likelihood of paying back the loans is greater. However, in the agency models of Jensen and Meckling (1976), Easterbook (1984), and Jensen (1986), higher leverage helps control agency problems by forcing managers to pay out more of the firm's excess cash. However, the pecking-order model predicts a negative relationship between book leverage and profitability. Again, the empirical evidence on the issue is mixed. For instance, Toy et al., (1974), Kester (1986), Titman and Wessels (1988), Harris and Raviv (1991), Bennett and Donnelly (1993), Rajan and Zingales (1995), and Michaelis et al. (1999), Booth et al. (2001), Bevan and Danbolt (2001) all find leverage to be negatively related to the level of profitability (supporting the pecking-order theory). Whilst Jensen, Solberg and Zorn (1992) find leverage to be positively related to the level of profitability (supporting the trade-off theory). To test the effect of profitability on leverage, we use return on assets (measured by the ratio between Operating Income and Total Assets).

Although interest is tax deductible due to default risk, firms may tend to use other tax shields. Tax laws allow certain tax deductions to be made from a company's taxable income. Depreciation on tangibles and intangibles are also tax deductible. The effective tax rate has been used as a possible determinant of the capital structure choice. According to Modigliani and Miller (1958), if interest payments on debt are tax-deductible, firms with positive taxable income have an incentive to issue more debt. That is, the main incentive for borrowing is to take advantage of interest tax shields. Accordingly, in the framework of the trade-off theory, one hypothesizes a negative relationship between leverage and non-debt tax shields. DeAngelo and Masulis (1980) argue that the marginal corporate savings from an additional unit of debt decreases with increasing non-debt tax shields. This is because of the likelihood of bankruptcy increases with leverage.

3. Methodology and data⁽²⁾

3.1. Static panel models

In the panel data framework, there are three types of models, mostly used to assess the relationship between debt and its determinants. These are: a pooled Ordinary Least Square (OLS) regression, panel model with random effects and the panel model with fixed effects. Following the previously defined determinants of debt used in this study one can write a pooled OLS regression in the following way:

$$\begin{aligned} LEV_{it} = & \beta_0 + \beta_1(NDTS_{it}) + \beta_2(PROF_{it}) + \beta_3(SIZE_{it}) + \beta_4(TANG) + \\ & + \beta_5(EVOL_{it}) + \beta_6(GROWTH_{it}) + \varepsilon_{it}, \end{aligned} \quad (1)$$

where i indexes firms, t indexes time, LEV_{it} is the level of debt (ratio between Total Liabilities and Total Assets), $NDTS_{it}$ are non-debt tax shields (ratio between Depreciations and Total Assets), $PROF_{it}$ is profitability (ratio between Operating Income and Total Assets), $SIZE_{it}$ is size (Logarithm of Total Sales), $TANG_{it}$ is asset structure (ratio between Fixed Assets and Total Assets), $EVOL_{it}$ is the level of risk (absolute value of percentage change of Operating Income), $GROWTH_{it}$ are growth opportunities (Growth of Total Sales), and ε_{it} is the error term which is assumed to have a normal distribution and varies over both country and time. However, by using a pooled OLS regression, firms' unobservable individual effects are not controlled therefore, as Bevan and Danbolt (2004) conclude, heterogeneity, a consequence of not considering those effects, can influence measurements of the estimated parameters. Nevertheless, it is possible to control

the implications of firms' non-observable individual effects on the estimated parameters by using panel models of random or fixed effects. Hence, by considering the existence of non-observable individual effects, we have can re-write equation (1) as:

$$\text{LEV}_{it} = \beta_0 + \beta_1(\text{NDTS}_{it}) + \beta_2(\text{PROF}_{it}) + \beta_3(\text{SIZE}_{it}) + \beta_4(\text{TANG}) + \beta_5(\text{EVOL}_{it}) + \beta_6(\text{GROWTH}_{it}) + u_{it}, \quad (2)$$

where: $u_{it} = \mu_i + \varepsilon_{it}$, with μ_i being firms' unobservable individual effects. The difference between a pooled OLS regression and a model considering unobservable individual effects lies precisely in μ_i .

In our empirical work we used the LM test for testing the relevance of unobservable individual effects. The null hypothesis of this test is that unobservable individual effects are irrelevant and hence, not rejecting the null hypothesis leads us to conclude that unobservable individual effects are not relevant, and so a pooled OLS regression would be an appropriate way of carrying out an evaluation of debt determinants. However, the contrary, reject the null hypothesis leads us to conclude that a pooled OLS regression is not the most appropriate way of carrying out analysis of the relationship between debt and its determinants.

Even if we have tested for the irrelevance of unobservable individual effects of firms, question of correlation between firms' unobservable individual effects and debt determinants in not solved. We can proceed with a panel model of random effects, if there is no correlation between firms' unobservable individual effects and debt determinants and if this is present the most appropriate way would be a panel model with fixed effects. We used the Hausman test to test the possible existence of such a correlation. The null hypothesis of the Hausman test is non-existence of correlation between unobservable individual effects and the explanatory variables, in this study, debt determinants, against the null hypothesis of existence of a correlation. We would proceed with a panel model of random effects if the null hypothesis, not rejected and if the null hypothesis is rejected, we would proceed with a panel model of fixed effects. Further, based on the results of the LM and Hausman tests, we will also present the evaluation of the most appropriate panel model. In addition to that, unlike other studies, we have also analyzed the model of two-way effect in which we assumed that company specific and period specific effects are random as there is every possibility of the presence of both effects simultaneously.

3.2. Dynamic panel estimators

It would be worthy to mention that static panel models do not allow us to analyze the possible dynamism existing in firm decisions when choosing their capital structure. This allows us to evaluate the dynamic panel estimators. Further, these models have greater power to control endogeneity and allow us to determine the level of adjustment of actual debt towards the optimal level of debt. We can describe that adjustment process as follows:

$$LEV_{i,t} - LEV_{i,t-1} = \alpha(LEV_{i,t}^* - LEV_{i,t-1}) \quad (3)$$

where $LEV_{i,t}$ is the actual debt of a company i in period t , $LEV_{i,t-1}$ is the actual debt of company i in period $t-1$ and, $LEV_{i,t}^*$ is the optimal debt of a company i in period t . Regrouping the terms and solving to the order of $LEV_{i,t}$, we have:

$$LEV_{i,t} = \alpha LEV_{i,t}^* + (1 - \alpha) LEV_{i,t-1} \quad (4)$$

If $\alpha = 1$ we have $LEV_{i,t} = \alpha LEV_{i,t}^*$, the actual level of debt, forcing equal to the optimal level of debt forcing firms to manage an optimal capital structure. On the contrary, if, $\alpha = 0$ we have $LEV_{i,t} = LEV_{i,t-1}$ i.e., There is no adjustment of the level of actual debt towards the optimal level of debt. Therefore, a high value of α , means a close proximity of the level of actual debt to optimal level of debt, whereas a low values of α , means less proximity between the actual level of debt and optimal level of debt.

It is important to mention that the optimal level of debt depends on the firms' specific characteristics that are on the determinants considered relevant in explaining debt as pointed out by Kremp et al. (1999), Shyam-Sunder and Myers (1999), Miguel and Pindado (2001), Ozkan (2001) and Gaud et al. (2005). Therefore, the optimal level of debt is given by:

$$LEV_{i,t}^* = \lambda_0 + \lambda_1(NDTS_{it}) + \lambda_2(PROF_{it}) + \lambda_3(SIZE_{it}) + \lambda_4(TANG) + \lambda_5(EVOL_{it}) + \lambda_6(GROWTH_{it}) + u_{it}, \quad (5)$$

Substituting (5) in (4), and solving to the order of $LEV_{i,t}$, we have:

$$LEV_{i,t}^* = \beta_0 + \delta(LEV_{i,t-1}) + \beta_1(NDTS_{it}) + \beta_2(PROF_{it}) + \beta_3(SIZE_{it}) + \beta_4(TANG) + \beta_5(EVOL_{it}) + \beta_6(GROWTH_{it}) + \eta_i + e_{it}, \quad (6)$$

Where, $\delta = (1 - \alpha)$, $\beta_0 = \alpha\lambda_0$, $\beta_1 = \alpha\lambda_1$, $\beta_2 = \alpha\lambda_2$, $\beta_3 = \alpha\lambda_3$, $\beta_4 = \alpha\lambda_4$, $\beta_5 = \alpha\lambda_5$, $\beta_6 = \alpha\lambda_6$, $\eta_i = \alpha\mu_i$ and $e_{it} = \alpha\varepsilon_{it}$

To control the correlation between δ and $LEV_{i,t-1}$ and between e_{it} and $LEV_{i,t-1}$ in estimating equation (6) using static panel models which can propose biased and inconsistent of the evaluated parameters, Arellano and Bond (1991) propose evaluation of the equation (6) at level variables in first differences, and the use of debt lags and its determinants at level as instruments. However, Blundell and Bond (1998) concluded that when the dependent variable is persistent, there being a high correlation between its values in the current period and in the previous period, and the number of periods is not very high, the GMM (1991) estimator is inefficient; the instruments used to generally be weak. In such cases by considering a system with variables at level and first differences Blundell and Bond (1998) extend the GMM (1991) estimator. For the variables at the level in equation (6), the instruments are the variables lagged in first differences. In the case of the variables in first differences in equation (6), the instruments are those lagged variables at level. However the GMM (1991) and GMM system (1998) dynamic estimators can only be considered robust on confirmation of two conditions: 1) if the restrictions created, a consequence of using the instruments, are valid; and 2) there is no second order autocorrelation. Therefore, to test the validity of the restrictions we use the Sargan test in the case of the GMM (1991) estimator and the GMM system (1998) estimator. The null hypothesis in the Sargan test indicates the restrictions imposed by the use of the instruments are valid against the alternative hypothesis that the restrictions are not valid. Rejection of the null hypothesis leads us to conclude that the estimators are not robust. Further, we also test for the existence of first and second order autocorrelation through Arellano and Bond (1991) test. The null hypothesis is that there is no autocorrelation against the alternative hypothesis being the existence of autocorrelation. Rejection of the null hypothesis of the existence of second order autocorrelation leads us to conclude that the estimators are not robust.

4. Results

Before conducting regression analysis, correlation analysis was carried out in order to find out whether there is any evidence of severe multicollinearity among the test variables⁽³⁾. Since we do not find evidence of multicollinearity (see Appendix 1), regression analysis has been carried out with the incorporation of all variables simultaneously. First, we present the results of the static panel model analysis. Results of static panel data models have been presented in Table 1.

Table 1. Regression results of Static Panel data models

Panel data Models: Dependent variable is LEV_{it} ; standard error in parenthesis					
Independent variables	Model 1	Model 2	Model 3	Model 4	Model 5
	OLS	FE-CS	RE-CS	RE-CS with AR(1)	RE-CS-Time
$NDTS_{it}$	-0.20313*** (0.0342)	-0.1765*** (0.04823)	-0.1826*** (0.04259)	-0.20014*** (0.04715)	-0.194059*** (0.0429)
$PROF_{it}$	-0.006817 (0.004960)	0.001064 (0.0028295)	0.0005335 (0.002818)	0.0006793 (0.0021408)	0.000935 (0.002816)
$SIZE_{it}$	-0.000681 (0.003533)	-0.0078*** (0.0023)	-0.00721*** (0.00227)	-0.004512** (0.00216)	-0.006968** (0.003305)
$TANG_{it}$	0.178434*** (0.0395)	0.118618*** (0.0390)	0.12826*** (0.03679)	0.11302*** (0.039502)	0.114088*** (0.03699)
$EVOL_{it}$	-8.00E-05** (4.05E-05)	-6.10E-06 (0.000023)	-9.32E-06 (0.0000232)	-0.000018 (0.0000188)	-8.46E-06 (2.33E-05)
$GROWTH_{it}$	5.66E-06* (3.13E-06)	1.08E-06 (1.80E-06)	1.30E-06 (1.79E-06)	2.42E-06* (1.40E-06)	1.14E-06 (1.79E-06)
C	0.293354*** (0.029958)	0.35348*** (0.02466)	0.347997*** (0.0317)	0.3405797*** (0.0309)	0.35517*** (0.03619)
Model summary					
R ²	0.066562	0.773270	0.049241	-----	0.039332
F-test	8.473773***	5.33***	6.154503***	-----	4.865314***
Rho AR	-----	-----	-----	0.51275378	-----
Cross-section random S.D.	-----	0.2077346	0.20115479	0.19221114	0.201223
Idiosyncratic random S.D.	-----	0.12428549	0.12428549	0.1116443	0.123394
Rho	-----	0.73640379	0.72371944	0.74773208	0.7231
Theta	-----	-----	-----	0.64886484	-----
Period random S.D	-----	-----	-----	-----	0.016621
BP-LM test	-----	-----	$\chi^2_{(1)} = 1269.64***$	-----	-----
Hausman test	-----	-----	$\chi^2_{(4)} = 6.59$	-----	-----
Fixed effect (F-test)	-----	$F_{(89,624)} = 21.85***$	-----	-----	-----
Wald χ^2	-----	-----	36.93***	28.77***	-----
Firms included	90	90	90	90	90
Total observations	170	170	170	170	170

Notes: 1. The LM test has χ^2 distribution and tests the null hypothesis that unobservable individual effects are irrelevant in explaining the dependent variable, against the alternative hypothesis of relevance of unobservable individual effects in explaining the dependent variable. 2. The Hausman test has χ^2 distribution and tests the null hypothesis that unobservable individual effects are not correlated with the explanatory variables, against the null hypothesis of correlation between unobservable individual effects and the explanatory variables. 3. The Wald test has χ^2 distribution and tests the null hypothesis of insignificance as a whole of the parameters of the explanatory variables, against the alternative hypothesis of significance as a whole of the parameters of the explanatory variables. 4. The F test has normal distribution $N(0,1)$ and tests the null hypothesis of insignificance as a whole of the estimated parameters, against the alternative hypothesis of significance as a whole of the estimated parameters. 5. ***, **, and * denote significance at 1, 5 and 10 % level of significance respectively. 6. EF, CS, BP-LM, SD denotes fixed-effect, cross-section, Breusch and Pagan's Lagrange multiplier for random effect, and standard deviation respectively. 7. [----] denotes results are not computed.

Source: Author's calculation.

From an analysis of the results of the Wald and F tests, we can conclude that we cannot reject the null hypothesis that the explanatory variables do not explain, taken as a whole, the explained variable, and so the determinants selected in this study can be considered explanatory of the debt.

The results of the LM test indicate we can reject the null hypothesis, at the 1 % significance, that firms' unobservable individual effects are not significant. Therefore, a pooled OLS regression will not be the most appropriate way of carrying out an evaluation of the relationship between debt and its determinants, since we do not consider the heterogeneity of firms, a heterogeneity which cannot be measured by the relationship between debt and its determinants. However, the results of the Hausman test show that we cannot reject the null hypothesis of absence of correlation between firms' unobservable individual effects and debt determinants. Therefore, we can conclude that the most appropriate way to carry out an evaluation of the relationship between debt and its determinants is an evaluation of a random effects panel model. The similarity of the results obtained in terms of significance and significance of the coefficients of variation, using random or fixed effects, shows that the correlation between unobservable individual effects and debt determinants is not relevant. Therefore, and given the possible existence of autocorrelation, we assess the random effects panel model, consistent with the existence of first order autocorrelation. In the final step of static panel data model, i.e., Model 5, we also estimated the model of two-way effect wherein both cross-section and period specific effects are assumed fixed.

Next we present the results of the GMM (1991) and GMM system (1998) dynamic estimators. The results are presented in Table 2. The results of the Wald tests allow us to conclude that the determinants used in this study can be considered, as a whole, explanatory of the debt.

Table 2. GMM (1991) and GMM (1998) estimates result

Panel data Models: Dependent variable is $LEV_{i,t}$; standard error in parenthesis		
Independent variables	GMM (1991)	GMM (1998)
$LEV_{i,t-1}$	0.4940653*** (0.0751869)	0.4545991*** (0.0710414)
$NDTS_{i,t}$	-0.2551332*** (0.0674686)	-0.2157173*** (0.0513694)
$PROF_{i,t}$	0.0010241 (0.0016644)	0.0004238 (0.0014219)
$SIZE_{i,t}$	-0.0228289** (0.0104641)	-0.0231829*** (0.0073044)
$TANG_{i,t}$	0.0754454 (0.0497679)	0.1068677*** (0.037752)
$EVOL_{i,t}$	-0.0000392 (0.0000285)	-0.000028 (0.0000244)
$GROWTH_{i,t}$	4.19e-06** (1.73e-06)	3.54e-06** (1.46e-06)

Panel data Models: Dependent variable is LEV_{it} ; standard error in parenthesis		
Independent variables	GMM (1991)	GMM (1998)
C	0.358712*** (0.0966603)	0.3393815*** (0.0656582)
Model summary		
Wald chi ²	214.88***	225.62***
AB test	Z1= -2.0867** Z2= 1.2007	Z1= -2.1744** Z2= 1.216
Sargan test	chi2(20) = 32.64561**	chi2(26) = 38.88394**
Firms included	90	90
Total observations	170	170

Notes: 1. In the GMM(1991) estimator the instruments used are $(LEV_{i,t-2}, \sum_{K=1}^n Z_{k,i,t-2})$, in which $Z_{k,i,t-2}$ are the debt determinants lagged two periods. 2. In the GMM system (1998) estimators the instruments used are $(LEV_{i,t-2}, \sum_{K=1}^n Z_{k,i,t-2})$, in the first difference equations, and $(\Delta LEV_{i,t-2}, \sum_{K=1}^n \Delta Z_{k,i,t-2})$, in the level equations. 3. The Wald test has χ^2 distribution and tests the null hypothesis of overall non-significance of the parameters of the explanatory variables, against the alternative hypothesis of overall significance of the parameters of the explanatory variables. 4. The Sargan test has χ^2 distribution and tests the null hypothesis of significance of the validity of the instruments used, against the alternative hypothesis of non-validity of the instruments used. 5. The Z1 test has normal distribution $N(0,1)$ and tests the null hypothesis of absence of first order autocorrelation, against the alternative hypothesis of existence of first order autocorrelation. 6. The Z2 test has normal distribution $N(0,1)$ and tests the null hypothesis of absence of second order autocorrelation against the alternative hypothesis of existence of second order autocorrelation. 7. Standard deviations in brackets. 8. *** significant at 1% significance; ** significant at 5% significance; * significant at 10% significance.

Source: Author's calculation.

From the results of the Sargan tests, we can conclude that we can reject the null hypothesis of instrument validity, and consequent restrictions generated, from use of the GMM (1991) and GMM system (1998) dynamic estimators respectively. However, the results of the second order autocorrelation tests concerning respectively the GMM (1991) and GMM system (1998) dynamic estimators, allow us to conclude that we cannot reject the null hypothesis of absence of second order autocorrelation. Therefore, given the validity of the absence of second order autocorrelation, but instruments invalidity we cannot conclude that the GMM (1991) and GMM system (1998) dynamic estimators are efficient and robust.

5. Discussion of results

Next, we present the comparison of the results of the models previously presented. First, we compare the results of the static panel models, then we compare the results of the dynamic panel estimators, and finally we go on to compare the results of the static and dynamic panel estimators. The summary of the results of the signs and statistical significance concerning the relationship between debt and its determinants are presented in Table 2.

5.1. Comparison of the results of static panel models

Observing the results presented in Table 1, we can conclude the results of a pooled OLS regression are different from those obtained using panel models of random and fixed effects. The first difference is related to the relationship between profitability and debt. Whereas using a pooled OLS regression the estimated parameter is negative, considering a panel model with random or fixed effects, the relationship becomes positive though insignificant statistically in all cases. The second difference is related to the relationship between $EVOL_{it}$ and debt. Whereas using pooled OLS regression the estimated parameter is statistically significantly negative, considering a panel model with fixed and random effects though the relationship is negative but statistically insignificant. The third difference is related to the relationship between sales and debt. Whereas sales are negative, but insignificant in case of pooled OLS, considering the model of panel with fixed and random effect sales tend to be statistically significantly negative. The fourth difference is related to the relationship between growth and debt. Whereas growth is significant with a positive sign in case of pooled OLS, considering the case of panel with fixed and random effect growth turned to be insignificant but the sign remains the same.

Further, considering the relevance of unobservable individual effects, given by the results of the LM test, we can draw the following conclusions from the results of the static panel models: 1) there is a negative and statistically significant relationship between non-debt tax shields and debt; 2) there is a negative and statistically significant relationship between sales and debt; 3) there is a positive and statistically significant relationship between growth and debt; 4) there is a positive and statistically significant relationship between ratio of fixed assets to total assets and debt; and 5) statistically, the relationships between profitability and debt and POCI and debt are not significant.

5.2. Comparison of the results of the dynamic panel estimators

Comparing the results of the dynamic estimators GMM (1991) and GMM system (1998), we find that the coefficient of ratio of fixed assets to total assets is insignificant in case of GMM (1991) while significant in case of GMM (1998)

and all other results are same in terms of sign and significance of the explanatory variable under consideration.

Using the GMM (1991) dynamic estimator, we obtain an impact of debt in the previous period on debt in the current period, which is statistically significant at 1% significance, of $\delta = 0.494$, and so with $\delta = (1-\alpha)$, we have an adjustment of actual debt towards the optimal level of debt off $\alpha = 0.506$. Applying the GMM system (1998) dynamic estimator the impact of debt in the previous period of debt in the current period is statistically significant at the 1% significance, of $\delta = 0.455$, and so the adjustment of actual debt towards the optimal level of debt is $\alpha = 0.545$.

The parameter measuring the impact of non-debt tax shields on debt is negative using both GMM (1991) and GMM system (1998) dynamic estimators and statistical significant at the 1 % level. As far as the relationships between other explanatory variables and debt is concerned, we find that growth is positively significant in both cases; profitability is insignificant in both cases, though carrying a positive sign; sales are negatively significant in both the cases; POCI insignificant, but carries a negative sign in both cases and ratio of fixed assets to total assets is insignificant in case of GMM (1991) while significant in case of GMM (1998) though carries positive sign in both cases. However, it should be noted that the results obtained from GMM (1991) and GMM (1998) are not robust, as the assumption of instrument validity do not hold good⁽⁴⁾.

6. Conclusions

The study was intended to identify the determinants of capital structure for Indian firms using a panel framework. For the analysis, we have taken 90 firms during the period 2002-2009, comprising of a panel model with fixed and random effects. We also used GMM (1991) and GMM (1998) estimates of our analysis. We found that that results obtained from the GMM (1991) and GMM (1998) are not robust as the assumption of instrument validity was not found to hold good. Therefore, based upon LM test and Hausman test, we conclude that: 1) there is a negative and statistically significant relationship between non-debt tax shields and debt; 2) there is a negative and statistically significant relationship between sales/size and debt; 3) there is a positive and statistically significant relationship between growth and debt; 4) there is a positive and statistically significant relationship between ratio of fixed assets to total assets and debt; and 5) the relationships between profitability and debt and POCI and debt are not statistically significant.

Further, we find that the Indian firms adjust the level of actual debt towards the optimal level of debt with speed of adjustment between 0.50 and 0.55, which is

profound when compared with adjustments of other country firms. Kremp et al. (1999) obtain values for adjustment coefficients of 0.53 and 0.28 for Germany and France respectively, Shyam-Sunder and Myers (1999) 0.59 in the United States, Miguel and Pindado (2001) 0.79 for Spain, Ozkan (2001) 0.57 for the United Kingdom and Gaud et al. (2005) values between 0.14 and 0.387, according to the type of debt used, for Switzerland.

We find a negative and statistically significant relationship between non-debt tax shields and debt and so we can conclude that Indian firms do reduce debt, given the greater possibility of non-debt tax shields.

We confirm the existence of a positive relationship, though insignificant, between profitability and debt. This result suggests the most profitable Indian firms resort more to debt rather opting first for internal financing.

Given the negative and statistically significant relationship between size/sales and debt, we conclude that smaller firms turn more into debt than larger firms, since the former do not have enough stuff to go for internal financing therefore only external sources are left for them.

Further, we find a positive, statistically significant relationship between asset structure and debt. This implies that the asset structure of the firms also plays dominant role in debt seeking. We also find a positive, statistically significant relationship between growth opportunities and debt. This implies that to achieve higher and higher growth Indian firms go for debt financing.

Finally, we do not find a statistically significant relationship between level of risk and debt and between growth profitability and debt. Based on the results obtained, we cannot conclude that a greater level of collaterals contributes to firms increasing debt, that a higher level of risk contributes to decreasing debt or that firm's use debt to finance their growth.

To sum up, we can conclude that Indian firms adjust the actual level of debt towards the optimal level of debt and the level of adjustment is substantial. Size, growth opportunities, capital structure and non-debt tax shields can be considered determinant factors in explaining the capital structure of Indian firms, and consequently in explaining the adjustment towards the optimal level of debt.

Notes

- (1) The underlying rationale for the MM theory is that solely the left hand side of the balance sheet, which reflects the company's investment policy (Drobez and Fix, 2003), determines the value of the firm. Therefore, their theory suggests that the value of the firm tends to be independent from the debt balance of the company, and instead is largely affected by the presence of a number of projects handled with positive net present value (NPV).
- (2) This section is heavily based on the work of Serrasqueiro and Nunes (2008). For the analysis data of all variables is obtained Capital line data base for the period 2002 to 2009.
- (3) It is important to mention that though we do not have evidence of sever multicollinearity between the variables analyzed. But correlation is somewhat higher between $EVOL_{i,t}$ and $GROWTH_{i,t}$ and hence provide evidence of near multicollinearity however, care should be taken in analyzing the correlation matrix presented in Appendix 1, since it is computed by ignoring the panel structure of the data and that is utilized for analysis.
- (4) Summary of all results relating to sign and significance of the parameters related to the variables is presented in Appendix 2.

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Appendix 1: Descriptive statistics & correlation analysis

Table A1. Descriptive statistics

	LEV _{i,t}	NDTS _{i,t}	PROF _{i,t}	SIZE _{i,t}	TANG _{i,t}	EVOL _{i,t}	GROWTH _{i,t}
Mean	0.292653	0.300254	0.261199	6.954037	0.386395	40.72013	197.6891
Median	0.291171	0.216359	0.255022	7.373254	0.361368	20.82680	19.07655
Maximum	1.101908	1.848915	2.346667	12.63313	1.799929	7152.750	117407.5
Minimum	0.000000	0.000000	-33.40313	0.000000	0.000000	-3489.543	-74.97216
Std. Dev.	0.243161	0.281408	1.795818	2.510073	0.244647	339.0820	4379.802
Skewness	0.402393	2.026714	-17.99475	-0.830592	0.934493	13.03922	26.67762
Kurtosis	2.231777	8.338604	335.9027	3.262921	5.068553	304.8653	714.3571
Jarque-Bera	37.13537	1347.929	3363583.	84.85980	233.1606	2754083.	1526627
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

Source: Author's calculation

Table A2. Pearson's correlation analysis

	LEV _{i,t}	NDTS _{i,t}	PROF _{i,t}	SIZE _{i,t}	TANG _{i,t}	EVOL _{i,t}	GROWTH _{i,t}
LEV _{i,t}	1						
NDTS _{i,t}	-0.1722	1					
PROF _{i,t}	-0.05786	0.08840	1				
SIZE _{i,t}	-0.02550	0.0540	0.0975041	1			
TANG _{i,t}	0.08744	0.3940	0.09661851	-0.01650	1		
EVOL _{i,t}	-0.047603	0.023040	0.02717152	0.00370	-0.03995	1	
GROWTH _{i,t}	0.01941	-0.0047070	-0.0035461	0.024669	0.00845	0.76384	1

Source: Author's calculation

Appendix 2

Table A3. Summary of the results of applying the various estimators: Empirical evidence for India

LEV _{i,t}	Expected Sign	OLS	Fixed effect	Random effect	Random effect AR(1)	Two-way Random effect	GMM (1991)	GMM (1998)
LEV _{i,t-1}	+	----	-----	-----	-----	-----	+	+
NDTS _{i,t}	-	_-***	_-***	_-***	_-***	_-***	_-***	_-***
PROF _{i,t}	-	- (n.s.)	+(n.s.)	+(n.s.)	+(n.s.)	+(n.s.)	+(n.s.)	+(n.s.)
SIZE _{i,t}	+	- (n.s.)	_-***	_-***	_-**	_-**	_-**	_-***
TANG _{i,t}	+	+***	+***	+***	+***	+***	+(n.a)	+***
EVOL _{i,t}	-	_-**	-(n.s.)	-(n.s.)	-(n.s.)	-(n.s.)	-(n.s.)	-(n.s.)
GROWTH _{i,t}	+	+*	+(n.s.)	+(n.s.)	+*	+(n.s.)	+**	+**

Note: (1) n.s. denotes not significant and (2) *** significant at 1% significance, ** significant at 5% significance; * significant at 10% significance.

Source: Author's calculation.

Appendix 3

Table A4. *BSE listed companies considered for analysis*

SL.No	Name of the company	SL.No	Name of the company
1	Aban Offshore Ltd	46	Lanco Infratech Ltd
2	ABB Ltd	47	Larsen & Toubro Ltd
3	AIA Engineering Ltd	48	Mahindra & Mahindra Ltd
4	Apollo Hospitals Enterprise Ltd	49	Maruti Suzuki India Ltd
5	Areva T&D India Ltd	50	McLeod Russel India Ltd
6	Aurobindo Pharma Ltd	51	Mphasis Ltd
7	BEML Ltd	52	MRF Ltd
8	Bharat Electronics Ltd	53	National Aluminium Company Ltd
9	Bharat Forge Ltd	54	Neyveli Lignite Corporation Ltd
10	Bharat Heavy Electricals Ltd	55	NHPC Ltd
11	Bharat Petroleum Corporation Ltd	56	NMDC Ltd
12	Biocon Ltd	57	NTPC Ltd
13	Blue Star Ltd	58	Oil & Natural Gas Corp Ltd
14	Cadila Healthcare Ltd	59	Opto Circuits (India) Ltd
15	Cipla Ltd	60	Oracle Financial Services Software Ltd
16	Colgate-Palmolive (India) Ltd	61	Orchid Chemicals & Pharmaceuticals Ltd
17	Crompton Greaves Ltd	62	Patni Computer Systems Ltd
18	Cummins India Ltd	63	Piramal Healthcare Ltd
19	Divis Laboratories Ltd	64	Power Grid Corporation of India Ltd
20	Dabur India Ltd	65	Praj Industries Ltd
21	Dr Reddys Laboratories Ltd	66	Punj Lloyd Ltd
22	Essar Oil Ltd	67	Rajesh Exports Ltd
23	Financial Technologies (India) Ltd	68	Ranbaxy Laboratories Ltd
24	GAIL (India) Ltd	69	Reliance Industrial Infrastructure Ltd
25	Gammon India Ltd	70	Reliance Industries Ltd
26	Gitanjali Gems Ltd	71	Reliance Infrastructure Ltd
27	Glaxosmithkline Pharma Ltd	72	Rolta India Ltd
28	Glenmark Pharmaceuticals Ltd	73	Ruchi Soya Industries Ltd
29	Godrej Consumer Products Ltd	74	Sesa Goa Ltd
30	GVK Power & Infrastructure Ltd	75	Siemens Ltd
31	Havells India Ltd	76	Steel Authority of India Ltd
32	HCL Technologies Ltd	77	Sterlite Industries (India) Ltd
33	Hero Honda Motors Ltd	78	Sun Pharmaceuticals Industries Ltd
34	Hindalco Industries Ltd	79	Suzlon Energy Ltd
35	Hindustan Petroleum Corporation Ltd	80	Tata Motors Ltd
36	Hindustan Zinc Ltd	81	Tata Power Company Ltd
37	Indian Oil Corporation Ltd	82	Tata Steel Ltd
38	Infosys Technologies Ltd	83	Tech Mahindra Ltd
39	ITC Ltd	84	Thermax Ltd
40	Jindal Steel & Power Ltd	85	United Spirits Ltd
41	JSW Energy Ltd	86	Usha Martin Ltd
42	JSW Steel Ltd	87	Videocon Industries Ltd
43	Jubilant Organosys Ltd	88	Welspun Corp Ltd
44	Jyoti Structures Ltd	89	Whirlpool of India Ltd
45	Lakshmi Machine Works Ltd	90	Wipro Ltd

Source: Author's calculation.

How can Africa attract different forms of capital flow: theoretical perspectives

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Abstract. *This paper explores the capital flow landscape in Sub Saharan Africa and other regions and reviews the capital flow theory and its allocation puzzle. The different mechanisms in which the volume and structure of capital flow can be increased are discussed. It concludes by presenting a modified theoretical model to guide the policy makers' decisions process in designing pro-growth incentive mechanism to attract more capital to region.*

Keywords: Capital Allocation Puzzle, Capital flow, Sub Saharan Africa.

JEL Classification: F2, G1, F3.

REL Classification: 10F.

1. Introduction

The prediction of neoclassical economic theory of trade and growth imply that capital should flow from regions with low marginal product to where it attract higher marginal product (Lucas, 1990). Contrary to the prediction, more capital is flowing to countries with higher to medium income and little less to developing countries where it is most needed. Sub-Saharan Africa is poorest region but with a relatively higher return on investment. However it is the lowest recipient of capital flow to date, actually the FDI inflow grew by only 59% between 1980-1989 and 1990-1998 while it grew by 5.200% for East Europe and Central Asia and by 942%, 740% for East Asia and Pacific and for South Asia respectively (Asiedu, 2002). The observed capital allocation puzzle has attracted interest of many scholars since the seminal paper by Lucas in 1990s.

Despite a relatively low rate of capital flow to Africa, there is a general consensus that without significant amount of new capital injection Africa's development objective cannot be achieved (Rice 2003, Asiedu, 2002 and Gourinchas and Jeanne, 2008). The argument of the finance on economic growth is further supported by the proponent of the theory of finance growth nexus like Schumpeter and Patrick. The critical need of the capital flow in boosting the economic growth in the region calls for more work to be done. While there is a series of work which have been documented after the Lucas master piece, yet there is a dearth of literature focusing on Sub-Saharan Africa. The slow rate of capital flow compared to other regions provides some signal that African context may be different and may need a different variant of the model for attracting capital flow. Therefore there is a need to develop a nuanced theory which incorporates context specific in order to guide responsive policy options. In the effort to provide more light to capital flow allocation puzzle and contribute towards capital flow and growth debate, this paper aims to review the existing literature and propose a theoretical scheme on how to increase capital flow in Africa. The rest of the paper is organized as follows: The next section presents stylized facts on capital flow in Africa. A concise review of theoretical and literature is provided in section three. Section four layout the proposed theory and conclusion is presented in section five.

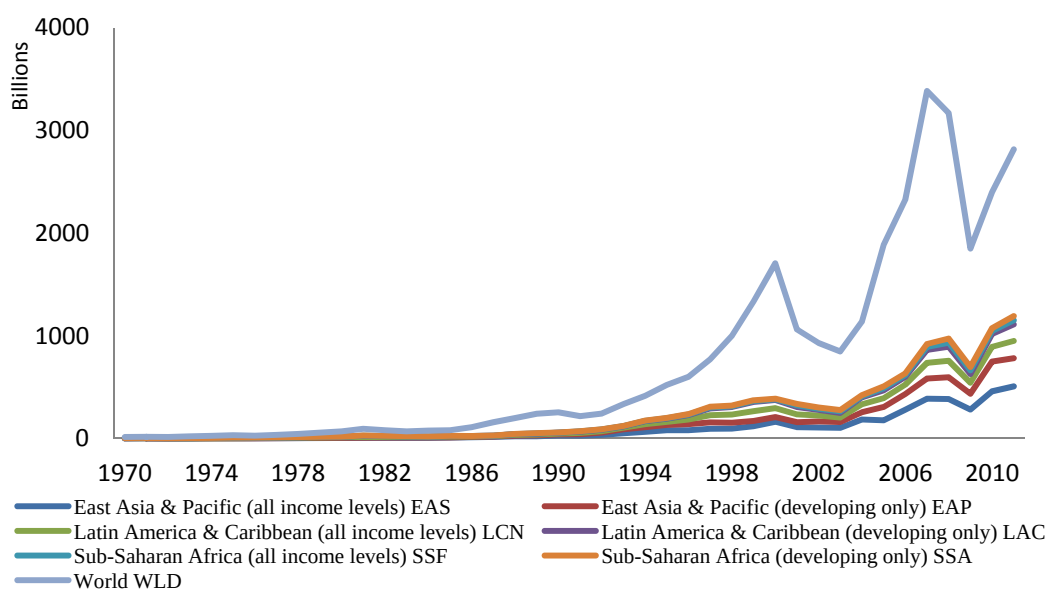
2. Stylized facts about capital flow in Sub-Saharan Africa

This section, presents the observed trend in capitals flow in Africa and its comparison with other regions around the world. The section is meant to provide broader perspectives on the empirical evolution on capital flow, delineate what works and what needs to be fixed based on the historical data. The information in this section will further guide the theorizing process and in determining the likely composition of the capital flow which may be relatively easier to attract taking into the short term crunches and capital flow inertial resulting from the recent global crisis.

Fact 1: Sub-Saharan Africa has consistently been the least recipient of capital flow

When analysing the trend from historical data on capital flow especially in term of FDI, Sub-Saharan Africa (all income levels) have been consistently lagging behind other regions in terms of the net inflow. Using the data from the World Bank Development Indicators over the span of 40 years, Figure 1 below provides clear evidence that the rate at which Sub-Saharan Africa attracts capital is relatively lower than all other regions.

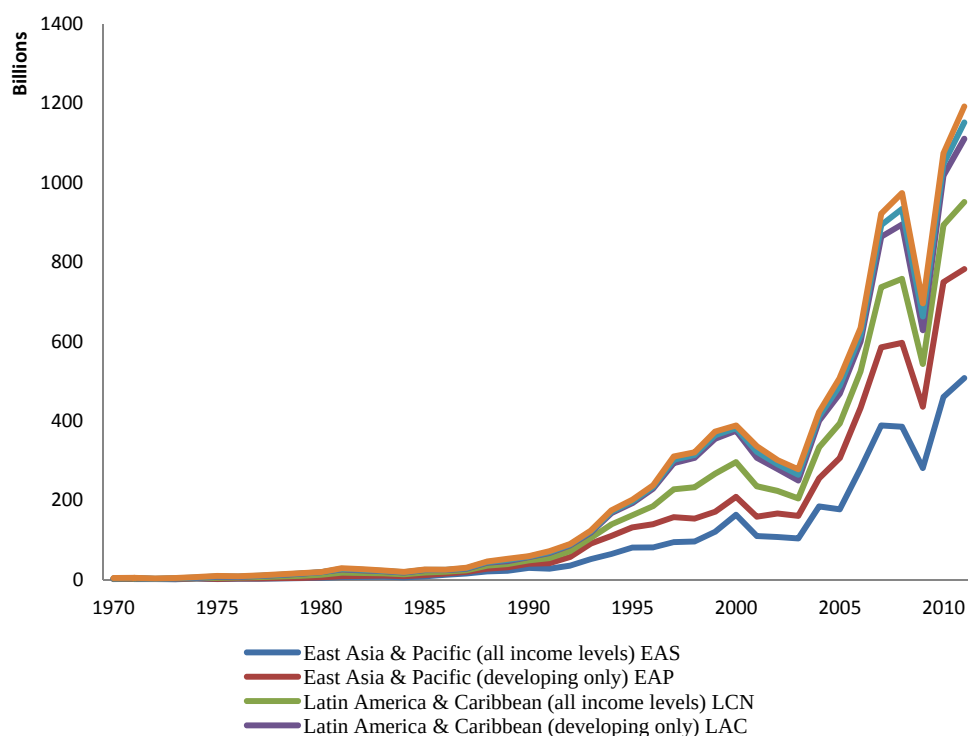
Figure 1. *The trend of FDI inflow across regions (Including World average)*



Data source: WDI, 2013.

Fact 2: The Gap of FDI inflow between SSA and other regions is widening over time

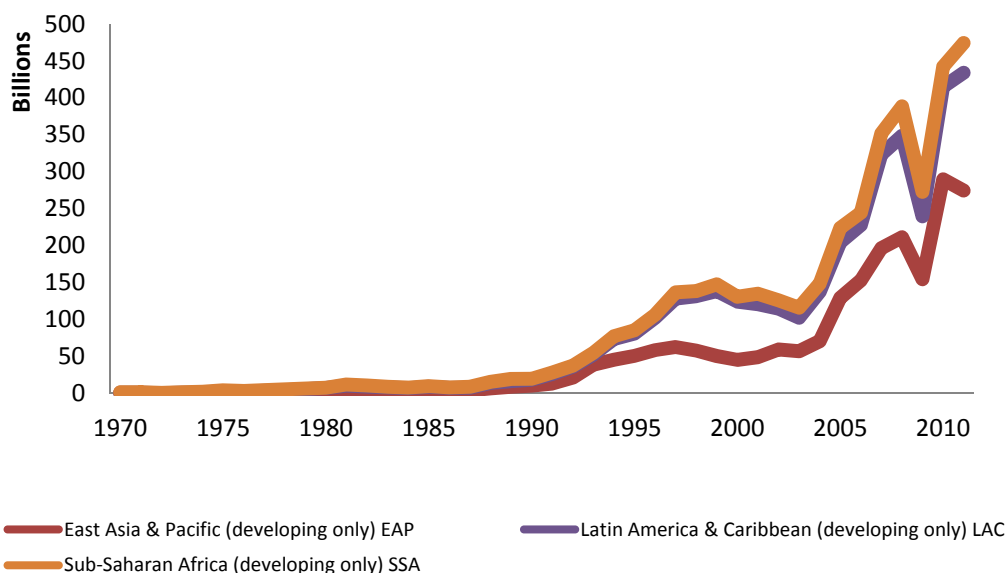
A careful analysis of the trend of FDI inflow across regions shows that even though the volume of FDI inflow has been consistently increasing across all the regions. The rate at which is increasing for SSA (all income levels) is slower compared to other regions. In other words there is a divergence of capital flow between SSA and other regions. During 1980s the inter-regional difference in terms of capital flow was relatively narrow but it has widened dramatically in the past 10-15 years. Figure 2 below demonstrates the growing trend of capital flow across countries over time.

Figure 2. *The trend of FDI inflow across regions (Excluding the World average)*

Data source: WDI, 2013.

Fact 3: Some segments of SSA countries are exceptionally doing well

Despite the fact that, the region as a whole has been persistently underperforming, there is a glimmer of hope for some countries within the region. A closer look of the data by disaggregating them into developing economy only, shows that some countries in SSA have consistently outperformed others regions at least in terms of the volume of FDI inflow. However, the questions about overall impact of such investments on the local economy remain controversial. Most of the best performers in SSA include those countries endowed with extractive resources (oil, gas and minerals). The previous empirical study has shown that the overall impact of FDI in extractive sectors is limited. More surprisingly for every dollar invested in SSA about 80% (0.8 cents) is being repatriated back leading to capital haemorrhage (Ndikumana and Boyce, 2008). The figure in South East Asia is relatively lower in the neighbourhood of 50%. Also most of the investment in Asia are inclined in manufacturing and service sectors which by large have high impact to the economy. Hence, the caveat here is that, even though the volume seems to be impressive in some countries in SSA, the net gains from the FDI may not be that impressive.

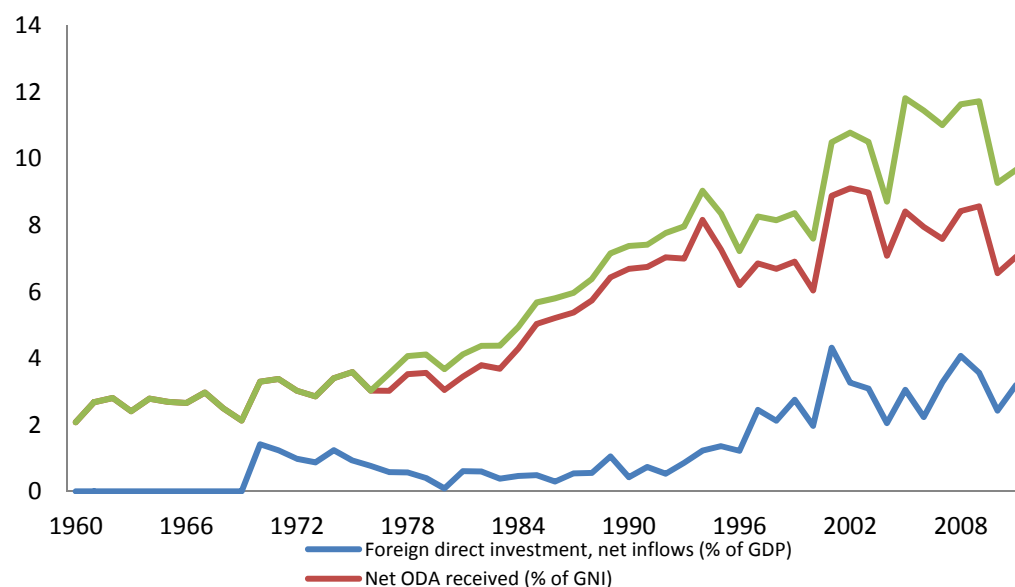
Figure 3. *The trend of FDI inflow across regions (developing economy only)*

Data source: WDI, 2013.

Fact 4: Remittances are more promising

Remittances are becoming significant source of capital flow in most developing countries. As demonstrated in Figure 4 below, the growth rate of remittances as percentage of GDP is consistently growing with faster rate than FDI and official development assistance. Such growth rate signals a strategic niche for SSA as an economic opportunity for attracting more capital inflow. Some countries like Philippines, Bangladesh and India have took as more aggressive stance of recruiting highly specialized expertise for global export in the areas of nursing and medicines for Philippines and Bangladesh, IT for India . Such dedicated effort may worth considering in boosting the future flow of remittances. Also in order to optimize remittance flow the need for well-designed incentive mechanism like Diaspora bond, developed financial market and financial institution cannot be over-emphasized. Figure 4 below illustrates the flow of FDI, ODA and Remittances over time.

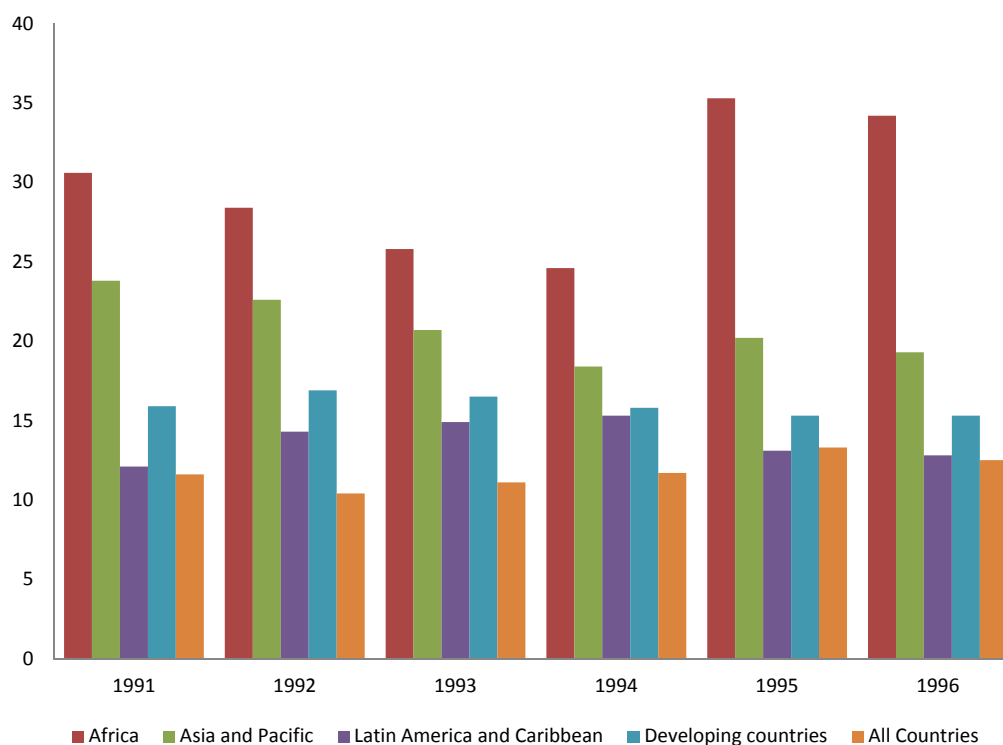
Figure 4. The growth trend in the inflow of FDI, ODA and Remittances as a percentage of GDP in SSA



Data source: WDI, 2013.

Fact 5: SSA has the highest return on investment

Return on investment (RoI) on USA investment is highest in Africa compared to other regions. More specifically RoI in Africa ranged between 25.6-35.3 % as compared to world average of 10.4 -12.5% and 18.4 -23.8% for Asia and Pacific (the second highest) in the same period as from 1991-1996. Figure 5 below provides a more details on the RoI comparative analysis across region from 1991-1996. While the figures may have changed but the overall ranking is likely to remain robust due to diversity of the production and service industry across regions. SSA countries should design the incentive mechanism which allows them to take advantage on the cross regional RoI differentials.

Figure 5. *Rate of RoI on US investment across regions*

Data source: UNCTD (1999).

3. A concise review on theoretical and empirical literature on capital flow

The theoretical debate on the capital flow may date back several decades ago. However the most significant turnaround on this debate was the seminal paper of Lucas on capital flow puzzle. In his work, he started with a rhetorical question why capital doesn't flow from rich countries to poor countries. He critically questioned the neoclassical prediction on the direction of the capital flow based on the marginal analysis of capital productivity. He further demonstrated a part of the paradox using Cob-Douglas production function. What stood out as the stumbling block was inadequate human capital development and capital market imperfection due to political risk. His conclusion emphasized the need to focus reduction of political risk, increased human capital mobility and openness to foreign investment in competitive terms.

Lucas' paper attracted a lot of attention from different scholars with significant empirical work being done on the capital flow allocation puzzle. Regardless of the

existing differences in their methodological approach, definition and composition of the capital flow variables, the following finding seems to be robust across studies: quality institutions, stable and predictable politics and policies, human capital development and openness of the economy. Others factors identified included technological innovation, infrastructural development and return on investments (Ahmed et al., 2005; Asieude, 2002; Ralhan, 2006; Dorsey et al., 2008 and Papaioannou, 2009).

According to Caselli and Feyrer 2007, the key explanation of the Lucas paradox lies on the lack of complementarity of human capital to total factor productivity in poor countries and high transaction cost. On other side Gertler and Rogoff, 1990 argues that capital flow to poor countries may be blocked by moral hazard and lack of collaterals or due to information friction. In addition some scholars have urged that capital flows upward to rich countries because of large market size, superior diversification opportunities and low transaction costs (Portes and Rey, 2005). More empirical research has demonstrated a positive correlation between high institutional qualities, low corruption, well-functioning bureaucracy and international capital flow (Alfaro et al., 2005; Portes and Rey, 2005 and Wei and Wu, 2002). Further suggestions shows that weak protection of property rights, legal inefficiency and a high risk of expropriation are major impediments to foreign banks capital (Papaioannou, 2009).

In summary the early debate on capital flow to Africa during 1980s was largely dominated by the need for more overseas development aid and more trade. The lack of significant capital flow was mainly attributed by the missing market, poor policy environments, poor macro economies fundamentals and political instability (Chea 2011; Njugo, 2011; Dorsey et al., 2008; Lucas, 1990). The pressures from the donors, IMF and World Bank have lead to a significant macroeconomic restructuring in many countries, liberalized their current account, became more open and developed their institution and infrastructure to some extent. These may be part of the reason explaining the recent increase in capital flow especially private capital and portfolio investment in Africa relatives to others sources of capital flow. It signals the gain of some confidence by the foreign investor's to the continent.

Despite the registered progress still much more need to be done. The current debates on how to attract more capital in Africa is centred on the need to maintain macroeconomic stability, more investment in the quality of institutions and public infrastructure, maintain good growth record and more innovative way of attracting capital. Some countries like Nigeria, Gabon Ghana have taken a further step in creating sovereign bond like Euro bond to boost the effort of attracting capital flow. Other innovative avenues may include designing of diaspora bond and

creating good environments to attract foreign capital small and medium enterprises funding including microfinance, saving and credit cooperatives, housing finance and education finance. The areas mentioned are the ones which are more likely to have positive growth impact and their demand seem to outstrip the supply.

4. Landscape of capital flow SSA and low-income countries

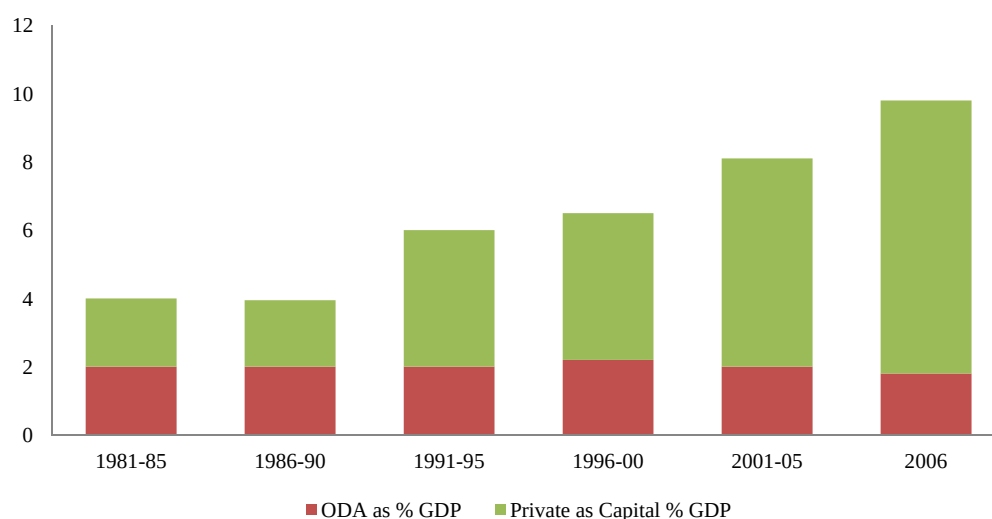
Sub Saharan Africa has been lagging behind other regions in attracting private capital except FDI in extractive industry. Some of the reasons behind the observed pattern can be attributed to relatively weak economic policies, shallow market with low purchasing power, and relatively high perceived risk (Chea, 2011; Asiedu, 2002). However it seems that the efforts which have been done by the region over the past three decades or so have started yielding dividends. As a result SSA recorded the highest level of capital flow for the first time in history during 2007. More specifically the private capital increased in six folds between 2000 and 2007 which is twice the amount of ODA to region (Chea, 2011). In 2007 it is estimated that the private capital flow in the region was \$84billion mainly from the increase in FDI, portfolio investment and private debt flows (Delechat et al., 2009). Most of the FDI is being directed in extractive industry while the portfolio investment is mainly concentrated in the countries with relatively well developed financial institutions.

South Africa is enjoying the lion share in terms of portfolio investment with other countries like Kenya, Tanzania, Ghana and Nigeria sharing the remaining residual. Important factor to note with portfolio investment is its sensitivity to both systematic and idiosyncratic risk. For example, during the recent economic crisis the portfolio investment started drying up and with reversal flow for countries like South Africa (Chea, 2011). On the other side most of the FDI in extractive industry are non-market seeking investments and their overall impact to the economy is negligible at least on the long run. The situation is further exacerbated for some countries like Tanzania where the negotiation of the contract in the extractive industry is flawed and biased towards the investors benefit. There have been a series of unresolved debate going on about the corruption scandal involving the multinational companies and the key policy makers and politician during the contractual agreement of the mining investments in Tanzania. The situation in the other countries with extractive industries is not that promising either except for Botswana and South Africa.

Comparing the region with other low income countries, the trend seems to be the same. Generally the inflow of official assistance as percentage of the GDP have

consistently remaining the same (around 2%) while the private capital have shown a significant increase over time (Dorsey et al., 2008). Figure 6 below demonstrates the dynamics of capital flow to low income countries during 1980-2006. The observed trend is likely to remain at steady increases as more low income countries are starting to grow faster, their income is rising and they are improving further their macroeconomic fundamentals. Despite the impressive trend observed in private capital inflow, the recipient country needs to be more strategic in designing the incentive to attract specific capital which will have a more lasting impact to their local economy than just blindly focusing at the levels of capital flow. The strategic choice of the relevant type of capital flow become even more important as the previous historical data shows that for every dollar invested in Africa about 0.8 cents is repatriated back. The implication is that the residual impact of such investment especially is non-marketing seeking is quite small.

Figure 6. *The Official assistance and Private Capital inflow to low income countries*



Data source: IMF, 2007.

5. A proposed modified theoretical framework

While there is no a single theory which provides a unified framework for the capital flow apart from the “imperfect” neoclassical theory, there is a consensus on what are key deriver of capital flow across countries. For example, stable macroeconomics fundamentals (controlled inflation, better fiscal policies, liberalized current account and controlled external balance of trade), openness, rising income, strong institutions, predictable policy environments and

functioning bureaucracy have positive impacts on all forms of capital flow (Chea 2011; Asiedu, 2001; Ralhan, 2006). On the other side liberalized capital market, strong property right regimes, strong financial system development seems to have a further influence portfolio investment (Eichengreen, 2007; Asiedu, 2001). Also human capital development and improved risk rating seems to have positive impact across the board (Lucas, 1990; Chea, 2011). All these factors are playing significant role in guiding the reform in SSA and other low income countries in their effort to attract more capital. However what is missing in earlier theoretical and empirical literature is their inadequacy in addressing the issue of heterogeneity across countries in their modeling and theorizing. Accounting for heterogeneity is of particular importance because the usually reforms requires heavy investment in human capital and financial resources to start with. Unfortunately most of the developed countries are already outstripped on these factors.

Taking into account heterogeneity factor in our modeling approach, we provide a more responsive policy guidance which take into account both systemic and idiosyncratic factors. Since the required investment in terms of human capital and financial resources is limited, then it may be optimal for each country to focus more investment on sectors where it is likely to gain most in its resource allocation. Such policy framework is important in order to maximize the gains from capital flow and minimizing the cost of reform. To put thing into perspectives, let use South Africa as an example, the country is relatively well developed, with significant high level of human capital and natural resources endowment. Hence its needs in terms of the volume and structure of the capital flow may be different compared to a country like Congo DRC where most of such factors are missing. Therefore in designing an effective policy, South Africa may gain more by focusing on the incentive mechanism of attracting more of portfolio investment and non-extractive industry's FDI as compared to Congo DRC which may need to spread its resources across different sectors.

To accommodate the heterogeneity among the countries, this paper proposes the introduction of the parameter to accounts for idiosyncratic differences. Such adjustment may improve the way countries design their strategy to optimize their effort of not only attracting capital flow but also maximize the mutual gain from the capital flow. At least theoretically, and based on the previous empirical literature, capital flow can be explained as function of systemic variables and idiosyncratic variables. Systemic variables have similar cross country effect while idiosyncratic variables have different effect across countries. The relationship can be summarized algebraically as flows:

$$CF = f(X, Z) \quad (1)$$

CF is a capital flow, X is systemic factors and Z is idiosyncratic factors. The systemic factor may include global recession, global economic boom, climatic change etc. The idiosyncratic factors may include policy environment, macroeconomic fundamentals, resource endowment, openness, market size, institutions, and governance. The standard model of capital flow has been emphasizing the need for the reform to improve on the idiosyncratic factors and collective action to mitigate systemic problems like climate change. The problem with the standard modeling is that it gives similar weight to all idiosyncratic factors cross countries which may lead to biased policy guidance for some countries depending on their specific context.

We propose to extend equation one to equation two by including the parameters lambda which takes into account idiosyncratic differences across countries. The value of lambda is to be estimated as the weighted index per idiosyncratic variable depending on the country ranking of priority and endowment. It is also assumed that the ranking will take into account the expected cost (in term of human and financial resources) and expected gains from the investment. For example, if attracting FDI will involve the construction of regional railway to the most remote area or attracting portfolio investment which may bring in the same amount of capital flow by building network of office complexes for running the business and technological innovation centers. Depending ramifications of the capital flow mix both on the short term and long term, the later project may have higher value of lambda compared to the former. However the sum of lambda should be normalized to 1 for easy comparison and mathematical tractability.

$$CF = f(X, \lambda Z) \quad (2)$$

Equation two can be further operationalized into the following regression model

$$CF = BX + \delta \lambda Z + \varepsilon \quad (3)$$

Where B is a vector of regression parameter, X is a vector of systemic variables, delta is a vector of regression parameters, lambda is vector of heterogeneity weights, Z is vector of idiosyncratic variables and eta is a random errors. The questions whether the proposed model will lead to more informative results and policy guidance on capital flow to Africa remain to be empirical. Further research on sensitivity analysis and empirical application of the proposed framework need to be put into test to validate the argument and claims made which is beyond the scope of this paper.

Also significant effort in reducing risky perception, political risk, improving good governance, functioning institutions needs to work hand in hand with the proposed theory for pro-growth capital flow.

5. Conclusion

Sub-Saharan Africa has been lagging behind other regions in term of attracting capital flow. Yet there is a significant need for capital injection for the region to meet its development agenda. In order to attract more capital there is a need to maintain and improve the achievement recorded in the past two decades in the areas of macroeconomics fundamentals, good governance and development of human capital. However a strategic choice of type and nature of capital required is critical for a meaningful impact of capital flow to the local economy. A revised model presented here might help policy makers to make more effective and pro-growth decisions on resource allocation towards the effort of attracting more capital have been proposed. Also the effort to reduce further political risk and the need to be more strategic in choosing the type and structure of capital flow to be attracted has been emphasized.

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Legal and practical aspects of the associations between the city of Bucharest and the large territorial collectivities – actuality and perspective

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Abstract. *In the current political and economic context, highly sensitive, determined and influenced by the financial crisis which spreads all part of globalization coordinates, the state administrations themselves are put in a position to find new and effective solutions, in order to satisfy a wide range of interests.*

One of the possible ways reserved to administrative systems, with priority to those attached to the European continental area values, is the collaborative administration, based on strengthening cooperation and partnership between the public authorities which are animated by common interests both in national and foreign, and in internal and international collaboration.

From this point of view, the current scientific approach aims to reflect on the reality of institutional and partnership relations that the Municipality of Bucharest - capital of Romania - conducts in its relations with other European cities and large municipalities, such as the Municipality of Rome (Italy). The purpose of these relations regard multiple activities such as local services, high quality serving of the members of the local community, according to the principle and essential value of European Administrative Space - i.e. local autonomy.

Keywords: territorial collectivities, collaborative administrations, local autonomy, Bucharest City, Rome City.

JEL Classification: H77.

REL Classification: 13G.

Introduction

The circumstances of political, legal and socio-economic nature in the last 20 years, at the world, national and local level have inspired in the local collectivities **a new philosophy** with respect to fulfilling the duties derived from satisfying the general interest, by virtue of the essential principle and value of the European administrative space – namely, **local autonomy**.

The local space became a consolidated decisional center with a high degree of autonomy and with an important role of focused support for the local and national development strategies or programs of the governmental actors.

At present, the **local territorial collectivities claim to play an increasingly significant role in the European context**, being encouraged even by the states to which they belong, in the context of recognizing autonomy as an efficient management system of the public affairs.

As in many other states, in our country, the process of awarding administrative vocation to the local collectivities followed the *roller coaster evolution* of the process of implementing the Romanian public administration reform, the local collectivity standing out due to its double nature, of decentralized collectivity, but also of state territorial circumscription, with legal personality and with bodies empowered to act in its name (representative public administration) (Manda and Manda, 2008: pp. 24-25).

Thus, the decentralization process experienced, depending on the degree of administrative modernization, different stages: from the simplistic approach, by means of which decentralization is reduced to a sum of transfers of competences and functions to considering it as an intention to rebalance the political system, by redefining the state territorial levels.

In this new scheme of values, the **duties entrusted to the local public administration** multiply, but they also diversify, completing the *traditional, politico-administrative ones*, with *economic, social, cultural, scientific and many other duties* (Manda, 2012: p. 111), therefore, being **correlated to the intervention forms adopted by these authorities in society**.

Having to permanently adapt to the evolution of the local collectivities, in order to be able to satisfy its needs, the *local public administration was pushed forward*, being forced to anticipate the social transformations that *forecast the future* (Bourgon, 2007: p. 7) and to influence the elaboration of prognoses, programs, projects as results of the forecast, using these anticipations.

Thus, the local space was opened to the *direct compromise of the actors within civil society institutional, pluralism, participative development and decentralization* (Bossuyt, 1995) representing the pillars of a new paradigm of local public administration.

In the context of the new paradigm, the central axis of the behavior of local public closely follows a main objective: **local development**.

Local development experienced an increased degree of maturity and elasticity by synchronizing the specialists in the field of two large concepts, acknowledged at the beginning of the 1990's: **sustainable development⁽¹⁾ and decentralized cooperation**.

I. Decentralized cooperation

In the current politico-economic context, decisively influenced by the effects of the **economic-financial crisis** (reduction of resources for the sectors of major interest– health, education, investments, unemployment, decrease of domestic consumption etc.) which also manifest at the level of the local communities, the local authorities are in the situation where they must find new and efficient **solutions**, capable of answering to the **satisfaction of the general interest**.

One of the possible **action paths reserved to the administration systems**, which is aligned to the major attention for *development of the European Union*, is constituted by the **collaborative sub-state administrations**. It is grounded on strengthening the **cooperation and partnership relations** between these public authorities animated by mutual interests, both at the domestic, national level, as well as on the external level, of international collaboration.

The term of *decentralized cooperation* represents an innovative concept, which reflects a right and a liberty of the sub-state entities in the decentralized states and whose exercising is transformed in value added to the states' activity in international context.

It was promoted in 1970⁽²⁾ by the World Federation of Twinned Towns (WFTT)⁽³⁾ as alternative to the failure of traditional cooperation (central cooperation promoted by governments) offering the possibility of *direct participation of communes and populations to the international action⁽⁴⁾*, and a first legal recognition was granted by the UN in 1971 through Resolution 2861 (XXVI).

This notion was consolidated at the beginning of the 1990's, coming to complete the niches not covered by the excessively centralized mechanism of the OECD, *Official development assistance* (ODA)⁽⁵⁾.

The term, not fully outlined even today, has two meanings (Bekkouche and Gallepp, 2001: 389-390):

- *In broad sense (Anglo-Saxon approach)*: it reflects a new type of cooperation approach, new cooperation forms based on initiatives generated at the level of the local collectivities and characterized by an enlargement of the sphere of the participating actors. In this sphere are included, apart from the authorities exercising public power, also actors within civil society (for example, NGO's). This type of more participative and more horizontal cooperation is specific to the European Union.

The European Commission consecrated this concept for the first time within the cooperation agreements between the European Communities and the states in *Africa*, the Caribbean and Pacific areas (CPA)⁽⁶⁾, with the occasion of the fourth Convention of Lomé, in the part consecrated to objectives, principles and actors of cooperation.

The Convention of Lomé provided an *adequate field of action for a truly decentralized approach* (Bossuyt, 2001: p. 6), but the EU continued and continues to develop new cooperation modalities traced to this concept.

- *In narrow sense (French approach)*: it outlines only the area of the cooperation between sub-state administrations (decentralized public cooperation). The only actors recognized to exercise this right are the **authorities elected through universal vote or those which have the status of local public authority**. It is a meaning recognized by the French doctrine and especially by the practice of Latin states, such as Italy, France, Spain.

The European understanding on decentralized cooperation distinguishes different **objectives** out of which we mention the *encouragement of the local initiative, consolidation of the decentralization processes in different states, consolidation and widening of participative democracy functioning framework by means of the active involvement of citizens in the problematic of development, by conferring the local collectivities the right to establish their own development priorities* etc.

Actors of the decentralized cooperation space

In what concerns the European Union local collectivities there is a multitude of local entities characterized by distinct roles, attributions and competences which intervene within decentralized cooperation, out of which we mention⁽⁷⁾: *local and*

regional public authorities, as well as other public entities enjoying relative autonomy, with definite competences and able to influence the social life of the collectivity; associations and local groups, such as cooperatives, base organizations (women, producers etc.) with specific „weight” in the community life; NGO's, civil associations and other types of associations connected to the development process; the saving and credit institutions and the mutual funds; the academic and human rights protection structures; SME's etc.

The expression „local authority” refers to a wide range of actors located on different administrative levels (municipalities, communities, districts, counties, provinces, regions etc.). Europe enjoys more than 90,000 local authorities (municipalities) and more than 1,100 intermediary level administrative-territorial units (districts, counties), but in the current economic context a strong tendency to reconfigure the municipal map is seen, with the purpose to eliminate localities with low resources and small-range services. The resetting is achieved either by *reducing their number by merger or aggregation of different municipalities (measure specific to the northern countries), or by creating supra-municipal cooperation entities (measure specific to France)* (González, 2006: p. 115).

In this context, decentralized cooperation **provides a sustainable platform for cooperation between entities**, allowing, at the same time, the outlining of the responsibility matrix of each partner and must be understood not as a *substitute of governmental cooperation* (Seisdedos, 2008: p. 107), but as a set of actions complementary to the latter.

The acknowledgement, within the second Un Conference regarding Human Habitats (*Habitat II, Istanbul*, Turkey, 3-14 June 1996), of towns as vectors of decentralized cooperation, as important protagonists in the matter of *sustainable development, of the socio-economic and cultural infrastructure, of human rights, of innovation, infrastructures* etc., generated an explosion of the dynamics of collaborative relations between the local entities (towns).

With this occasion, increased importance was given to local collectivities and authorities in the context of the world configuration of trade and international relations and local powers were recognized the right to cooperation for development, as international policy instrument, a matter until then considered as pertaining exclusively to national governments.

In what concerns decentralized cooperation, for some very active municipalities, it can constitute the objective of coordinated actions (the type of internationalization policies) or, in case of others, it can be a quantification of a wider participation at the international level, but not as a result of strategic programs.

Decentralized cooperation represents not only an important dimension of cooperation for development, but also an important instrument for consolidating decentralizations. Local authorities became the voice of their own collectivities, which they represent within the international organizations, on topics related to cooperation for development, a tendency to internationalize local collectivities being increasingly seen.

This particular type of cooperation constitutes a *new approach of the cooperation relations which attempt to stabilize direct relations with the local representation bodies and to stimulate their own abilities in designing and implementing the development initiatives with the support of the direct participation of interested citizens, taking into consideration their interests and their points of view on development* (Guía de orientaciones para la cooperación municipal al desarrollo, 2010: p. 19).

The competence and experience of local authorities in the area of the traditional sectors of local development, as well as the thorough knowledge of the local interests and needs lead to the consolidation of trust in these authorities, in the context of the development process.

The principle of local autonomy, fundamental principle governing the local public administration and the activity of its authorities, consecrated in the legal order of many European states and not only, allows the local collectivities to perform decentralized cooperation actions in the area of the competence fields that were transferred to them.

Thus, decentralized public cooperation subsumes international partnerships between different territorial collectivities or between different local public entities, with specific responsibilities and competences, with their own development exigencies, aiming at a common general interest, local development.

Decentralized public cooperation differentiates from the classical one by a few important characteristics (Enríquez and Ortega, 2007: pp. 13-14):

1. It assumes the participation of decentralized entities which act in programs, promote and manage actions, without necessarily including the concentrated participation and action of other actors (for example, the central government);
2. The action sphere belongs to the competences of the sub-national entities; it does not compete to that of the central administrations, but it completes the traditional bilateral cooperation in the area (local-territorial) in which, usually, it does not work; this area can be wider or narrower, depending on the decentralization degree of each state;
3. Cooperation comprises more than a simple transfer of financial resources, including experience exchanges in the field of providing public services, local

institutional consolidation, local infrastructure, local development, territory management etc.

4. The actors of decentralized cooperation are decentralized autonomous public territorial entities. They have their own budgets, programs.
5. The autonomy of these entities confers upon them more flexibility and fewer restrictions and procedures than in the case of classical cooperation.
6. The relations established between the actors of decentralized cooperation are more stable, both on average and on long term, and allow the adaptation of the cooperation pace or modalities.
7. It is grounded on the direct interest of each participant, generating horizontal symmetrical, reciprocal and mutual interest relations. This equality relationship is contested by the simultaneous existence between the participants of numerous asymmetrical relationships, from the institutional, socio-economic, administrative, financial and technical point of view;
8. It may involve the participation of a wide range of actors, thus generating sustainability on the long term and a consolidation friendship in international relations between peoples.

The legitimacy of decentralized cooperation derives both from the official texts of international and national bodies, and from running multilateral programs.

At the level of the EU member states, the legal framework of decentralized cooperation comprises several layers, defined by the *Council of Europe*⁽⁸⁾, the *European Union* and the *national* one.

A first instrument that ensures cooperation between the territorial collectivities is represented by the *Framework convention*⁽⁹⁾ *on cross-border cooperation of collectivities or territorial authorities* and the two *additional acts*. In what concerns the European Union, the legal framework was initially defined in the fourth conference of the *Convention of Lomé*. Local authorities from the EU member states and the partner states received from the European Commission direct support for decentralization and decentralized cooperation by means of geographical programs, but also through thematic programs.

Direct public decentralized cooperation. New challenges

Depending on the degree of responsibility of the local public authorities in elaborating and planning public decentralized cooperation actions, the decentralized cooperation modalities are of two types: *direct* or *indirect*. In case of direct cooperation, the implementation of actions can be directly executed by the authorities or delegated to another actor, and in case of indirect cooperation, the responsibility belongs to actors outside the institutional environment of the local authorities. An example of indirect cooperation can also be the allocation of

cooperation resources by means of the open calls for local projects: *the financing of projects and actions presented by the NGO's representing a major part of the public decentralized cooperation flows.*

The essential characteristic of direct cooperation is thus constituted by the cooperation between „counterparts”, between local authorities in different states. It was consolidated by one of the coordinates of globalization, that of internationalizing exchanges, which enlarged the sphere of the international actions allowing the local actors (local authorities) to establish bilateral or network horizontal relations (initiatives of local public interest), with their counterparts in other states, relations increasingly ample, which are, today, at the basis of the world economy, through the issues they determine and the actors they involve.

The specialists in the matter distinguish between the simultaneous development of three phenomena: (Malé, et al., 2014: pp. 12-13). *an exponential increase of international activism of local governments; a new manner of standing out for local collectivities at the world level, not only as actors of the cooperation process (donors and beneficiaries), but as actors of any form of the world agenda; a change of the modalities and forms of relating to the international environment, increasingly more professional, oriented towards results, projects, through innovative networks and contexts, and internationalization through the supra-municipal actions.*

Direct cooperation exceeded today the stage of donor-acceptor relationship understood as support for development and the fight against poverty, transforming into a mechanism of the internationalization policy of local collectivities. This type of relationship relates to the solving of local interest problems (local public services, territorial management, health, sport, culture etc.), the authorities having flexibility in what concerns the scheduling and running of the cooperation process.

Today we are witnessing a change of approach of the relationship established through decentralized cooperation, the asymmetric relations of the donor-acceptor type being replaced by horizontal relations, by *equality and reciprocity* between partners, which allow experience exchanges and knowledge and mutual support.

The direct relations established between authorities allow, for the purpose of the coordinated implementation of public actions, the co-opting within a wide range of mechanisms (associations, clusters, forums, work networks etc.) of other categories of actors (universities, NGO's, public institutions etc.), legal responsibility belonging to the local authorities.

Thus, public decentralized cooperation, on the one hand, becomes a *vector of growth in matters of development and social and territorial structuring*, and, on

the other hand, *favours local autonomy* and, therefore, *democracy at the local level* and, at the same time, *decentralization* (Bekkouche and Gallet, 2001: p. 390).

Direct cooperation materializes, in its turn, in several forms, from the bilateral cooperation between pairs of territorial collectivities, to the network cooperation where we see more territorial collectivities associated for the purpose of reaching common goals.

Bilateral cooperation: from twinning to mutual support partnerships

By bilateral cooperation between two local collectivities is understood that relation established between the authorities of each party *around common local development goals and within which the executive authority becomes the central protagonist of the relationship*.

In practice, by *local collectivity* is understood as the population living on the territory of certain administrative territorial units of the state. They are named differently, depending on the administrative level: for an intermediary level, we find them in the form of regions, departments etc., and for the local level they are in the form of circumscriptions, municipalities, communes etc.

The partnership materialization is seen in the form of *twinning agreements, partnership conventions* etc., and implies a solemn commitment involving both the signing local authorities and the civil society. In many situations, partnerships are concluded as a result of signing, in an earlier stage, of a *statement of intent* (without legal commitment) with general character and subsequently developed in what concerns the goals targeted, the fields of action and the actions performed.

Regardless of the inequality existing from the economic, political and social viewpoint between the collectivities (from the perspective of the public institution resources), the parties are considered equal within the partnership, imposing a rigorous detailing of the objectives, problems and solutions, of the rights and obligations, of the benefits and results targeted, bilateral cooperation transforming into an *extension of the local development strategies in the territories of those collectivities*.

Since the associations between communities are not mandatory, the conclusion of a partnership between the local authorities must emit a common political will to put the contributions of the partner collectivities on equal positions.

Traditionally, two local collectivities associate through a twinning agreement, which reflects a special friendship and mutual support relationship which, in the last twenty years, experienced a radical transformation. The goal of twinning local collectivities is no longer the strict assistance or financial support, but of closeness of

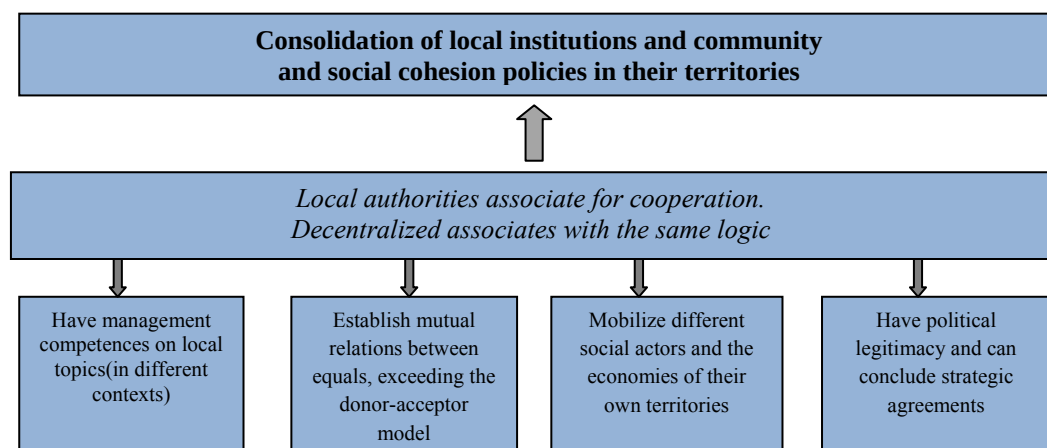
the two communities, for the purpose of ensuring cultural exchanges, knowledge, expertise, development of common projects etc., agreement which remains functional as long as there is political, but also social, will of both partners.

The twinning agreements between the signing parties have permanent character, in the past materializing through simple statements of intent and a series of official visits, which, in time, preponderantly as a result of changing the political configuration of the local decision-makers and of a decrease of political interest, lost their content (lack of motivation and activities), being difficult to identify new common objectives. Gradually, twinning was revitalized, becoming a strong instrument of cooperation and international solidarity by implementing common projects, both by the local authorities, and by the civil society.

The new models of association between communities are oriented towards ensuring the sustainability of public interventions and take into account the experience exchanges and institutional consolidation, giving up the old cooperation formulas based on isolated actions. Under the institutionalized umbrella of direct bilateral cooperation, local authorities will contribute to the consolidation of local governance, by linking the organizations within civil society in both collectivities.

These strategic partnerships subsume both the *added value* of local authorities, and that of the civil society organizations (Figure 1).

Figure 1. *Specificity and added value of decentralized cooperation*



Source: Proyecto Local, *op. cit.*, p. 39.

A major responsibility in boosting local development is due to the elected officials who can thus legitimate the initiative proposals of the citizens they represent and who elected them.

In what concerns the criteria used for concluding the partnerships, they target the *territorial similarities* (territorial size, geographical position, territorial profile a.s.o.), *topics of mutual interest*, *projects for the future* etc.

In order to appreciate if an association is performed in conditions of reciprocity, the specialty literature identified a *set of criteria* that can constitute a theoretical basis for building the evaluation indicators (Proyecto Local, 2010: pp. 48-50).

- *The strategic perspective of the cooperating institutions*: the institutions must adopt the same vision of equality and reciprocity within the established relationship of association. The guiding principle of these agreements is that of the common or mutual interest.
- *The common identification of problems and possible solutions*. The partner institutions must identify the problems affecting them, the solutions identified and the solving procedures which must be undertaken by all partner parties to maximize the benefits. The benefits obtained by each party must be rigorously identified and must be accepted and recognized by both parties.
- *Inclusion of the interdependency principle*. The relations established between institutions must include this principle, interdependency being built around the problem-solution equation.
- *Active participation of all actors involved*. The participation intensity depends on the reciprocity relation, all participating actors having to actively contribute to obtaining the forecasted results.
- *Mutual understanding and commitment*. The degree of reciprocity is measured depending on the degree of knowledge and commitment of the institutions of a signing party in the process of development of the partner party's institutions.
- *The parties' institutional consolidation*. A mutual relationship must take into account the long-term institutional consolidation of the cooperating parties, which presupposes mutual knowledge within the mutual exchange process.
- *The initiative right and capacity of each associated party*. A mutual relationship cannot be grounded on the exclusive initiative of just one party. There must be a shared leadership. Often in the start of partnerships, the power pole can be found with only one signing party, due to the lack of resources, experience etc.; however, in time, these asymmetries must diminish and progressively disappear, in order to be replaced with equality relations.
- *The closeness process*. It implies the setting of measurement indicators of the similarity of projects and mutual exchange in the imposed actions.
- *Mutual responsibility*. A reciprocity relationship presupposes a common responsibility. For this reason, in the partnership agreement there must be undoubtedly outlined the responsibilities of each party, the form of financing and the contribution with resources of each partner.

- *Transparent relations and responsibility.* The actions and results obtained within the must be subjected to transparency and to accountability rules.

The new association models consist of an approach that differs qualitatively from the traditional one (from the perspective of the *genesis, destiny and content*) from the local authorities, which allows them to modernize *their own politico-administrative culture*, which makes them more open to the exterior and more sensitive to the interior (González Parada, 1998: p. 9).

From the perspective of local development, the advantages which can be capitalized as a result of the closer bilateral cooperation are reflected by the local authorities characteristics: they are closer to the social necessities, they are leaders of collectivities that they represent, they promote citizen participation, fight against “sectorialization” and promote the integrity and the transversality of the cooperation actions, they have the necessary resources and the heritage, they manage their own culture and identity, they enjoy the social capital etc.).

These examples shape the role that the local authorities could have in bilateral cooperation and in decentralized cooperation in general, which in the context of the expansion of the actors and their actions’ sphere reveals a profoundly multidimensional character.

In spite of the pursued objectives, whichever the form of direct cooperation shape might be between local authorities, these present their own weakness, some of them deriving from the difficulty of fulfilling the obligations imposed by the partnership, as well as from an internal institutional opposition, and others being determined by the criticism resulting from the incapacity of the authorities to professionalize their actions within the partnership (González Parada, 1998: p. 9).

These weaknesses of decentralized cooperation have their origin in the space of local interests, politico-economic, social and ideological.

Out of the most often seen implementation barriers against direct decentralized cooperation we can mention: lack of effective decentralization, the absence of an open attitude of the actors involved, oriented more towards a donor-acceptor vision rather than towards equality, lack of institutional capacity and political will, ignorance of the principle of mutual interest, absence of a unitary vision on the future cooperation projects etc.

In the context of inequity, in what concerns the degree of decentralization between the partners, especially when one of them belongs to a state with several degrees of decentralization, a pressure factor occurs for the consolidation of decentralization in the adverse state.

The existence of a significant difference between the local collectivities (number of inhabitants, available sources etc.) may lead to a transformation of the reciprocity relationship into a dependency relationship of one collectivity on its partner.

II. Municipal cooperation between Bucharest and other territorial collectivities

Just like at the governmental level, at the local level, *the diagnose of the Romanian administrative reality* reveals the necessity of operating a set of measures and actions in the administrative plan in order to develop the capacity of this system to absorb the given changes, in other words, to allow its modernization.

We further distinguish the existence of a high degree of territorial dependence upon the central authority, from the perspective of solving the local interest problems, mainly due to the distribution of the financial resource of the state between the administrative levels, as well as the separation of the functions and institutional competencies, which compels the administration to provide the citizen with some quality operational services, less expensive, valuable for the collectivity. Important to be underlined it is also the frame of decentralization of the transferred competencies from the central level to the territorial one.

With regard to the national judicial frame of the decentralized cooperation, we distinguish the constitutional and the legal frames. At a constitutional level the judicial capacity of the territorial collectivities to cooperate with other homologue collectivities is grounded on article 120 para. (1) and (2) which state that *the authorities of public administration, through which the local authority in communes and cities is made, are the chosen local committees and mayors, under the law, and these function as autonomous administrative authority*, and also on the article 121 para. (1) and (2) which disposes that *the public administration authority, services for the coordination of the activities of communal and urban councils in order to achieve public services of counties interest is the county council which is elected and works under the law's conditions*.

Similar to other states, the general competencies of the Romanian local authorities for satisfying the collectivities' needs and for furnishing some local interest public services are regulated by the law.

Regarding the legal frame related to the decentralized cooperation, the main premises of the matters is constituted by *Law no. 215/2001 a local public administration*, republished with the subsequent changes and completions. Therefore, the article 11, para (3) from the law which says that *the territorial-*

administrative units have the right to, between the limits of their executive and deliberative authorities' competences, to cooperate and associate with foreign territorial-administrative as well, in law's order, through the decisions of the local or county councils, whatever the case.

Thus, the Romanian State guarantees by law the local authorities' actions (deliberative and executive) started in the sphere of the decentralized cooperation type of international relations and executed in the name of the collectivities which they represent, but which have to respect *the limits of the competencies offered by the law and the international arrangements of Romania*. The material form of the cooperation has to respect certain rules of form and fond, legality control being assured by the prefect.

In the study proposed for analysis, we shall restrict the area of scientific research focusing on the synthetic analysis of the concrete effects caused by the conclusion of such direct cooperation partnership, between the City of Bucharest and other municipalities in Europe, as the case of the town Rome (Italy). Thus, we wish to reveal the *need to strengthen the collaborative type of administration*, as a *solution* to the problems faced today, the local public administrations, source and modality to overcome the obstacles appearing in the way to increasing the administrative efficiency, but also to improve public services.

In this sense, the applicative research focuses on identifying the main involvement directions of the partners in the agreements, for the purpose of bringing together the citizens of these local collectivities, of promoting the active European citizenship, of intensifying the mutual understanding between citizens etc.

From this perspective, the undertaken research wishes to answer the question: To what extent the cooperation on the public administration level of the municipality of Bucharest with other cities across Europe has contributed to the reciprocal sustainable development, to the consolidation of the common values and the feeling of European identity?

The methodology used is preponderantly qualitative and it is based on the analysis of the official documents, study case and interviews- structured alongside the representatives of the Municipality of Bucharest.

An urban diagnostic from 2011 (Document of strategic planning *Strategic Concept Bucharest 203*: p. 8) has revealed the fact that Bucharest is an East-European capital which already registers enough gaps comparing to the bigger and more developed European capital cities, but it still is, from the geographic, territorial size and economical points of view in a direct urban competition (European, macro-regional) with Belgrade, Budapest, Sofia or Istanbul, and also

with other important cities from the neighborhood: Salonic, Zagreb, Chisinau, Krakow, etc.

The Bucharest Municipality represents the first urban and national center of Romania, this level being achieved due to the status of capital of state, but also through the meeting of criteria related to the number of inhabitants (over 2 million), territory (approx. 365 square km), provided services, worldwide ranking place according to several urban development factors, etc.

This urban priority reflects into a series of indicators: decision making no. 1 center; high concentration of the public services infrastructure; it generates 20% of the national GDP; the best business oriented city of Romania; approximately 10% of Romania's inhabitants live in Bucharest, etc.

A study from 2011 shows that in 2010/2011, Bucharest occupied the first place in the ranking of the most attractive cities from Eastern Europe for investors, done by DI Magazine, called "Cities and European areas of the future – 2010/2011". According to the study, Romania's capital is followed by Warsaw, Budapest, Prague, Bratislava, Krakow, Kiev, Pilsen, Brno and Wroclaw. Bucharest leads according to cost efficiency for the investors, but it also dominates the smaller cities ranking according to cost efficiency (The Report of The General Mayor of Bucharest for year 2011: p. 4).

To have a proper image of what Romania's capital city represents at a worldwide level, alongside other big cities, megalopolis or just other capital cities of the world, we will present some of the statistic selections taken and processed from the online data base NUMBEO which provides information on cities and states of the world over life conditions, real estate, health, traffic or pollution.

Thus, internationally, Bucharest occupies from the *Quality of Life Index* 2014s⁽⁹⁾ point of view, the 80th place and the 363th place from the *Cost of Living Index* 2014⁽¹⁰⁾.

Regarding the Municipality budget for 2014, this is approximately 1 bill. Euro, covering all the areas of interest for an European capital⁽¹¹⁾, as it shows from the balance sheet of the budgetary execution of Bucharest for 2013: a decrease of the financing sources for expenses by 3% comparing to year 2012, inaccessible external credits in 2013 (the law continuing to restrict the access to loans because of the high debts); a 98.35% rate of expenses absorption which denotes a high performance of the managing of public funds; the direct payment of the municipal public services – approx. 42, 49% of the total finance resources of the taxpayers, from which: 4.89%⁽¹²⁾ etc.; a light decrease comparing to the precedent in regard

to the funds allocated to social assistance, which shows that alongside the unwanted recession period specifics it is obvious the humanist approach of the actual administration preoccupation; a payment of the debt service performed exactly and on time, one of the effects being keeping the rating of the municipality according to the in-country rating⁽¹³⁾.

For achieving the fundamental objective of „the development of the municipality of Bucharest as a dynamic city submitted to the European capital cities network, having a regional, continental and intercontinental role”, have been approved by *The General Council of the Municipality of Bucharest through the Decision no. 148 from 24.06.1999 five strategic objectives of economic and social development* as it follows (The Report of The General Mayor of Bucharest for year 2011: p. 15):

- *The emphasizing of Bucharest's identity according to its aspiration to become a European metropolis.*
- *The support of the vitality and attractiveness of Bucharest suited to the role of Romania's capital city.*
- *The development of the city as an urban agglomeration having an active and stimulative role on a regional and metropolitan level.*
- *Raising the citizens' quality of life.*
- *The protection and the exploitation of the natural, architectural and urbanistic potential.*

As it is said in the General Mayor's report from 2013, *the territorial planning and the formulation, implementation and monitoring of some politics and strategic documents represent essential instruments in the development process of the Municipality of Bucharest and its territory of support and influence* (Idem), which have attracted the preoccupation and interest of its management within the partnerships with other administrative- territorial units from the international sphere.

Bucharest Municipality has developed forms of cooperation with both international organizations, and through bilateral or multilateral agreements. A synthetic picture of the development of such partnership of the Bucharest Municipality with the developing collectivities, from countries with emerging economies with European countries such as Amman (Jordan), Damascus (Syria), Belgrade (Serbia), Ankara (Turkey), Hanoi (Vietnam), Chisinau (Republic of Moldova), Pretoria (South Africa), Beijing (China), Athens (Greece) is found in the appendix⁽¹⁴⁾. Under those agreements, shares objectives where to exchange experience and knowledge in various fields, the balance between the Bucharest Municipality and the other territorial collectives being still present.

Inside of the Protocol Corporation and Twinning between Bucharest Municipality and the Municipality of Amman, Jordan agreed to cooperate in fields as: *water supply, sewerage, sanitation of the city, local tax collection, public transport, cleaning, environmental protection and culture*. It also talks about mutual support in the following areas: *economic relations, trade and tourism*.

Friendship and Cooperation Protocol between Bucharest Municipality and Damascus provides support information exchange in areas such as: *urban systematization, cadastral and administrative development of the industrial areas, urban transport, and geographic information system application*.

The Cooperation Protocol signed between our institution and the city of Belgrade speaks of promoting the exchange of information and experiences in area such as: *social, economic, cultural and local administration*, focusing especially on the environment protection, urban development and rehabilitation of historical and cultural monuments.

Under the Twining and Cooperation Protocol signed with the Ankara Municipality, at the second article is established that the 2 institutions will promote the exchange of information and experience in areas such as: *environmental protection, urban development, public transport and social services*. It also will encourage the collaboration between local government institutions and other non-governmental organizations and support friendly relations between citizens of the two capital cities.

Regarding the Cooperation and Twinning Protocol between the Bucharest Municipality and Izmir city, knowledge sharing was to be accomplished in the same areas as those covered by the Ankara Cooperation Protocol, but is even talking about the expansion of cooperation in the field of *culture, youth policy, professional training, sports, mass-media communication and the cultural heritage preservation*.

The Cooperation Agreement signed with Istanbul Metropolitan Municipality in the article 3 reads as follows: "The Parties will pay special attention to taking measures having the aim of cooperation in the *field of culture and arts of the two countries, promoting visual and performing arts, literature, music and film for their citizens*." Also will encourage the cooperation between businessmen from the two cities and will initiate support measures to stimulate the development of companies and to promote investment in the two cities.

Bucharest Municipality has signed a Twinning and Cooperation Agreement with Hanoi city from Vietnam, in which has been established that the two institutions

will cooperate in the following fields: *urban planning and management, development, economic, professional trading, tourism and cultural activities.*

The Municipality of Bucharest signed on June 3rd, 1997 a Protocol on development of cooperation relations between the Bucharest Municipality and Chisinau City Hall. The object of the Protocol is the exchange of specialist delegations in areas such as: *the organization and functions of the local public administration, organization of the cadaster services and urbanism and the territory planning, organization and functioning of the real estate investment sector and property filling, mutual information in sectors such as: water supply, street lighting, road maintenance, heating and sanitation, urban transport of passengers.*

On November 4th, 1999, Bucharest and Chisinau Municipality signed a Twinning Protocol having as object the exchange of experience and knowledge in areas that were covered by the Cooperation Protocol signed two years earlier by the two institutions, namely: *organization and functioning of local public administration, organization of the cadaster service and urbanism and territory planning, organization and functioning of investment in real estate property filling, mutual information in sectors such water supply, street lighting, road maintenance, heating system and sanitation, passengers urban transport.*

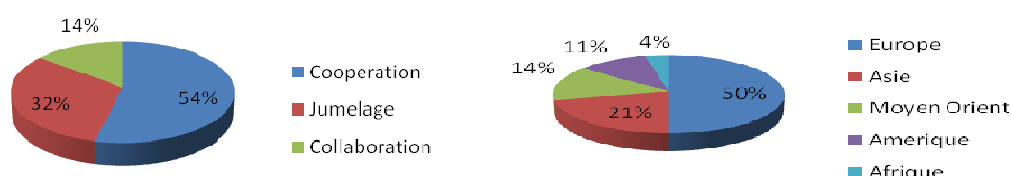
In the Twinning Agreement signed between PMB and the Pretoria Municipality, South Africa, is established that the two countries will uphold *justice and maintain peace and respect the cultural heritage of each, encouraging cultural development, educational and scientific Romanian and South-African nationalities.*

Also Bucharest Municipality signed a Twinning Agreement with Beijing Municipality, China. The agreement provides that the two institutions will perform a series of exchanges in the fields of *business, commerce, science, education, sport, health, personnel specialization.* Bucharest Municipality and Athens have signed both a Cooperation Agreement and a Twinning Protocol. Under the Twinning Protocol the parties agreed to promote the exchange of information in areas such as: *public administration area, especially in environmental protection, urban development and specific protection and cultural monuments.*

Also, from the European Union members, Bucharest signed in 1996 a Protocol Agreement with Paris, France, and in 2007 a Cooperation Protocol with Rome, Italy.

A study on the development of bilateral agreements concluded by the municipality (Mincă, 2013) shows that the largest number of the agreements was concluded in 1997-1999 (17 agreements), 54% representing Cooperation Agreements and 32% Twinning Agreements, and 50% of the agreements have been signed with European cities. From the total of the agreements by the municipality, 50% were concluded with counterparts from Europe 21% Asia, 14% in Middle Est, 11% America and 4% African, observing that Bucharest had a good active relation with Rome, Vienna, Seoul and Yerevan (Figures 2-3).

Figures 2 and 3. *Weight of the bilateral agreements types*



An illustrative example of Bucharest Municipality association formula with other territorial collectivities is the one embodied in the Cooperation Protocol signed by the Bucharest Municipality with Rome (Italy) and which establishes in Article 2 that the 2 municipalities will promote the exchange of information and knowledge in areas such as: *general public administration, urban transport, local economic policy, culture, education, sports, health, environmental protection* etc.

Implementation of the agreement has started with the opening of a representative of City Hall Bucharest (PMB) in Rome. Moreover, from 2007 to 2014, there were two visits to Bucharest and three visits to Rome, one of them at the level of General Mayor of Bucharest (2010 - Opening PMB Representation Office in Rome).

In 2014 there was a meeting of Bucharest Municipality delegation with the representatives of the Municipality of Rome, at the initiative of the Association “Citta del Bio”, for the development and strengthening of partnerships between the two cities, by identifying common sustainable policies for food and agriculture, taking into account the role that cities can play in the favor of public health, environment, quality of life and sustainable economy.

The Bucharest Municipality delegation was interested to know the experience of Rome Municipality in order to strengthen the route of Bucharest Municipality towards becoming a Bio Town. In this aspect, the Italian side was addressed questions regarding specifically how Rome municipality promotes widespread

organically-produced food within the catering activity in schools, how traveling markets work, and the types of services developed on nutrition education issues.

The exchange of experiences planned for the near future aim at the strategic project “Roma Citta da coltivare”, developed for the dissemination of culture and agricultural practice in Rome and considered a first call for the allocation of land to young farmers in this municipality, the experience of *Teaching farms*, *Gardens school* and *School Catering Service* projects which provides more than 150,000 meals/day using more organic products, but also the opportunities that can benefit both municipalities to develop the cooperation in the field of agriculture and nutrition.

Conclusions

The undertaken research highlights the rising trend of internationalization of territorial collectivities inside a new action sphere, that of decentralized cooperation, much more elastic and permeable than the traditional version of the centralized cooperation.

Decentralized cooperation has created the possibility of transforming the sub-state actors into direct interlocutors of international cooperation, present in a wide range of formulas that contribute in an accelerated rhythm to the consolidation of the local governance.

However, in order raise the impact of the decentralized cooperation local internationalization policy is necessary, in harmony with the national one and which to reflect inside different projects and territorial programs, the synergy of the actions of all the actors (central, local, institutional, civil society's actors, private, etc.), in order to increase the impact on local collectivities.

The process of decentralized cooperation must unfold under the patronage of the principle of reciprocity, of the common development of the collectivities involved in the decentralized cooperation network, on the necessities and proposals that emanate from the local collectivities.

The representative authorities of these collectivities must enjoy adequate competences and resources that even though can use different forms and spheres of expression, allow reaching the common objectives inside a rigorously defined partnership as well

If we keep in mind the more restricted area of our research and analyze pragmatically the decentralized cooperation of the Municipality of Bucharest case,

we must take into account the answers of a set of questions regarding the international representation of the municipalities, the viable options and the extreme opportunities of the sustainable development of the collectivities and their authorities, the municipality image projected outside, etc.

As it is revealed from the undertaken research, in the context of profound socio-economic and political transformations of Romania's last decade, the municipality of Bucharest has generated and intensified different forms of bilateral or network cooperation, its local authorities becoming the main actors of these cooperations.

The municipality has promoted partnerships that don't strictly occur between different political entities, but in which their pacification, implementation and management are included civil society representatives for consolidating the legitimacy of the local public interventions

Even though the instruments and mechanisms used during these cooperations are more and more innovative, there are significant obstacles that must be overcome in order to achieve the expected objectives inside the concluded cooperations, and we keep in mind especially the existence of an administrative capacity, encased by the difficulty of allocating its own financial resources or accessing international funds, by the changes of the political configuration on CGMB level and by a socially vulnerable capital

All the persons interviewed from *The Protocol and External Affairs Direction* (PMB) have appreciated that from the different forms of cooperation concluded by the municipality, the twining remains the most efficient and effective on the long run, but less supple and flexible as the agreements/protocols of cooperation and collaboration. The direct cooperation between municipal cities is preferred instead of the traditional one (central) as it is more transparent, less bureaucratic and it involves a greater decisional autonomy, establishing a horizontal relation, reciprocal understanding between parts and recipients

In regards to the concretization of this cooperation, the initiative of elaborating some projects and actions are fairly divided between the agreement parts.

Local authorities from Bucharest must elaborate and implement a public policy of internationalization of the municipality which should complete the existing strategic planning, but rather with a sectorial impact than a general one. However, there are no standard models for such a policy, the authorities thus facing real challenges of international cooperation.

In order to avoid the situations in which the policy will stagnate the unfolding of the decentralized cooperation processes it is necessary to establish friendship

relations among the civil societies of the two collectivities, situation in which the representatives of the civil society are not only a turntable, but also partners in managing these cooperations alongside the local authorities

The cooperation of the Municipalities has one last projection, as a significant objective of the administration: the Citizen. In this case the cooperation serves better thanks to the continuous improvement of public services, and due to the essential principle and value of the European administrative space: *the local autonomy*.

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Notes

- (1) The outlining of the sustainable development was performed within the Brundtland Report „Our common future” (1987) which defines this concept in the sense of satisfying the needs of today without sacrificing ability of the future generations to satisfy their own needs. The definition underlines the need for a new way of understanding the relationship between development, economic growth and the use of natural resources, at the same time with the need to preserve these resources. The concept was adopted at the international level within the UN Conference on Environment and Development in Rio de Janeiro, in June 1992.
- (2) The first actions of decentralized cooperation materialized in the twinning agreements between different owns, after World War II. The priority cooperation axes targeted friendship, peace, cultural exchanges etc.
- (3) Which is transformed in year 1988 in the *World Federation of United Towns and Cities*. Manifest of the seventh WFTT Congress.
- (4) *Official Development Assistance* (ODA) is a term coined by the *Development Assistance Committee* (DAC) of the *Organization for Economic Cooperation and Development* (OECD) to measure aid.
- (5) At the moment of signing, the European Communities were composed of 12 European states, and CPA had 69 states.

- (6) European Commission, *Note to the services of Development General Directorate and to the delegations in the CPA-ALA-MED and PECO countries*, Development General Directorate, A4(00) D/1424, 23 December Brussels, pp. 2-3 in Abraham, L.D, *La cooperación oficial descentralizada. Cambios y resistencia en las relaciones internacionales contemporáneas*, Los libros de la Catarata, 2008, Madrid, p. 207.
- (7) At present, by means of the Congress of Local and Regional Powers.
- (8) Adopted by the Council of Europe in Madrid on the date of May 21st, 1980 (STCE n° 106). The convention defines the legal framework of the cross-border cooperation between the signing states. It was ratified by Romania through GO no.120/1998.
- (9) *The Quality of Life Index* is an estimation of the quality of life made by utilizing an empirical formula, based on experiments. At this point it is considered the most important factor: pollution, then safety etc.
- (10) The indices that compose *The Cost of Living Index* are taken into consideration and have as level of reference New York City (NYC). The *Consumer Price Index* is an indicator that takes into consideration the price of consuming goods, including groceries, transportation and utilities. The Housing Rent Index is an estimation of the cost of the apartments for rent and bars in New York City. *The Local Purchasing Power* shows the relative power of buying the goods and services with a medium wage in that city.
- (11) Approx. 30% being allocated to investments. The evolution of expenses of the Municipality of Bucharest comparing to 2009 shows that, despite the economic conjuncture which got worse constantly under the actual General Mayor, the politic of fostering investments has further succeeded.
- (12) The urban development potential represented by the education sector is insufficient and/or underutilized, generally because of the patrimonial base or decreased motivation of the teaching staff.
- (13) Thus, the nominal effort of approx. 6.68% annually from the total of the budget expenses doesn't cover the rate to paid, but only interest and fees.
- (14) Data supplied by the *Direction of Foreign Affairs and Protocol* within the Bucharest City Hall.

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- Report of the General Mayor of the City of Bucharest for year 2011*
- Report of the General Mayor of the City of Bucharest for year 2013*

Appendix

Source: Data supplied by the *Direction of Foreign Affairs and Protocol* within Bucharest City Hall

Twinning/cooperation/collaboration protocols

Twinnings

No.	Document type	Date of signing
1	Agreement protocol Bucharest – Athens	20.05.1993
2	Twinning protocol Bucharest – Atlanta	19.09.1994
	Memorandum of understanding regarding cultural and economic cooperation Bucharest – Atlanta	06.1994
3	Declaration of mutual agreement regarding the conclusion of the Twinning Agreement Bucharest – Pretoria, South Africa	20.10.1997
4	Twinning and cooperation protocol, Bucharest – Ankara	20.06.1998
5	Twinning and cooperation protocol, Bucharest – Amman, Jordan	19.06.1999
6	Twinning protocol Bucharest – Chisinau	4.11.1999
7	Twinning protocol Bucharest – Nicosia	12.03.2004
8	Agreement regarding the establishment of twinning Bucharest – Beijing	21.06.2005

Cooperations

No.	Document type	Date of signing
1	Cooperation Protocol Bucharest – Paris	20.07.1996
2	Cooperation and friendship agreement Bucharest – Athens	17.01.1997
3	Cooperation Protocol Bucharest – Izmir	23.07.1998
4	Memorandum regarding cooperation and friendly exchanges Bucharest – Beijing	23.11.1998
5	Memorandum of cooperation Bucharest – Zhenjiang Province, China	28.11.1998
6	Understanding draft for cooperation Bucharest – Damascus, Syria	17.12.1998
7	Understanding and mutual cooperation agreement, Bucharest – Ottawa, Canada	22.02.1999
8	Friendship and cooperation protocol Bucharest - Damascus, Syria	19.06.1999
9	Draft of cooperation protocol Bucharest – Belgrade	7.07.1999
10	Friendship and cooperation protocol Bucharest – Hanoi	30.08.1999
11	Cooperation Protocol Bucharest – Belgrade	22.09.1999
12	Cooperation agreement Bucharest – Montreal	29.06.2001
13	Cooperation agreement Bucharest – Istanbul	28.04.2006
14	Cooperation Protocol Bucharest – Roma	26.06.2007
15	Cooperation Protocol Bucharest – Vienna	14.12.2010

Collaborations

No.	Document type	Date of signing
1	Protocol regarding the development of collaboration relations Bucharest – Chisinau	3.06.1997
2	Collaboration agreement Bucharest – Moscow	22.06.1997
3	Understanding protocol Bucharest – Beijing	28.08.1997

Declarations/Letters of intent

No.	Document type	Date of signing
1	Letter of intent Bucharest – Budapest	2.04.1997
2	Declaration of Ankara, First General Assembly of the Association of Capitals in the Black Sea Area	06.09.2000
3	Declaration of Vienna, Role of Capital Cities in the EU expansion process	02.07.2001
4	Memorandum regarding the results of the visit to Moscow of GM of the City of Bucharest	8.11.2005
5	Letter of intent, Bucharest – Ilfov development region – Lazio region	18.05.2006
6	Memorandum regarding the results of the working visit in Bucharest of China International Industry & Commerce (CIIC)	18.01.2007
7	Letter of intent for the participation in the program „Youth in Europe” – a drug-prevention program	19.09.2007
8	Declaration European cities against drugs	19.09.2007
9	Resolution of DONAUHANSE Project	2007
10	Letter of intent Bucharest – Tbilisi	19 .09. 2009
11	Project of intent regarding the Protocol on the collaboration program between Bucharest and Moscow	2010 -2011
12	Memorandum of understanding for friendship and cooperation Bucharest – Seoul	05.2012
13	Letter of intent regarding the cooperation between Bucharest – Yerevan	10.04.2013

At the beginning of the 1990's, Bucharest joined the majority of international organizations: *METROPOLIS*, *AIMF*, *l'Union des villes capitals en Europe central et du sud-est*, *BALCINET*, *Energie Cites*, *l'Union des Capitales de l'Union Européenne*, etc. Out of the last actions, we can give as examples WeGO (L'organisation pour gouvernance électronique) in 2012, *Citta del Bio* and *Major Cities of Europe* (2014) etc.

Psychological biases and the capital structure decisions: a literature review

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Abstract. *Each decision-making process is an important cognitive and emotional process which is open to the emotional effect. Individuals decide to make a decision about a future uncertainty that makes them feel good, or maximally good by minimizing the loss to gain ratio. Recent researches in finance have argued that the capital structure decisions and firms' funding and strategic choices deviate from the traditional neoclassical paradigm. However there is a nascent empirical literature that has exposed interesting evidence of the effects of managerial behavioral biases. In this context, managers' decisions, that to create the capital structure, have a vital importance for the company. The behavioral finance (BF) approach may be revealed useful results in the process of solving decision-makers' behaviors and thoughts. In this context the purpose of this study is to reveal if the managers are affected by their behavioral characteristics in the process of the financing decision-making, based on the findings of studies in the literature. From this point of view behavioral finance literature, which is about the financing and capital structure decisions, is investigated. As a result, theoretical and empirical analyses, in the literature, show that managers' biases play an important role to explain the capital structure choice.*

Keywords: Capital Structure Decisions, Behavioral Biases, Decision Making.

JEL Classification: G32, G02.

REL Classification: 11B.

Introduction

How the managers finance their firm operations? How should they do? What are the factors that influence managers' decisions? How these decisions affect to economic wealth? These are important questions and must be answered carefully for the firm sustainability. In connection with this, especially the capital structure decisions are important factors in financing firm's operations.

Capital structure one of the most controversial issues in corporate finance. According to finance literature there are various approaches that constitute of the capital structure theories. Nevertheless none of them are constant accuracy. The researches as for the validity of each approach, give us conflicting results. Also all of these approaches hold in common one important point, the implicit assumption that financial market participants like investors and managers make decisions rationally (Vasiliou, 2009: 19). When we look at the studies in Turkey we see that they are based on traditional finance theories, too.

However, the psychology science literature is wide and continues to expand day by day. This literature which is about human psychology and behavior draws our attention to that most people, including investors and managers, are subject to important limits in their cognitive processes and tend to develop behavioral biases that can significantly influence their decisions. Indeed, individual reasons are cognitive shortcuts that influence the position, making irrational and non-optimal terms of traditional financial theories. These biases have been identified and classified and grouped as follows: The means of representation, reasoning analog bias of conservatism and confirmation, but also emotions such as loss aversion, optimism and the overconfidence (Azouzi and Jarboui, 2012: 48). So leading researchers to focus deeper into the real factors that determine capital structure in practice.

Psychology has found that humans tend to have unwarranted confidence in their decision making. In essence, this means having an inflated view of one's own abilities. This trait appears universal, affecting most aspects of our lives. Researchers have asked people to rate their own abilities, for example in driving, relative to others and found that most people rate themselves in the top third of the population. Few people rate their own abilities as below average although obviously 50% of all drivers are below average. Many studies of company CEOs, doctors, lawyers, students, and doctors' patients-have also found these individuals tend to overrate the accuracy of their views of the future (Byrne and Utkus, 2013).

Behavioral Finance (BF) is an emerging discipline that represents a collection of alternative approaches to refine the classical finance definition of economic

rationality. In particular, BF draws on the psychology and cognitive science literatures to examine why individual decision-making often deviates from rational choices in systematic ways (Chira, Adams and Thornton, 2008).

BF studies are the psychology of financial decision-making. Most people know that emotions affect financial decisions. BF extends this analysis to the role of biases in decision making, such as the use of simple rules of thumb for making complex investment decisions. In other words, BF takes the insights of psychological research and applies them to financial decision-making (Byrne and Utkus, 2013).

As Gene Epstein stated in “The Myth of Rationality: What Really Drives Economic Decisions” when referencing Kaufman (1994), “it is the nature of human behavior to try to escape discipline”. When traditional finance fails to explain our lack of rationality, BF offers alternative explanations of what motivates economic decision-making. Do human beings think in terms of the past when developing their strategy for the future? Do they let themselves be influenced by the belief that they have control over a situation when there is no way to assess the amount of control? (Chira et al., 2008).

On the other hand most studies on BF have focused on investor behavior but the actors are not only investors but also managers in the financial markets. To be considered managers’ behavioral characteristics that have an impact on their decisions, ensure taking more consistent and realistic results. Concordantly recent studies show that managerial behavioral biases are receiving growing attention in corporate finance. Recent theories have illuminated how biases like overconfidence and optimism can affect various corporate decisions (Azouzi and Jarboul, 2012). As defined Hersh Shefrin, bias is nothing else but the “predisposition towards errors” (Shefrin, 2007). In other words, a bias is a prejudice or a propensity to make decisions while already being influenced by an underlying belief (Chira et al., 2008). There is also a nascent empirical literature that has exposed interesting evidence of the effects of managerial behavioral biases (Azouzi and Jarboul, 2012).

In this study BF literature has investigated in the context of psychological and behavioral biases’ effects on the financial decisions especially capital structure decisions. The study is organized as follows; after this introductory section in which the reader is referred to the research topics, follows the next chapter in which focuses on the capital structure and its behavioral aspects. The next section deals with the studies in the literature that examines the effects of psychological

and behavioral factors' on the financial decisions especially on the process of determining to capital structure. The paper ends with the concluding remarks.

Theoretical base

Since the Modigliani and Miller's first study that is about the theory of capital structure, an extensive literature has occurred on this subject. This literature has experienced the transaction from Miller's (1977) postulate of tax neutrality which is refused later by DeAngelo and Masulis (1980) with their concept of non-debt tax shields, to the static theory that postulates the optimum debt level as a consequence of a trade-off between the tax advantages of borrowed money and financial distress costs (Miguel and Pindado 2001).

Until the publication of Modigliani-Miller theory of capital structure, there were traditionally prevailed view that there is a direct interdependence between capital structure and corporate value. Such independence stemmed from the perceived financial risk exposure causing that for companies with higher debt levels there were required higher rates of return on debentures as a compensation for risk. On the other hand, there is the cost of equity financing which is higher than a cost of debt financing. As the total cost of financing is obtained as a sum of cost of equity financing and debt financing (Uckar, 2012: 169).

A large portion of the financial economics and corporate finance literature has been concerned with building on the MM propositions with the addition of capital and managerial labor market imperfections, and testing the implications of the theories arising from such additions (Sanvicente, 2011).

Many studies have been done on the theories of capital structure so far. Theories like trade-off theory, pecking order theory, agency costs theory has seen wide acceptance in practice. In this sense, the existing traditional financial theories of capital structure factors are based on the basic data- oriented like agency costs, asymmetric information and transaction costs. Although companies have the same basic data, different financing preferences of firms are explained by behavioral theories. In the traditional finance theory, an individual is considered to be rational. In these studies, the effect of the decision maker's personality is neglected. However, behaviorists tend to emphasize the bounded rationality due to cognitive limitations (Tomak, 2013).

As mentioned above, academic research work on capital structure, both theoretical and empirical, has generated many discussions and studies seeking to explain why firms do what they do with regard to choosing debt or equity (Soufani et al., 2012). All of the researches hold in common one important point, namely, the

implicit assumption that financial market participants as well as company managers always act rationally. However, an extensive and growing literature on human psychology and behavior shows that most people, including investors and managers, are subject to important limits in their cognitive processes and tend to develop behavioral biases that can significantly influence their decisions (Azouzi and Jarboui, 2012).

The psychological fact known as bias and its presence in human decision making provide the additional insight on the subject of individual irrationality and broaden the ideals of irrationality (Bashir et al., 2013)

Capital structure literature contains most of the theoretical and empirical studies that has identified the determinants of capital structure. And also recent arguments about the financial decisions are on the subject that if the behavioral or psychological factors effect on the capital structure decisions. These discussions lead us to the science of BF.

BF is the paradigm where financial markets are studied using models that less narrow then those based on Von Neumann-Morgenstern (1947) expected utility theory and arbitrage assumptions. BF uses models in which some agents are not fully rational, either because of preferences or because of mistaken beliefs (Ritter, 2003).

According to another view BF is a field of finance that proposes psychology-based theories to explain anomalies. Several studies in the field of BF have shown how individual emotions and biases cloud over rational thinking and decision-making. Some emotional and cognitive biases such as loss aversion, optimism, overconfidence etc. impact the decision making (Suresh, 2013).

Ricciardi and Simon (2000) say that BF attempts to explain the what, why, and how of finance and investing from a human perspective. Baker, Ruback and Wurgler (2004) state that behavioral corporate finance replaces traditional rationality assumptions with potentially more realistic behavioral assumptions. Shefrin (2001) denotes that there are two key behavioral impediments to the process of value maximization. The first impediment, which he calls “behavioral costs”, is internal to the firms and tends to undermine value creation. These costs are associated with errors of managers because of cognitive imperfections and emotional influences (Vasiliou and Daskalakis, 2009: 20).

Managers must be a choice between debt and equity while making financing decisions. The psychological biases, in managers regarding financing decisions,

do not necessarily result in decisions that are consistent with the expected preferences of investors.

When we look at the BF's issues that related with the capital structure, seen that as mentioned in the next section the studies concentrated to the effects of psychological biases on the process of financing decision-making especially determining the capital structure. In the next part of the study these studies and researches will be examined.

A review of literature on the behavioral aspects of capital structure

Ever since the seminal work by Modigliani and Miller (1958) many studies attempted to explain how firms choose their capital structure and whether an optimal capital structure actually exists, which contains both debt and equity. But as mentioned before most of these studies based on traditional finance. Nevertheless recent studies or researches in BF show that the behavioral characteristic of a manager is an important factor that in the process of determining capital structure. This is exactly where behavioral corporate finance emerges. It replaces the traditional rationality assumptions with potentially more realistic behavioral assumptions concerning the various financial decisions.

Behavioral analysis considers the elements of human perception and evaluation of outside situation and events, and most importantly, the emotions associated, both ex ante and ex post with any financial decision. This new field of modern finance refers to neuroscience debate and assertion that the motivations, emotions, and feelings are indispensable to any human decision, including the financial ones; emotions are essential to any decision and course of action (Mitroi and Oproiu, 2014).

Uckar (2012), in his study of literature review, says that BF has completely different starting point. They arise from empirical studies of behavior of investors and participants in financial markets. In doing so, through the establishment of certain psychological patterns, they seek to detect behavior that is inconsistent with the assumptions of investor rationality and market efficiency (Uckar, 2012: 170).

In his research Uckar gives information about the Shefrin (2001) and Heaton's (2002) studies. In Shefrin's study of BF, he states that overconfidence may induce a manager to adopt an over indebted and sub-optimal capital structure. In similar research Heaton (2002) analyzed the effect of overconfidence on financing decisions in the absence of asymmetric information or moral hazard problems.

According to Uckar if the manager is overconfident, he believes that firm shares are valued under the market value, which opens the mispricing problem. In such circumstances where the cost of capital is not properly defined, errors are possible in decisions about the viability of investment projects. That is, due to managerial overconfidence, the managers make project with negative present value that he mistakenly believes to be positive. Also, because of the belief that stocks are underpriced, the manager will select the issue of debt securities as a source of financing for such investment projects. As a result of managerial overconfidence it comes to the excessive use of debt, high debt ratio and thus a high probability of financial distress (Uckar, 2012: 174).

Impact of behavioral elements in the formation of capital structure can be observed during merger and acquisition procedures as well. In their model, Shleifer and Vishny (2003) argue that mergers and acquisition decisions and decisions about methods of financing deals are driven by misvaluations of the participating companies. Since the stocks are mispriced as a result of irrational investors, rational managers recognize this opportunity to arbitrage and respond to the mispricing. Their model suggests that acquisitions for stock are made by overvalued companies and target companies tend to be less overvalued. In such condition when valuations are high, acquisitions will involve payment in stocks rather than in money (Uckar, 2012:173).

In their study Ben-David, Graham and Harvey (2007) measures the overconfidence of managers in a unique sample of over 6,500 stock market forecasts made by top U.S. financial executives. Their measure of overconfidence is based on miscalibration of beliefs, and operationalized using a method drawn from laboratory experiments of overconfidence. They link their estimate of executive overconfidence to firm-level archival data and study how miscalibration is reflected in corporate policies. Each quarter, from March 2001 to March 2007, we surveyed hundreds of U.S. Chief Financial Officers (CFOs) and asked them to predict expected one- and ten year market equity returns as well as the tenth and ninetieth percentiles of the distribution of market returns. They use the narrowness of the individual probability distributions for stock market returns as proxy for each respondent's confidence. By evaluating the same forecasting task across all executives, they assess whether CFOs are miscalibrated and disentangle this bias from any potential bias in the mean estimate, optimism (Ben-David, Graham and Harvey, 2007).

They examine the time series and cross sectional determinants of overconfidence and analyze the relation between our overconfidence measure and a range of

corporate policies including investment, mergers and acquisitions, financing, payout, market timing and compensation (Ben-David, et al., 2007).

And finally they said that firms with overconfident CFOs invest more and engage in more acquisitions, and the market reaction to their acquisitions is negative. They also find a positive relation between managerial overconfidence and financial structure: firms of overconfident CFOs have higher debt leverage, rely more on long-term debt, and pay fewer shares following price run-ups. Another finding from their research is that executive compensation in firms with overconfident CFOs is tilted towards performance-based pay (Ben-David et al., 2007).

In Hachbarth's (2008) capital structure model, higher debt levels, and hence managerial optimism and overconfidence, are beneficial for shareholders. Since manager attempts to act in the interest of shareholders, ie. To maximize the perceived value of the company, he will try to optimize the capital structure in such a way as to achieve greater tax savings in relation to agency and distress costs (according to trade-off theory of capital structure). Usually, an overconfident manager perceives debt as more undervalued than equity, so he issues higher level of debt than a rational manager (Uckar, 2012: 174).

Vasiliou and Daskalakis (2009) investigate that whether capital structure decisions and actual firm financing in general deviate from the traditional neoclassical paradigm. That is, they investigate whether capital structure determination is based on other than rational decisions. These decisions are called rational under the neoclassical paradigm. Their research results show that firms avoid using long-term debt, thus their capital structure consists mainly of equity. The main reason seems to be the big boom of the stock exchange during 1998-2000. In their research they found that there is strong evidence that Greek firms have followed the market timing approach of financing by issuing new stock during 1999-2000 when the prices in the ATHEX were high. So this result questions the BF approach and specifically the irrational investors-rational managers approach (Vasiliou and Daskalakis, 2009).

According to their opinion most of the managers believe that a new stock issue announcement will either lead to an increase or to no effect in the stock price, cancelling the signaling theory and raising questions as to why managers have these opinions (Vasiliou and Daskalakis, 2009).

And they continues to explain their findings like that; one way argue that we are using a nonrepresentative sample period where managers could well be biased by

the bubble and subsequent decline of the stock markets around the world, not just in Greece. They explain the word of “biased”. They say that “biased situation” first presupposes a “correct-nonbiased situation” and second should be caused by an anomaly. In other words, there can be no bias unless something happens to provoke it. Furthermore, it is the assumptions set in every situation that lead to a bias or to a correct situation. The bubble and subsequent decline of the stock markets around the world could bias managers under the neoclassical paradigm. Because a bubble and subsequent decline of a stock market are anomalies under the neoclassical paradigm, they could bias managers in their opinions. Managers could be biased under the neoclassical theory, but the neoclassical theory does not seem to hold (Vasiliou and Daskalakis, 2009).

They say that if individual managers are indeed responsible for corporate decisions, then they affect corporate behavior and performance and their decisions and behavior are the firm’s decisions and behavior (Vasiliou and Daskalakis, 2009).

According to Uckar (2012) the last area where it is possible to isolate the impact of behavioral elements on the formation of capital structure lies in the primary issues of securities. On market for IPO’s it is the common occurrence of high first-day return. That imply that the issues are underpriced at the offering price or that managers and pre-IPO shareholders are irrational since that are satisfied with a smaller inflow of new capital than would be possible. Laughran and Ritter (2002) seek to overcome this phenomenon through a model based on prospect theory in which issuers are likely to net the amount of money “left on the table” by an underpriced offering together with the “gain” in their wealth that comes from the rise in the price of the shares that they retain in the company (Ucar, 2012: 173).

Uckar has also mentioned that the net amount will often be a positive sum with the increase in value of the retained holdings exceeding the difference between the offer price and the market price for the shares sold in the IPO. Therefore, the original pre-IPO shareholders can offset the loss of the underpricing with the good news that their total wealth is higher than was previously expected. According to him, in this way, the previous hypothesis that the managers and pre-IPO shareholders are irrational was disproved. And also he has mentioned Ljungvist and Wilhelm’s study (2005) as an example to support for this conclusion In their research Ljungvist and Wilhelm state that issuers of underpriced offerings often use the same IPO underwriter for following equity issues, suggesting they are not

unhappy through a larger inflow of capital, they would not choose the same underwriter (Ucas, 2012: 174).

The second path of Uckar's research about the impact of behavioral elements in the domain of corporate finance is one that assumes that corporate managers can be subject to behavioral biases and that some of the corporate finance transactions they undertake are the result of those biases. This second line of research that assumes "irrational managers" is a somewhat less presented in researches (Baker et al., 2007), but in any case worth studying (Uckar, 2012: 174).

Azouzi and Jarboui's (2012) research examine the determinants of firms' capital structure introducing a behavioral perspective. In their research a theoretical analysis has made and results presented that CEO emotional biases highlights role (optimism, loss aversion, overconfidence) to explaining capital structure choice. Data analyses revealed CEO emotional biases importance in explaining capital structure choice. Indeed, empirical relationship analysis between optimism and capital structure choice shows behavioral dimension role in the explanation. CEO optimism level is positively correlated with a preference for internally generated resources and debt but negatively associated with capital increase. CEO optimistic is reluctant to ask the market to avoid the being evaluated risk. They prefer to fund projects primarily through internal capital debt and then finally external equity (Azouzi and Jarboui, 2012).

And also they found that CEO loss aversion level is negatively correlated with firms' leverage ratios and capital increase. CEO recognizes firms' operational risk level and loss aversion seeks to reduce its firms' total risk by using low of external funding including debt. CEO of high operational firms try to control the total risk by limiting the financial risk introduced by debt and the issuance of new shares. He prefers to finance its investment projects through internal funds (Azouzi and Jarboui, 2012).

The other finding, in their research, is that overconfidence negatively affects internally generated choice, debt and equity but it is positively correlated with the choice of debt and cash flow couple, and with the cash flow and debt and equity combination choice. Overconfidence implies CEO alignment their choice with the shareholders' interests. Thus, CEO overconfidence overestimates his skills to reduce risk. This led him to choose high projects risk which is in the interest of shareholders and increases firms value (Gervais et al., 2007). To finance its investment choices, this overconfidence leader considers his company undervalued by the market limits its emissions securities risky. He prefers first internally generated resource (cash flow) and uses capital structure combinations

to minimize its firm's risk (including internally generated resource and debt combination) (Azouzi and Jarboui, 2012).

Another research was made by Kremer, Lee, Robinson and Rostapshova (2013). In their research they show that acceptance of small risky gambles and scores on math tests is associated with inventory accumulation among Kenyan shopkeepers. They argue that loss aversion may be one factor helping explain the broader puzzle of why high rates of return on capital among small firms in developing countries are both arbitrated away and do not lead to the high growth rates of consumption that the Euler equation would predict. Many Kenyan shopkeepers fail to make small inventory investments with high expected returns. In their papers they examine the determinants of inventory investments and show that shopkeepers who invest one standard deviation more into a risky asset in a laboratory-style game have 10-16 percent larger inventories. Consistent with the view that math skills may be useful in debasing, those with one-standard deviation higher math scores have 14-18 percent larger inventory levels. And finally their results are that, loss aversion can potentially help explain a series of puzzles related to the persistence of unrealized high-return investment opportunities. Since a loss-averse firm owner may turn down small, highly positive expected return investments if they carry risk, loss aversion offers a potential explanation for several puzzles and recent empirical findings. Their findings are that small business owners behave as if they are loss averse raise the possibility that social safety nets might increase investment among small business owners more generally. Their works also suggest that at least some of the heterogeneity in returns to capital identified by Hsieh and Klenow (2009) may be due to differences in management quality across firms, as opposed to the impact of tax and regulatory distortion across firms (Kremer et al., 2013).

Another study that examines the effect of bias on the financing decisions belongs to Tomak (2013). In her study Tomak investigates the effect of manager's confidence level on capital structure decisions. For this purpose firstly she has revealed the determinants of capital structure from the finance literature. According to her, generally accepted as the core factors for the market leverage are industry median leverage, tangibility, profits, firm size, market-to-book assets ratio and expected inflation. These fundamental variables and confidence factor that influence leverage are used in this model specification. The model used in her study is as follows;

$$LEVERAGE_{i,t} = a_0 + a_1 CONF_{i,t-1} + a_2 MB_{i,t-1} + a_3 SIZE_{i,t-1} + a_4 TNG_{i,t-1} + a_5 PRF_{i,t-1} + a_6 GDP_{i,t-1} + a_7 INF_{i,t-1} + \varepsilon_{it}$$

In this model CONF means the Management Confidence, MB is Market to Book, SIZE is Firm size, PRF is Firm Profitability, GDP is Gross Domestic Product and INF is Inflation Rate. In this research Tomak make two analysis that one of them descriptive analysis and other one is regression analysis. The descriptive statistics on different variables in the model during the period of 2001 to 2012 for the Turkish manufacturing firms. As a result; although most of the previous studies document that overconfident managers tend to use high level of debt in capital structure decisions, according to Tomak there is not clear and enough evidence for the idea of overconfident managers tend to use more debt level therefore management confidence and leverage relation is uncertain. In addition to this, firm size, tangibility of firms and GDP measure indicate insignificant impacts on leverage. However Tomak found some evidence in her research for firm specific determinants like size and profitability. While firms size yields a positive impact on leverage, the firm profitability effects in the negative way. As the firm size increases, the impact of leverage also increases in the firm and finally profitability of the firm effects debt level in the negative way as the profitability decreases, firms prone to use more debt in the firm (Tomak, 2013).

Soufani, Tse, Cole and Aboulamer (2012) examine the relationship between anchoring as a behavioral bias exhibited by managers and their decisions on whether to issue debt or equity. They investigate whether anchoring captured by a number of proxies including market to-book ratios, the proportion of shares sold off that are held by managers, the exercising of stock options held by managers long before their expiration dates, share repurchases, stock returns, bond yields, 52-week share price highs, and share prices at last equity issue and last debt issue, sufficiently explains the changing levels of debt or capital structure mix adopted by firms (Tse et al., 2012).

Another research belongs to Filbeck, Gorman and Preece (1996). They hypothesize that firms may actually make financial decisions based on the financing decisions of some industry leader. In their research they tested the Patel et. al hypothesis that firms have a tendency to keep their capital structures in line with the industry and find virtually no support for herding behavior of firms and next they tested the hypothesis that firms base capital structure decisions on following some industry leader. They find stronger, but still weak support for this hypothesis as well (Filbeck et al., 1996).

Mefteh and Oliver (2010) consider the impact of manager confidence as a determinant of capital structure in a sample of French firms. They find that traditional determinants of capital structure are significant for French firms, as

they are for firms in many countries. Also they find that manager confidence, as proxied by industry sentiment indices (described later), is highly negatively significant in explaining French firm financing decisions. They said that this result not support the hypothesis that managers are acting according to their expected psychological bias- a preference for debt when they are confident. They also decompose their measure of industry sentiment in to a common consumer confidence component and a unique manager confidence component and the as a result they find that the manager component does have the expected positive relation with leverage. According to their research investor confidence is negatively related to leverage and that the unique component of manager confidence is positively related to leverage. This finding supports the manager confidence bias of their preference for debt. Furthermore they say that the investor confidence component dominates manager confidence, resulting in an overall negative effect of industry sentiment with leverage (Mefteh and Oliver, 2010).

In his study Fowler (2013) try to investigate and understand if finance managers are emotionally impacted by an economic outlook, either in a positive or negative way, and if that emotional impact is a factor in their budget recommendations. For this purposes Fowler make interview with the 77 California municipal finance managers using a Likert-scale to gather self-reported data about attitudes and behaviors related to emotions and decision-making. As a result Fowler proposes that, finance managers rely on valid forecast instruments, experience and the opinions of trusted people to develop their recommendations. Finance managers are affected emotionally by the implications of economic data but are able to effectively put their feelings aside to make sound recommendations for adoption by elected officials (Fowler, 2013).

In the study of entitled heterogeneous beliefs, moral hazard and capital structure, Bigus (2003) says that heterogeneous beliefs are possible even when there is symmetric information but individuals evaluate the same information differently. His paper shows that the form of financing matters when there are heterogeneous beliefs. When heterogeneous beliefs and moral hazard exist, a debt-equity mix might outperform pure debt or pure equity. When there is no moral hazard problem, an optimal contract should ensure that the party who attaches a higher probability to certain revenue or a certain range of revenues, that is, the party who values it more, should keep the revenue in its entirety. And he continue to say that an optimal contract is typically highly nonlinear and may induce the entrepreneur to behave opportunistically after having signed the contract, by for example, influencing the distribution of revenues. For these he analyze how well standard financial contracts, such as pure debt, pure equity and mixed debt-equity

financing (hybrid financing), may be suited to address the issue of heterogeneous beliefs. And Bigus analyzed the investor associates a higher risk with a project (e.g., a venture) than does the entrepreneur. Assuming risk neutrality, heterogeneous beliefs on risk favor equity financing, because then risk does not matter. And also Bigus says that hybrid financing can often be the optimal form of financing and may strictly outperform pure equity financing (Bigus, 2003).

The study of on the subject that Manager's irrational behavior, made by Shao and Wang (2013). Their research purpose is to explore manager's irrational behavior and reasons for it in corporate capital investment decision-making. The authors present the approach to discovering manager's irrational behavior in corporate capital investment decision-making; classify the irrational behavior by the steps in decision-making; propose hypotheses on reasons for each irrational behavior; conduct empirical test through hypothesis testing and questionnaires; summarize the real reasons for each irrational behavior according to the empirical results. In their research they find that when estimating cash flow, managers will use heuristics for lack of clear frame of mind so cognitive bias and psychological factors take place in heuristics. And they say that the main reason causing irrational behavior in the determination of discounted rate is the deficiency in financial literacy. Since most managers are confused with the concept of cost of capital, method of risk management and models of discounted rate, cognitive bias and psychological factors function in this step. They say, managers behave irrational while making decision for the reason that cognitive biases effect on their behavior (Shao and Wang, 2013).

Ullah, Jamil, Qamar and Waheed (2012), in their research, show that managers are risk averse, whereas size and profitability are positively related to the capital structure. Their study explains that do the managers adjust their capital structure in accordance with business risk and how the profitability, size of the firm and sales growth are contributing to the capital structure formation. Their study cover five years from 2006 to 2010 and using the data from five sectors of nonfinancial listed companies on Karachi Stock Exchange. Briefly their study is contributing in research by analyzing the effect of risk on debt equity mix of the firm listed on Karachi Stock Exchange. Their paper is using the data of the Motor Vehicles, Trailers and Auto parts sector of Karachi Stock Exchange from the period of 2006-2010. They apply panel data technique to the 19 firms. They apply two analysis, one of them descriptive analysis and other one is regression analysis. They also make collinearity analysis because of observing the factor of multi-collinearity. The variables that used in their analysis are capital structure business risk, profitability, size and sales growth (Ullah et al., 2012).

When we look at the Malmendier, Tate and Yan's (2010) research they say that the measurable managerial characteristics have significant explanatory power for corporate financing decisions beyond traditional capital-structure determinants. In their paper they study the role of managerial traits in explaining the remaining variation. They measure capital-structure relevant beliefs revealed by CEOs' personal portfolio choices (overconfidence) and identify formative personal experiences early in life (Great Depression, military). In the research they derive specific implications for financial decision-making and confirm the importance of managerial traits in explaining observed variation in corporate capital structure (Malmendier et al., 2010).

In their research they show that overconfident managers view external financing to be unduly costly and prefer to use cash or riskless debt. And they identified the two biggest shocks that are likely to be formative experiences and that affect a significant portion of our sample CEOs early in life: growing up during the Great Depression and serving in the military. These traits may later manifest themselves in more aggressive capital structure choices (Malmendier et al., 2010).

They use data on CEO option-holdings to measure overconfidence. The data is taken from large U.S. companies. The research covers from 1980 to 1994. In their research CEOs have a strong incentive to diversify their personal portfolios since they receive substantial equity-based compensation and since the value of their human capital depends on firm performance (Malmendier et al., 2010).

As a result, they provide evidence that managers' belief and early-life experiences significantly affect financial policies, above and beyond traditional market, industry and firm-level determinants of capital structure (Malmendier et al., 2010).

According to the Barros and Silveria (2007) differences in opinion style and perception of reality related to managers' personal traits can significantly impact observed corporate decisions. And they say that there is evidence that managerial overconfidence/optimism can be an important determinant of firms' capital structure (Barros and Silveria, 2007).

Their study examines the possible influence of two closely related cognitive biases that are extensively documented in behavioral research, optimism and overconfidence, on a firm's capital structure decisions. Their study offers one of the first empirical tests of this hypothesis and, at the same time, presents new evidence about the factors that better explain observed leverage levels, using a sample of Brazilian public companies. They use a sample of 153 non-financial

Brazilian firms listed in the Sao Paulo Stock Exchange (Bovespa) with data from 1998 to 2003. In this research the information that belongs to top managers was collected from the Brazilian Securities Commission Annual Information forms filled out by all firms authorized to publicly trade their stocks from 1998 onwards. The information is consist of manager's name, year of birth, year when he or she took up the job, gender, education (financial, general or technical), status (company founder, heir and/or controlling shareholder) and number of preferred or common stock of the firm owned by its manager (Barros and Silveria, 2007).

When we look at the Fairchild's (2009) study we show that he analysis the effects of managerial overconfidence on financing decisions and firm value when investors face managerial moral hazard. Fairchild focuses on the combined effects of managerial overconfidence and moral hazard on capital structure decisions. He develop a financing model in which managerial overconfidence and agency problems combine to affect the manager's debt decision and firm value.

In the study two cases are taken into consideration that one of them the manager may have an incentive to exert an inefficiently low level of effort in running the business. An overconfident manager overestimates his ability, and underestimates financial distress costs. The first model predicts a positive relationship between overconfidence and debt. In the second case, the manager has an incentive to use free cash flow to invest in a new pet project that may be value-reducing (the free cash flow problem). Fairchild says that in this case overconfidence may result in a decrease in debt and the effect of overconfidence on firm value is ambiguous, since a project that may have been value-reducing under a rational manager may indeed be value-increasing under an overconfident manager, as the overconfident manager exerts higher effort. First model supports the existing empirical research that finds a positive relationship between managerial overconfidence and debt. And second model derives a novel result, not previously found in the theoretical or empirical research; managerial overconfidence may result in a decrease in debt, as the overconfident manager overestimates future investment opportunities, and hence reduces debt, compared to the rational manager, in order to invest in these new projects (Fairchild, 2009).

Eichholtz and Yönder (2014) measure CEO overconfidence through their exercise of corporate stock options, and distinguish Real Estate Investment Truths (REITs) led by overconfident CEOs from other REITs. They combine the REIT information with a sample of almost 8000 commercial real estate transactions and generated predicted values for all the properties in the sample, and subsequently they compare these predictions with the actual purchase and sales prices. They

develop a hedonic valuation model of commercial properties to generate predicted prices for all the real estate transactions done by REITs, and then relate the actual purchase and sales prices to these predictions, distinguishing the transactions of REITs led by overconfident CEOs from others. They also calculate the difference between the actual transaction price and the expected price calculated from a joint regression of REIT transactions and a control sample by other types of buyers and sellers, including REITs for which they cannot determine overconfidence. Then they compare the means of the residual transaction prices for REITs with overconfident managers and their non-overconfident counterparts and do a second stage regression analysis. Their research sample consists of 11758 transactions. The research covers the years of between 2001-2012 (Eichholtz and Yönder, 2014).

Conclusions

Although this paper in its structure does not represent an empirical research in the narrow sense, its scientific contribution is reflected in the review of available literature on the effect of psychological biases on the financial decisions, especially on the capital structure decisions. In other words this research examines the determinants of firms' capital structure introducing a behavioral perspective.

There are very few studies on psychological biases' for managers' capital structure decisions in finance literature. Little attention is given on this subject in the literature. And also when we look at the past decade we see that the studies about the effect of the biases on firms' capital structure decisions have been increased.

So refer to the lately researches they show that analyzing the process of managers' decision-making have based on these biases. As seen above the theorists have included the behavioral aspects to the subject when they do their capital structure analysis. Theoretical and empirical analyses show that there is an effect of emotional and cognitive biases (overconfidence, optimism, loss aversion, anchoring etc.) on the financial decisions. Managers are affected by their behavioral biases when they are making decisions. However, biased managers should make realistic forecasts.

As a result of the studies above, the findings are summarized as follows;

- Managers usually are affected by their behavioral characteristics and behavioral biases in decision-making process.
- Irrational managers mean that affected by their behavioral characteristics.
- Biased managers use their internal resources firstly and then secondly they use debt and finally equity.

- When we look at the literature that consist of examined the psychological and behavioral biases, we see that the overconfident bias is more subjected than the others.
- Overconfident managers believe that their firms are valued under the market value and they also value the risk of debt lover than equity. This situation causes their debt level higher than the rational managers.
- Overconfident managers estimate the cost of the investment projects undervalued and estimate the value of the projects overvalued.

This study is a due diligence and a qualitative study. A summary of previously conducted empirical and qualitative studies in the finance literature. The purpose, to draw researchers' attention to studies that take into account the human factor and to emphasize the importance of this factor in funding or financing, especially capital structure decisions. We hope that this research will be used as a resource for future studies which will be related with same subject.

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The role of “after school” units in Romania’s rural areas

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Abstract. *The objective of the research is the identification and measurement of benefits related to educational projects implemented in the rural areas. The research type refers to a study that envisions the necessity to establish after school facilities and the economic benefits associated. The analysis of the rural population shows that in Romania there are a much higher number of children aged between 5 and 14 years compared to the one in urban areas, but also a higher frequency of dropout. The result of the research shows an increase of economic and social benefits at the level of population and local administration, both on short and long term, through the development of learning and social networking abilities.*

Keywords: education, after school, rural environment, economic benefits, social benefits.

JEL Classification: I25.

REL Classification: 4D, 15D.

1. An educated kid – a very well trained adult

From the economic point of view, labor force is a product of life duration and also of education and learned abilities. It offers a potential for achieved incomes, and the level of the latter depends on the employment ratio, which in turn depends on the existing companies (in the manufacture, agriculture and service fields).

Among the status indicators that characterize the quality of life, the ones regarding the education degree and health have a special importance for the inhabitants of rural areas. The indicators of education degree are especially important, because they are directly linked, on one hand, to the social-professional category and therefore to the level and incomes that are potentially achievable by the inhabitants, and, on the other hand, to the level of aspirations, of demands, necessities they ask for. Therefore, the attention granted to identify and solve the problems that education and health involve on this territory, must be special.

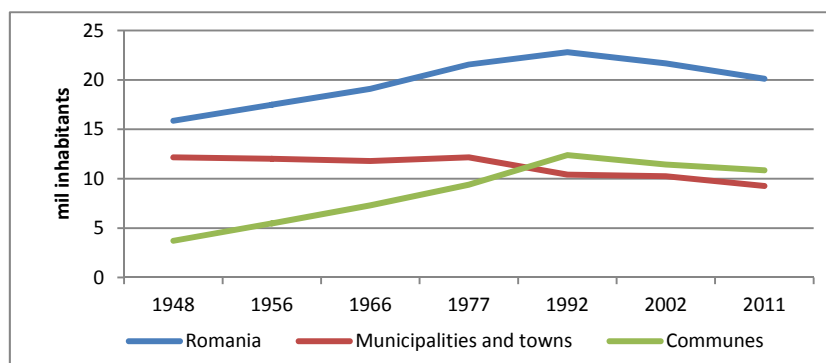
In the rural areas, a series of material difficulties are to be found, as the lack of housings and canteens. These impacts especially on children living in villages where only primary schools exist or that have no school, and the children must go over long distances, sometimes under hard conditions – especially during the winter, to attend the school at the center of the village.

Taking into account the number of hours spent by parents at work and other house activities, that take place in the rural environment, the primary school children are more and more neglected in respect to homework and other educational activities that help them close on the mysteries of learning.

In the recent period, the Ministry of National Education was involved in facilitating the transportation of pupils to the educational units in the rural areas, through acquisition of school micro-buses.

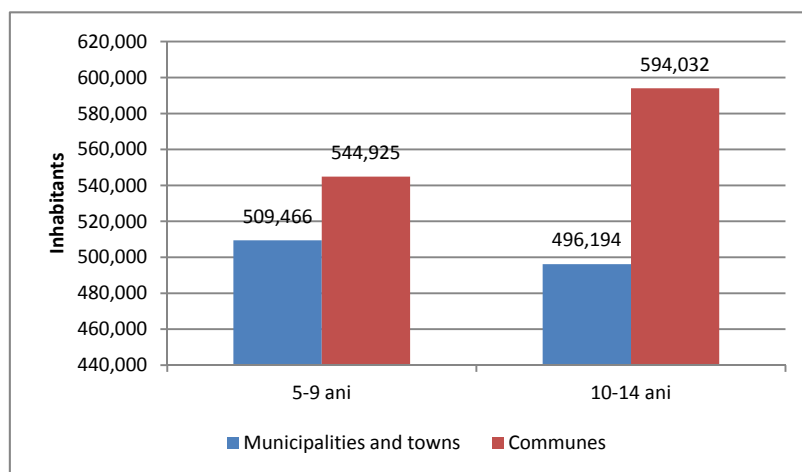
2. An overview on the population of rural areas

According to the 2011 census, the standing population of Romania was 20,121 million persons, of which 10,333 million women (51.4%). As against the situation at the moment of the previous census, the standing population decreased by 1,559 mil. persons (of which, 0,779 mil. women), mainly because of external migration.

Figure 1. *Evolution of Romania’s population, on total and categories of localities*

In municipalities and towns, there are 10.859 thousand persons, representing 54.0% of the total standing population. As against the situation recorded at the previous survey, the weight of standing population in the urban areas increased by 1.3 percentage points on the count of the rural environment.

On October, 20th 2011, children (0-14 years) have a weight of 15.9% in the total standing population, young population (15-24 years) represents a percentage of 12.3%, mature people (25-64 years) form the majority (55.7%), and people of 65 years and above account for 16.1% of the total. Persons of 85 year and more hold a quota of 1.3% in total standing population.

Figure 2. *Distribution of the population on age categories in municipalities, towns and communes*

In the communes in Romania, there are some 545 thousand children of age between 5-9 years, which represents 2.71% of total population and some 594 thousand children aged between 10 and 14 years, which is 2.95% of total population. Compared to existing population at the level of municipalities and villages, there is a

greater weight recorded for children for age groups 5-9 years and 10-14 years in rural areas (51.68 % for age group 5-9 years and 54.49% for the group 10-14 years).

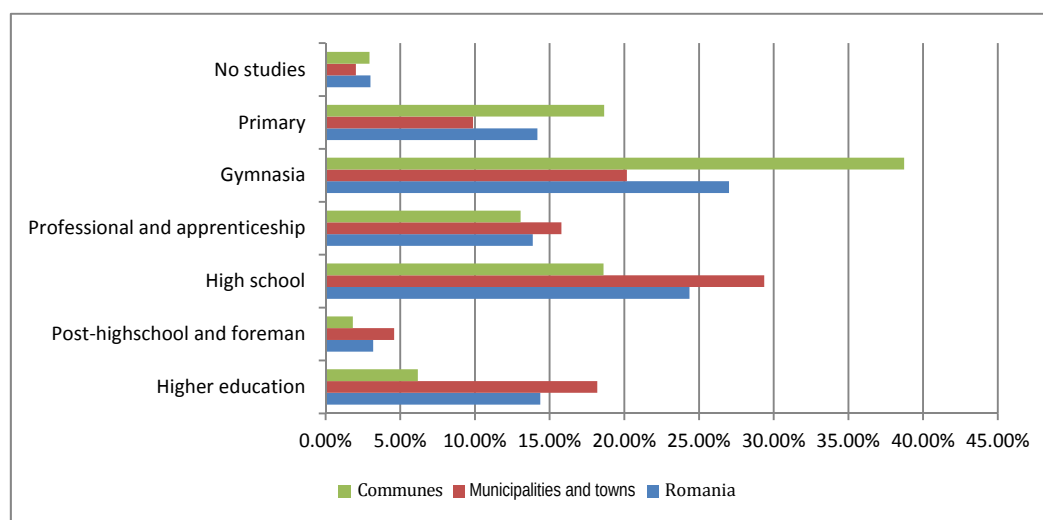
In Romania, out of the total standing population of ten years and older, 44.2% have a low level of education (primary, gymnasia or no school graduated), 41.4% an average level (post-high school, high school, professional or technical) and 14.4% a superior level. On October 20th 2011 there were recorded 245.4 thousands illiterate persons (1.36%).

Table 1. *Distribution of the population on the level of the educational entity graduated*

Name	Superior	Post-high school And technical	High school	Professional and Apprentices	Gymnasia	Primary	No studies
Romania	14.38%	3.19%	24.36%	13.88%	27.01%	14.18%	3.00%
Municipalities and towns	18.19%	4.59%	29.36%	15.79%	20.17%	9.87%	2.03%
Communes	6.18%	1.83%	18.61%	13.06%	38.73%	18.65%	2.94%

From the statistical data for 2011 at the level of communes, it results that 6.18% of total inhabitants have higher education (professors, engineers, medics, economists and other professions) and some 20.44% have high school and post-high school studies (educators, medical staff, technicians, ecology agents and other categories). Of total population, more than 38.73% have graduated general school, 18.65% primary school, and some 2.94% have no studies.

Figure 3. *Distribution of population on the level of educational institution graduated*



At the level of communes, an increasingly high rate of drop-out is recorded in pre-academic education.

3. Role of „after school” in children education

The great number of children in rural area leads to the need to create new proper spaces for education and recreation, which villages Romania lack greatly.

Because the „after school” constructions are an absolute necessity, it is mandatory to realize such investments, which will offer spaces needed for taking over educational and recreational activity for children, outside classes.

The less costly variant for „after school” constructions would be inside school. Generally, educational units in rural environment have terrain endowment that is sufficient to raise such constructions. Also, the opportunity of choosing such location results from the advantageous functional conditions, thus avoiding the movement of children outside the school, from the school to afterschool.

The specific objectives of an “After school program” are the following:

- To offer special educational services, to improve the school adaptation behavior of children;
- To provide support for beneficiaries and their family, through specialized assistance in approaching psychological difficulties;
- Psycho-behavioral optimization of pupils, by using group activities;
- Stimulate and increase in a significant manner of the level of self-esteem, acknowledgement of one's own identity, of inter-personal communication and relationships.
- Provide a secure environment for leisure;
- Prevent school drop-out and failure, which has a high level in rural areas;
- Integrate in the school programs by increasing adaptability to this type of environment, considering that the life style in rural areas does not involve in a high degree help from parents;
- Increase of accessibility defer for families wishing better alternatives to care for, development and education of children.

In the „after school” centers, children can benefit from a wide array of facilities, among which we can outline the following:

- Support in solving homework for the next classes and additional homework;
- Facilitate inter-personal relations between children;
- Creative workshops, such as: painting, modern and society dancing, theater, music;
- Form and enlarge the knowledge horizon;
- Meditation and consultation for various disciplines.

The cost to realize such construction varies from a location to another, depending on the nature of the terrain they are placed on, the built surface (in turn, depends

on the number of necessary places, that is the number of children), but generally the cost per square meter would be 560 euro/sqm without VAT.

4. Identification of economic benefits for „after school” projects

The „after school” concept is relatively new for Romanian parents and almost non-existing in the rural areas. These centers, which are far from any resemblance with the school or the house, where children learn and entertain, and are a temptation for parents working at least eight hours per day. In such centers, children socialize in a much better fashion, the psychologists recommend the parents to choose after school programs, which they consider to be more beneficial than a nanny. After school should not be “luxurious”, but a necessity, both in the rural and urban environments. Kids do not have to spend their time isolated, but inside a collectivity, the existence of those centers being an ideal occasion to socialize.

The after school centers are developed and managed by local administration, and therefore there will be no fee for services provided there. From the financial viewpoint, they will generate no income, but from the economic and social views, the advantages are multiple for kids, their families and local community.

In synthesis, economic and social benefits for the “after school” projects could be:

Economic benefits

- Reduction of costs at the level of families children come from – adults will be able to run activities (including economic, generating income), without being forced to supervise the children. Also, there is eliminated the necessity to employ some persons for surveillance (more than three quarters of the families potentially beneficiary of services offered by the “after school” children care center have an overall low living standard).

Social benefits

- The increase of the level of endowment for education in the rural areas. Regarding the material endowment for education, it differs from a village to another. Endowment is practically non-existing in small human settlements. At the level of villages, especially ones that are communal centers, the school endowment is relatively small for the number of potential children;
- The attraction of qualified teachers for the education of pupils, by reshaping the enrollment system and the capitalization of possibilities for granting facilities at the level of local community, taking into account the fact that the number of children in need of additional training is high.
- The continuation of the program of area concentration of educational activity with low school population;

- The inclusion, with priority, of schools and children care centers in rural areas in programs of endowment with modern educational tools;
- Awareness of local communities, especially in rural areas, in securing conditions of comfort and some facilities for teaching staff;
- Development of the education and culture degree of children in this area. The establishment of the „after school” children care center will allow the organization of some cultural events for pupils, and also the organization of school clubs, art expositions;
- Prevention of children institutionalization;
- Reduction of the effects of material difficulties, such as the lack of hostels and canteens, effects that are felt with especially high intensity in villages without, children being compelled to go over long distances to pursue classes in another village;
- Awareness of people regarding the importance for education of pupils in an organized framework;
- Increase children social and communicational abilities;
- Monitored diet for kids.

5. Sensitivity analysis of the internal profitability ratio

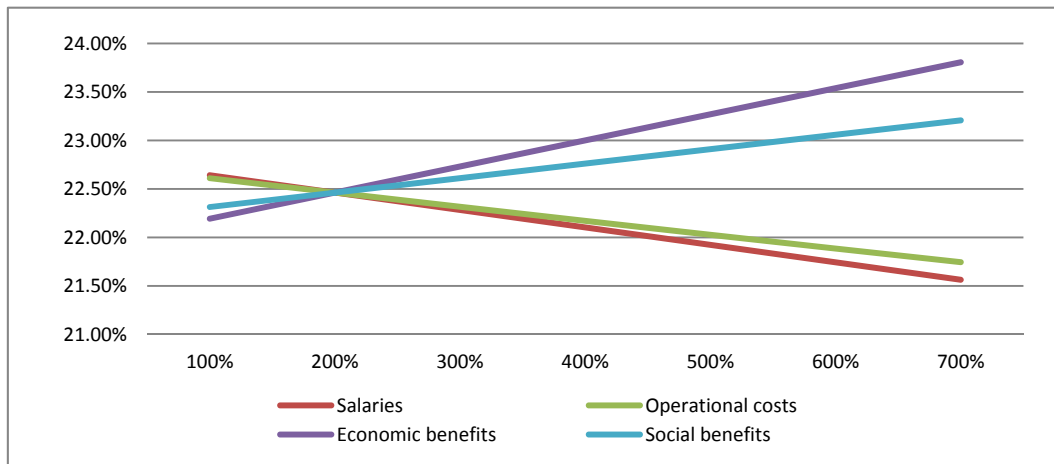
To emphasize the effects of the variation of elements included in the economic internal profitability ratio (IRRE) and of the net present value (NPV), each component that can influence their value will modify from the base situation as a separate increase or decrease by 1-5%, the other elements remaining constant, and the re-calculation of IRRE and of the percent report between the net present value and the value of the investment. The elements taken into consideration for sensitivity analysis: salaries, economic benefits, expenses related to utilities and maintenance, social effects.

Table 2. *Evolution of the economic internal profitability ratio at the modification of variables inside the interval -1%...5%*

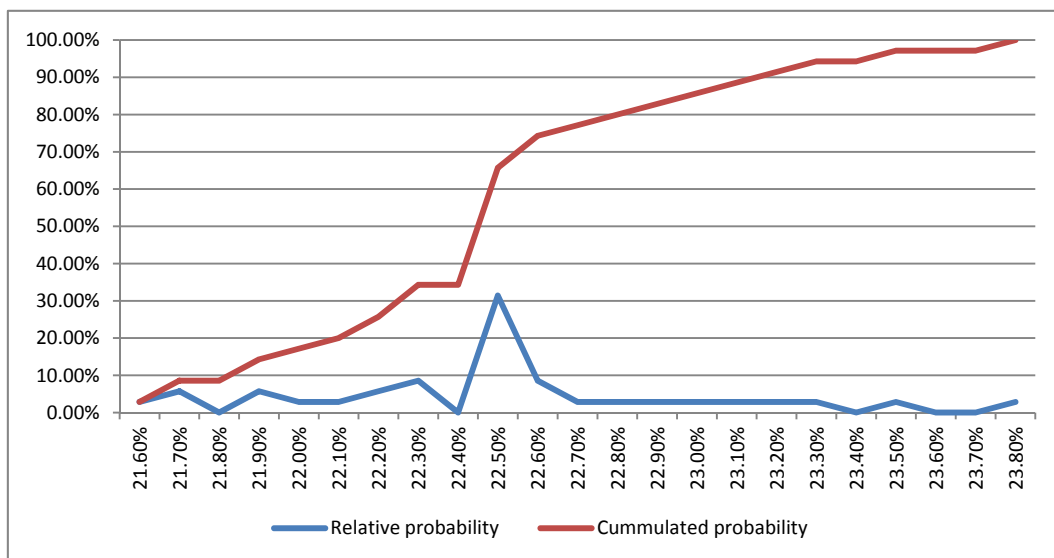
Variable	-1%	0%	1%	2%	3%	4%	5%
Salaries	22.64%	22.46%	22.28%	22.10%	21.92%	21.74%	21.56%
Operation costs	22.61%	22.46%	22.32%	22.17%	22.03%	21.89%	21.74%
Economic benefits	22.19%	22.46%	22.73%	23.00%	23.27%	23.54%	23.81%
Social benefits	22.31%	22.46%	22.61%	22.76%	22.91%	23.06%	23.21%

Table 3. *Percent report between NPV (net present value) and the value of investment (%)*

Elements	-1%	0%	1%	2%	3%	4%	5%
Salaries	145.57	143.95	142.34	140.73	139.12	137.51	135.89
Operation costs	144.58	143.95	143.32	142.69	142.06	141.43	140.80
Economic benefits	141.50	143.95	146.40	148.85	151.30	153.75	156.20
Social benefits	142.63	143.95	145.28	146.60	147.93	149.25	150.58

Figure 4. *Sensitivity of the economic profitability ratio*

The curve of cumulated probability allows us to establish a certain degree of risk, if cumulated probability is higher or lower than the reference value considered critical for the economic internal profitability ratio. Also, the probabilities that this ratio could be higher than a certain value adopted as limit can be evaluated. For the analyzed situation, there is a null probability for the economic internal profitability to fall below 5.5%.

Figure 5. *Distribution of relative probability and cumulated probability of the economic profitability ratio*

For this type of project, the following factors can be identified, with the specified elasticity type.

Table 4. *Elasticity of critical variables of IRRE*

Parameters	Elasticity	
	min	max
Salaries	-0.8000	-0.7990
Operational costs	-0.6574	-0.6390
Economic benefits	1.1962	1.2019
Social benefits	0.6636	0.6647

The result indicates two categories of elements: one having a high impact on the internal economic profitability ratio and one with a lower impact. In the first category, we can consider the economic effects, and in the second set there can be included: salaries, operational costs and social benefits.

The modification of the variables for benefits and salaries has a negative elasticity, but with a sub-unit value for the internal economic profitability ratio. The increase of the positive intensity of social effects leads to an increase of the internal economic profitability ratio, but with a low amplitude.

6. Conclusions

We can conclude that the existence of a number of children in the rural areas, higher than the one in urban environments, calls for the development of after school facilities. At the level of villages, there is a relatively high rate of dropout in pre-academic education, determined, mainly, by material (economic) conditions. Regardless the size and nature of investments, the indicators achieved have acceptable values for the authorities. By taking into account the nature of these projects, even if they do not generate financial incomes, they allow in turn the achievement of an internal economic profitability ratio much above the reference level. Also, the net present values reach a level which is at most 35% above the value of investments.

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Is cash conversion cycles optimum in Turkish listed food-beverage firms?

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Abstract. *In this study, the optimality of cash conversion cycles of firms at food-beverage index of BIST (Istanbul Stock Market) is investigated. Panel KSS unit root test developed by Uçar and Omay (2009), which is suitable for heterogeneous panels & for non-linear financial series and taking into account cross sectional dependence, is used in study with quarterly data spanning the period 2008-2013. Cash levels of 13 firms among 15 are observed non-optimal by the aid of Sequential Panel Selection Method (SPSM) developed by Chortareas and Kapetanios (2009). This results show most firms at food-beverage index do not pursue a balanced working capital policy.*

Keywords: Cash Conversion Cycles, Non-Linear Panel Unit Root Test, Sequential Panel Selection Method, Food and Beverage Sector, Turkey.

JEL Classification: F32, G31, G32.

REL Classification: 10B.

1. Introduction and theoretical background

The idea that working capital management affects a firm's profitability and risk is generally accepted and has recently received considerable attention. Having a healthy financing structure depends on not only long-term financing and investment decisions such as capital budgeting and capital structure, dividend policy but also decisions for liquidity control (Banos-Caballero, 2012). In periods of crisis, although firms are able to continue their existence by way to reduce or postpone long-term investment, failure at cash management and liquidity control can be brought to the point of completely stopping their activities for failing to give enough attention to working capital management. In this context, an effective working capital management is required for companies in order to both continue their existence and increase their competitiveness (Yücel and Kurt, 2002).

At effective management of working capital, cash conversion cycle is an important criterion especially in cash management (Attari and Raza, 2012). Cash conversion cycle, where the decisions about investments on accounts receivable & inventories and about acceptance of credit from suppliers, are reflected (Garcia-Teruel and Martinez-Solano, 2007), is defined as the period of money return of funds used for working capital (Omağ, 2009). While cash conversion cycle is shorter in some firms, it could be quiet longer for others. In fact, in some firms payment period comes to be negative due to its longer duration than efficiency period (İşeri and Chambers, 2003). With short cash conversion cycle, a firm can keep less cash among the elements of working capital and have liquidity due to deferred payments (Çakır, 2013). Moreover, a firm can increase its profitability and value via using funds to increase efficiency (Nobanee, 2010). On the other hand, increased sales due to prolongation of cash conversion cycle may also provide increase in profitability. That is; with prolongation of the cash conversion cycle, glut of inventory may prevent interruptions in the production process and job losses that may arise due to the scarcity of products (Banos-Caballero, 2010), customers who want long-term purchases may be unimpeded when prolonged period of receivables (Çakır, 2013), supplier financing can be reduced by utilizing early payment discount in case of shorter debt repayment period (Wang, 2002). However, when the cost of investments in working capital is greater than the return of loans granted to customers with the investment made in stock, profitability can be adversely affected by the cash conversion cycle (DeLoof, 2003). Maintaining high investment in working capital, and relinquish other efficient investments to make these and existence of long cash conversion cycle can lead companies to bankruptcy (Banos-Caballero, 2010).

Having optimum period of cash conversion is a necessity of effective liquidity management. However, the differences of firms arising from the production

processes in the sector, the conditions of competition, buying and selling opportunities with credit and the built-in applications in the sector can affect their credit sales, inventory and debt policies, and this may lead cash conversion cycles to differ by sector. In other words, a receivable, inventory or commercial debt level that can be considered optimal in one sector, are not pointing an optimal level for a company in another sector. In this context, each sector has its own average cash conversion cycle (Kök et al., 2013).

In literature, while there are many studies to investigate the relationship between cash conversion cycle as a major tool of working capital and variety of variables, there are few to test the stationarity of cash conversion cycles (Kök et al., 2013). In our study compared to the other studies, whether firms of food-beverage index have optimum cash level is tested via non-linear unit root test which is more suitable for financial time series and the significance of taking into account the optimum cash level when creating liquidity investment and financing policies for companies is expressed.

2. Literature review

Effective liquidity management contains both reduction of the inability risk to cover short-term liabilities and planning & control of current assets by avoiding over-investment and short term liabilities (Eljelly, 2004). Liquidity management is necessary for fulfillment of the obligations and to ensure warranty of a profitable venture (Attari and Raza, 2012). Moreover, fully concentration on liquidity of companies led to a decrease in profitability, received financial decisions to maximize profitability of the company will reduce the chances of having sufficient liquidity (Yücel and Kurt, 2002).

In most studies, a negative correlation has been found between cash conversion cycle and profitability [Wang (2002), Jose et al., (1996), Shin and Soenen (1998), S. Harma and Kumar, Yücel and Kurt (2002), Eljelly (2004), Lazaridis and Tryfonidis (2006), Garcia-Teruel and Martinez-Solano (2007), Raheman and Nasr (2007), Nobanee (2011), Attari and Raza (2012)].

Lyrroudi and Lazaridis (2000) examined the relationship between cash conversion cycles of firms in food sector in Greece and variables like liquidity, profitability, debt structure and size of company in their study. While they couldn't find any relationship between cash conversion time and leverage ratio, they have determined the positive relationship between liquidity and profitability ratios. On the other side, they stated that there is no difference in terms of liquidity ratios between small and large scale companies. Similar study was made on companies in BIST (Stock Market of Istanbul) (Yücel and Kurt, 2002). It is examined in their

study that whether cash conversion cycle, liquidity, profitability and leverage ratios of companies in the study content differ significantly according to company scale, periods and sectors. Liquidity ratios have positive relationship with cash conversion cycle, negative relationship with profitability and have no relationship with leverage ratios. Moreover, it is observed that cash conversion cycles varied according to sectors, the cash conversion cycle of companies in industry sector was longer when compared with other sectors, cash conversion cycle has not changed during the recession and large scale companies have longer cash conversion cycle by small and medium-sized entities (SMEs). Belt (1985) have studied American companies and observed that cash conversion cycles of retail and wholesale trade companies is shorter than production companies, cash conversion cycle has increased in times of recession and while cash conversion cycle of non-durable goods decreased in a consistent manner, the durable goods cash conversion cycle has been unstable but declining for the examined time period.

Uyar (2009) tried to test how cash conversion cycles of companies operating in the commerce, stone-ground and textile sector on BIST are affected by global economic crisis. In study, it is stated that due to crisis, the period length of receivables collection and the retention of inventories cause long periods of cash conversion in stone-ground and the textile industry, and commerce companies have shorter cash conversion cycle by extending their debt repayment period. In study made by İşeri and Chambers (2003) examining cash conversion cycles of firms in food, beverages, tobacco and retail commerce sector, almost all of the companies of production and companies in the retail sector have all been shown to be negative conversion time. However, this is interpreted differently in terms of sectors. Being longer payment periods of debts than the collection periods of receivables and inventory holding periods is evaluated negatively by manufacturing companies. Since firms have chosen the extension way of the payment period of short-term debt before unable to shorten their collection and inventory holding periods. On the other hand, while buying goods by credit & selling by cash, having the ability to be easily converted into cash of inventories and increase the period of short-term debt payments of companies in the retail sector have made negative conversion periods to be interpreted positively. Furthermore, being as much unaffected as manufacturing firms of companies in this sector is interpreted as an advantage in terms of cash conversion cycles.

Companies hold liquid assets in their hand in order to fulfill their daily activities, to fight with encountered extraordinary situations and to provide short-term gains. Since large companies have access to both monetary and capital markets easily, they have no reason to possess liquid assets as much as SMEs. The challenges faced by SMEs in finding resources have increased the importance of an effective

liquidity management for these companies (Moss and Stine, 1993). In the literature, large enterprises and SMEs have been studied for the management of liquidity.

Sakarya (2008) has investigated the cash management efficiency of SMEs in his study and observed not having effective cash management of companies. In study, cash conversion cycles vary by sub-sectors in manufacturing industry and some sub-sectors undulate according to the overall average. SMEs can make their cash management more effective by analyzing their cash conversion cycles (Peel et al., 2000). Small-scale companies have relatively more current assets, a high proportion of short-term debt and fluctuating cash flows (Padachi, 2006). Omağ (2009) studied cash conversion cycle of SMEs in Turkey and USA. He has found that fluctuations in cash conversion cycles of SMEs in Turkey are higher. Banos-Caballer (2010) analyzed the determinants of cash conversion cycles of SMEs and stated that these companies identified their target cash conversion cycles and tried to reach this goal. Moreover, they observed that companies with large cash flows and former companies have longer cash conversion cycles. Also, companies with the higher leverage effect, fixed asset investment & asset profitability and companies having opportunity to grow have more aggressive cash management policy, namely they have shorter cash conversion cycle. Ebben and Johnson (2011) have investigated the relationship between invested capital and performances of manufacturing and retail SMEs. They stated that companies with effective cash conversion cycles are more liquid and they have higher profitability. Lyrودي and McCarty (1993) examined the relationship between cash conversion cycles & the current ratios and cash conversion cycles & liquidity ratios. It is said that cash conversion cycle has negatively relationship with current ratio, stock return time & debt repayment period and positively relationship with receivable collection period. Furthermore, cash conversion cycle differs according to manufacturing, retail, wholesale & service sectors and cash conversion cycle is higher in service sector (Lyrودي and Lazaridis, 2000).

Fluctuations may occur at cash conversion cycles depending on both the developments in industry and macroeconomic factors like inflation, interest rates, growth rates (Omağ, 2009). The presence of optimal working capital level for sector, the investments on working capital of companies due to the fluctuations, and temporary & different changes in policies relating to the financing of these investments may occur, but will show the return again to its former level. Namely, fluctuations in cash conversion cycles will take place around sector average and later will return the average value. Kök et al. (2013) tried to test the existence of optimal working capital policy according to sectors by applying panel KPSS test to series of cash conversion cycles of 7 manufacturing industry sectors in BIST in the period 1990-2009. In their study, it is determined that a working capital policy

and optimal working capital level for each sector exist, although they are at different levels. Moreover, NDS series is stationary for all sectors and has a tendency to return to average in long-run.

3. Econometric methodology

In literature, nonlinear panel unit root test developed by Uçar and Omay (2009) (UO) has been used in many areas like stock market efficiency (Omay and Karadağlı, 2012; Suresh et. al. 2013), testing unemployment hysteria (Bolat et al., 2014), the validity of purchasing power parity (Bahmani-Oskooee et. al., 2013; He and Chang, 2013).

Instead of ADF unit root test at Im, Pesaran and Shin (IPS) panel unit root test, UO (2009) panel unit root test uses nonlinear unit root test developed by Kapetanios et al. (2003). The difference between UO and IPS panel unit root tests is based on their alternative hypothesis. Alternative hypothesis of IPS accepts that at least one series is stationary and all series are linear. However, alternative hypothesis of UO tests that at least one series follows the Panel Exponential Smooth Transition Autoregressive Process (PESTAR).

The null hypothesis of UO panel unit root test shows that all units follow unit root process ($H_0: \phi_i = 0$). Since Y_i is not defined under this hypothesis, it cannot be tested directly. Therefore, Uçar and Omay (2009) parameterized this equation again by following the study of Kapetanios et al. (2003) by obtaining its first-order Taylor expansion around $\phi_i = 0$:

$$\Delta y_{i,t} = \alpha_i + \delta_i y_{i,t-1}^3 + \sum_{j=1}^{p_i} \beta_{i,j} \Delta y_{i,t-1} + \varepsilon_{i,t}$$

In this equation, y represents the series of cash conversion cycles, t is period number, α and δ_i are prediction parameters. If $\delta_i = 0$, null hypothesis is that panel has a unit root. If $\delta_i < 0$, alternative hypothesis is that there exists nonlinear at least one stationary series in the panel.

Uçar and Omay (2009) suggested the test statistic given below to test null hypothesis of unit root:

$$\bar{Z} = \frac{\sqrt{N}(\bar{t}_{NL} - E[t_{i,NL}])}{\sqrt{\text{var}[t_{i,NL}]}}$$

In here, $E[t_{i,NL}]$ shows the expected value of $t_{i,NL}$ and $\text{var}[t_{i,NL}]$ represents the variance of $t_{i,NL}$. This test takes into account cross-sectional dependence and is suitable for heterogeneous and nonlinear series.

The main problem of panel data techniques is that alternative hypothesis is for stationarity of at least one series. In such cases, it can be said that panel has stationarity. However, there isn't any idea about which series are stationary and which are not. Therefore, stationary and non-stationary series are distinguished via sequential panel selection method developed by Chortareas and Kapetanios (2009).

The SPSM proposed by Chortareas and Kapetanios (2009) is based on the following steps:

- Uçar and Omay panel unit root test is applied to the panel. If the unit root null cannot be rejected, the procedure is stopped, and all the series in the panel are non-stationary. If the null is rejected, we move to step 2.
- Same analysis is continued by removing series with Minimum KSS statistics from the panel.
- This process lasts till the acceptance of alternative hypothesis which is at least one series in the panel is stationary. Thus, stationary and non-stationary series are distinguished.

Moreover, Bootstrap simulation was performed by 10.000 replications when carrying out analysis.

4. Data and empirical results

In this study, the existence of optimal cash conversion cycle of firms in Food and Beverage Index of BIST is tried to be determined by the quarterly dataset containing cash conversion cycle series between the periods 2008 and 2013. In this context, data of these 15 firms quoted to index with their correctly available data was obtained from official websites of BIST, Public Disclosure Platform (Kamuyu Aydınlatma Platformu-KAP) and companies. Cash conversion cycles of firms in question are calculated by subtracting debt payment period from the sum of the receivables collection period and inventory turnover period.

Unit root tests are in suitable structure in order to determine whether cash conversion cycles are at optimum level. In order to choose suitable unit root test for panel, the homogeneity and linearity of series, and cross sectional dependence of the panel must be determined. According to slope homogeneity test developed by Pesaran and Yamagata (2008), series are heterogeneous. These results are given in Table 1.

Table 1. Pesaran and Yamagata (2008) Slope Homogeneity Test Results

	Test Statistics	Prob.
Δ	4.310	0.000
Δ_{adj}	4.595	0.000

Cross sectional dependence is another test which must be applied before investigation of unit root presence. In order to search cross sectional dependence, the results on Table 2 should be viewed. When time dimension is larger than cross sectional dimension, Breusch and Pagan (1980) CD LM1; when time dimension is equal to cross sectional dimension, Pesaran (2004) CD LM2; when time dimension is smaller than cross sectional dimension, Pesaran (2004) CD LM results should be taken into account. In our study, the significance and test statistics of CD LM1 (Breusch and Pagan 1980) should be considered since our time dimension is larger than cross sectional dimension. According to this result, cross sectional dependence exists in the panel for both models of level and level & trend. In this situation, using second generation unit root tests which take into consideration cross sectional dependence will be suitable.

Table 2. *Cross Sectional Dependency Test Results*

	Level	Level & Trend
Cd LM1 (Breusch and Pagan 1980)	729.567 (0.000)	659.641 (0.000)
Cd LM2 (Pesaran 2004)	39.347 (0.000)	34.838 (0.000)
Cd LM (Pesaran 2004)	-1.200 (0.115)	-0.949 (0.171)

Values in parenthesis represent significance levels.

Many reasons about non-linearity can be mentioned according to characteristic feature of examined financial series (Çil Yavuz and Yılancı, 2012). In literature, it is proven by many studies that financial series show non-linear behavior. In this context, using linear tests may lead inaccurate results. Therefore, non-linear test should be used. Cash conversion cycles should be considered as a non-linear. Because, in the creation of receivable collection period (RCP), stock return period (SRP) and debt payment period (DPP) values, heterogeneous structure of market and non-linear commercial tendencies of investors in the market can be considered as the reasons of this situation.

According to the results on Table 1 and Table 2, it is reasonable to use a panel unit root test which is suitable for nonlinear, cross sectional dependent and heterogeneous panels. Namely, extended version of Nonlinear KSS unit root test for panel is test we are going to use. This test is developed by Uçar and Omay in 2009 and known as “Panel KSS” & “UO panel unit root test” in literature.

Table 3. *Uçar and Omay (Panel KSS) Unit Root Test Results*

Series		Panel	
Firms	Tvalue	Tbar	Pvalue
Merko	-2.088	-1.337	0.049**
Pınar Et ve Un	-1.758	-1.210	0.072*
		-0.998	0.144

*Since series have a fluctuating structure, the results of only trend and intercept model was stated. *, **, *** represents 1%, 5% and 10%, respectively.*

According to UO panel unit root test (2009), null hypothesis states nonexistence of unit root in the panel, alternative hypothesis represents that at least one of the cross sections in the panel follows the Panel Exponential Smooth Transition Autoregressive Process (PESTAR). As can be seen, alternative hypothesis indicates that at least one series is stationary. However, it does not state which series are stationary and which series are not. In order to solve this problem, Sequential Panel Selection Method (SPSM) developed by Chortareas and Kapetanios (2009) is used in our study. According to this, first of all analyze is performed again by extracting from panel Merko firm with the lowest Tvalue statistics. After seeing panel significant, this time Pınar Et-Un firm with the lowest Tvalue statistics is extracted from panel. Null hypothesis that panel has a unit root is accepted in this new situation after removing these two firms from the panel respectively. If the stationarity in the panel was still going on, same procedure would be carried out by extracting the firm with the lowest Tvalue statistics from the panel. The series of these firms are observed stationary and cash conversion cycles of these firms are at optimum level. However, cash conversion cycles of other firms are not optimum, and therefore follow fluctuating working capital cycle. These results were given in Table 3. In the table, extracted firms from the panel, Tvalues of these firms, Tbar value of remaining panel after extraction and significance level at this situation was stated respectively.

5. Conclusion and discussion

Planning and controlling the current assets and short term liabilities of companies maintaining their activities by balancing liquidity - profitability are necessary for effective cash management in many companies.

Because, when companies prefer to stay liquid by a conservative approach, they can miss the profitable investment chances. When pulled profitability to the forefront and focused on investments, they may confront with liquidity crisis. At this point, the determining cash level at an optimum level for companies has a great significance.

In this study, the existence of optimal cash conversion cycle of firms in Food and Beverage Index of BIST is tried to be determined by the quarterly dataset between the periods 2008 and 2013. The stationarity of series was investigated via nonlinear panel unit root test developed by Uçar and Omay (2009). By using Sequential Panel Selection Method (SPSM), 13 of 15 firms were observed non-stationary except Merko and Pınar Et-Süt. In this context, companies in food-beverage sector were found that they do not have optimal working capital cycle, their cash conversion cycle differ from average in long-run and have a volatile

structure. The reason for this situation can be considered as the non-stationary, constantly vulnerable against crisis of economic structure of Turkey. Moreover, these findings contradict with the findings of the study made by K  k et al. (2013).

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Comparative analysis of the financial discount rate and of the net present value of a public investment project throughout its life

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Abstract. *This paper sets out to identify the correlation between the variations in spending and revenue as the investment progresses through time and the evolution of the financial discount rate and of the net present value; it also seeks a method for computing the probability of reaching a certain value. The project's performance indicators are established at the "0" moment, when costs and revenues are estimated for the entire life of the project. It would be useful for any investor, even if they are local administrations, to follow the actual evolution of their investments as they develop through time. The positive or negative deviations from the performance indicators can determine the investor to adopt tailored decisions for each particular case in order to maintain a minimum set-performance for the project.*

Keywords: discount rate, sensitivity analysis, net present value.

JEL Classification: G11.

REL Classification: 11D.

Introduction

Public projects are the instruments used by public administration and by public authorities in general to implement their strategy. This is done through the use of investment resources over a limited period and with a strict delimitation at either a local or a national level. Through projects of infrastructure, the various investors always seek to meet the goals formulated in the local or regional development strategies and policies.

The desired development of the local community is achieved by combining the resources and solutions available at a certain time into local investment projects, which are initiated by the administrations within the constraints of the allocated funds.

Apart from the initial starting capital, any investment project must be attributed with further capital in order to insure proper functioning throughout the exploitation period, when there will be a need to replace or modernize the machines and equipment in use.

The advantages associated with infrastructure investment projects are the useful results, anticipated and expected by the local administration (the investor) after realizing the goal set out by the projects and by their final beneficiaries of as well (the local communities).

The return on capital is the investor's payoff and it is the main advantage enjoyed for the risk and financial effort made in infrastructure projects. The advantages earned after a project is complete are the compensation between the costs incurred by the project both in the building and in the exploitation phase on the one side, and the expected benefits on the other.

The calculations necessary for the evaluation of investment projects are realized in a time period which, usually, long precedes the starting date. Also, the forecasts consider a relatively large timespan for the use of the goods (buildings, installations, equipment etc.) which are a result of the investment projects. A project analysis must observe two important aspects: the cost of realizing the project and the expenditure generated by the existence of the investment. From the point of view of the cost of realization the investment effort can be easily determined with sufficient accuracy, as it implies expenditures and resources which will transform into equipment, machines, buildings and special constructions etc. within the very near future. Looking at the effects of revenues and anticipated costs, the starting-point forecast is based on hypotheses and information which are prospectively estimated by looking farther into the future. Predictions are made on: the exploitation period, the performance and functioning parameters of the future structures being built, the commercial aspects of the

activity (even if it only deals with the delivery of drinking water by a water-supply system) by convincing the population that the water resource which bears a “cost” is safer and healthier than the previously used resource – the well – which did not require upkeep, and all this taking into account the supply of raw materials (both for the potable water system as well for the sewerage and for the wastewater treatment), the sales situation (the market, the demand, the volume of sales, the acquisition and the selling prices, the revenues a.s.o.), the running costs and the final financial results (Anica-Popa, Alexandru, 2008, pp. 99-106).

All of these increase the level of uncertainty when evaluating the size of the profit and the forecasted level of efficiency. The advantages and efficiency of infrastructure investment projects must be evaluated while looking into the future and are thus attributed with a certain degree of risk.

As such the responsibility of the analysts and of the beneficiaries (local administrations) is evident, as they draw out the investment decisions, the necessity for comparative studies and analyses etc. all with the final goal of obtaining and supplying correct and credible evaluations on the efficiency of their investments.

The lowest accepted level of efficiency in infrastructure investments implies the judicious use of allocated resources. The financial resources are not wasted and an acceptable profit is set with regard to the costs attracted, while the functioning and quality parameters are guaranteed for the products offered by the projects (drinking water and treated water).

When looking at the specifics of infrastructure investment projects aimed at water supply and sewerage we notice that these are entirely self-financed, as the investment effort is recuperated in its entirety throughout the life-cycle of the projects and their exploitation is made according to the principles of autonomous management.

If the fundamental objective in the evaluation of private commercial projects is the profit, which defines their existence and their success, when it comes to public projects there are multiple objectives of an economic, social and ecological nature as well as issues of a cultural nature.

The money flows in the initial years of the investments are usually negative and turn positive after several more years. Because they decrease with time, the negative values of the initial years carry more weight than the positive values of the later years. This means that choosing a time span is crucial when determining the net present value. Furthermore, the choice of discount rate influences the evaluation of the net present value.

When there is a positive net present value, it means that the project generates a net benefit. In other words it can be an appropriate measure for the added value

brought to society by the project, in money form. Also, the net present values are useful in the rating of the projects and in deciding which one of them is best.

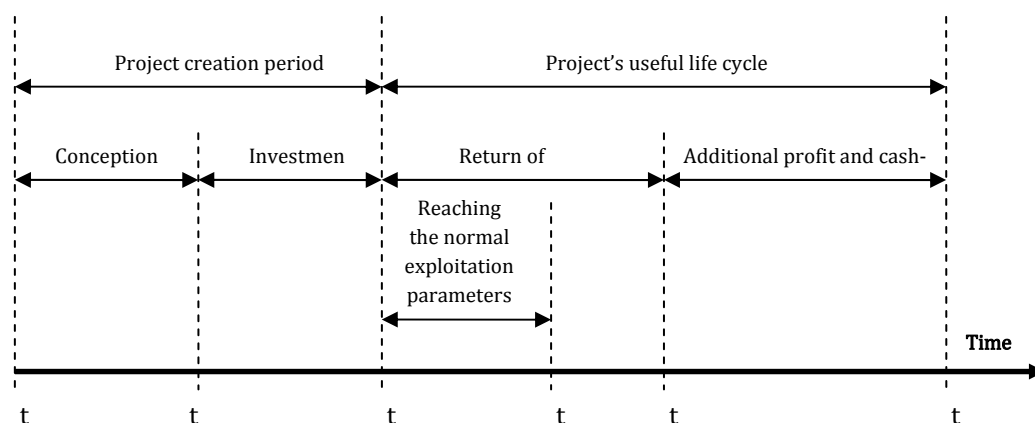
The usefulness of financial analysis at the start of the investment project is in calculating its internal rate of return and comparing it to the discount rate. For each type of project, and especially for those which generate profit, it would be useful to employ an analysis which keeps track of the meeting of performance indicators throughout the exploitation period.

1.1. The lifecycle of infrastructure investment projects

The lifecycle of an infrastructure investment project in water-supply and sewerage is comprised, time wise, from the time interval which begins at the start of the project (the “ t_0 ” moment) and the “ t_5 ” moment. This time interval refers to several periods, steps and stages which succeed each other from the moment when the idea for the project emerges to the expiration of the investments, through decommissioning or demolition etc. Within the life cycle of infrastructure projects a series of operations and activities occur, which are integrated into a unitary process for using the goods of said project.

From a temporal point of view, we first distinguish in the life cycle of a project a series of milestones which are characteristic to any investment decision-making process. Thus, the starting “0” moment is the emergence of the idea of an infrastructure investment project. Beginning from this moment enough time passes in order for the future investment decision to be prepared by means of studies, research and specific documentation. In other words, a journey is made from idea to project generation: identifying the need and the opportunity, creating feasibility studies, technical projects, execution details etc.

Figure 1. *The life cycle of infrastructure investment projects*



Source: Prelipcean, 2008, p. 47.

The “ t_1 ” moment marks the start for the spending of the funds allocated to the infrastructure investment project. From this moment (t_1) the investment process begins in a restricted sense: the investment objectives are set out, the physical capacities are appraised for the production of drinking water, of water supply and sewage networks, of treatment plants and of adjacent services.

The “ t_2 ” moment signals the beginning of the exploitation of the water and sewer networks and of the treatment plant which constitute the objectives of the investment project. This phase also includes the technological test and the instruction of personnel. The investment process ends and the exploitation activity begins. The “ t_2 ” moment also marks the beginning of the useful life cycle of the freshly commissioned facilities.

From an economical and managerial standpoint the “ t_2 ” moment is particularly important in defining any investment project. It reveals the length of time spent from the initiation of work to the final commissioning and bring about the benefits which were expected from the beginning of the project.

The “ t_3 ” moment sits at the end of the period needed for the facilities to reach normal functioning parameters. The newly built infrastructure for water supply and sewerage has reached the proper technical, economic and financial indicators. The “ t_3 ” moment also marks the critical point (the neutral point, or the point of balance in the exploitation) when the revenues precisely match the costs and the profit is zero. From now onward the efficient exploitation begins, which generates profit and cash-flow and provides the expected advantages envisioned by the investors.

The “ t_4 ” moment marks the end of the economic process meant for the recovery the initial invested capital from the profit and cash-flow generated since “ t_3 ”.

At “ t_5 ” the economic life of the investment has expired and the disinvestment decision is adopted.

For calculating the performance indicators for the project the moment of reference is “ t_0 ”, as it was then that the revenues and costs for the exploitation period have been forecasted. For any investor, even if they are local administrations, it would be useful to follow the evolution of their investment throughout their exploitation cycle. The positive or negative divergence for the performance indicators may determine them to adopt decisions specific to each case, in order to maintain the minimum established performance for the project. As such, the analysis for the meeting of the performance indicator can be done at any point between “ t_2 ” and “ t_5 ”.

1.2. The description of the investment

The object of the analysis will cover the network of potable-water fountains, in order for the necessary pressure and debit to be met. The realization of this potable-water distribution network and the creation of future prerequisites for the introduction of tap water to individual households are elementary conditions for increasing the comfort level of households and the general quality of life for the population. The evacuation of wastewater is to be done through a sewer system which will transport the sewage of households, public institutions and commercial entities to a treatment plant where it will be cleaned, disinfected and released into the hydrographic circuit. All the facilities will not induce further negative effects to the soil, drainage, microclimate, surface water, vegetation or fauna; they won't add to the noise levels or ruin the landscape. The estimated value of the investment is 1,543,563 euro and it will be completed in 12 months.

Due to the higher investment costs implied by the acquisition of high-tech equipment and technologies, which will insure a superior performance throughout the life of the project, it is natural for any investor to expect lower running costs, a higher productivity, lower specific consumption, a higher revenue and a greater profit. In infrastructure investment projects, the annual running costs are with raw materials, fuel and energy, personnel, taxes and duties etc.

1.3. Establishing the costs and revenues for the forecasting period

The possible costs and revenues are established for any investment project in its feasibility stage, looking forward into a reasonably long time period in order to determine the efficiency indicators.

The point of departure is from the studies on the demand of potable water for the population, animals and irrigation on the one hand and the quantity of water which needs to be treated, on the other hand.

The starting tariff is of 0.5 euro/m³ for the potable water delivered into the network and 0.75 euro/m³ for the drained and cleaned water, at 2006 price levels. The values are established based on the running costs of the installations.

We consider these tariffs as constant, without looking at the future effects of inflation (there is the possibility that the negative effects on the tariffs meant for the population will be supported by the local budget, in the form of subsidies). In the future, the rising volume of water delivered, drained and cleaned will generate an increase of total revenues to a greater extent than the increase in costs, due to the nature of variable and of fixed costs. The variable costs will expand with the volume of delivered, drained and cleaned water (the cost of the reactive used, for

example), while the fixed costs will stay relatively constant (amortization costs). This will lead to a reduction in the cubic meter costs of the delivered and drained water, and that of the cleaned water.

As an example we will take an integrated system for water delivery and drainage. During operation we can identify a series of costs which are generated by the existence of the water and drainage systems.

The running costs refer to the costs incurred by the personnel who service the delivery and cleaning stations, the costs of the reactive compounds and of the disinfectants, the cost of the electricity used by the pumps and the cost for transporting the sludge from the cleaning station to the storage locations approved by the environment agency.

The annual personnel costs will be:

▪ **For the water delivery facility:**

2 pers X 250 euro/month X 12 months X 1.28 = 7,680 euro

▪ **For the drainage installation:**

2 pers X 250 euro/month X 12 months X 1.28 = 7,680 euro

The electricity consumption will be calculated by looking at all the consumers which have been determined for the two networks.

▪ **For the water delivery facility:**

No.	Description of the consumer	No. of pcs.	Unit power kW	Installed power kW	Functioning power kW	Number of functioning hours [hours/day]	Energy consumed kWh/day	Energy consumed [kWh/year]
1	Submersible drilling pump	2	1.7	3.40	3.40	7.00	11.90	4,343.50
2	Chlorine pump	1	0.5	0.50	0.50	7.00	3.50	1,277.50
3	Exterior lighting elements	4	0.3	1.00	1.00	5.00	5.00	1,825.00
	TOTAL			4.90	4.90	-	20.40	7,446.00

▪ **For the drainage installation**

The energy consumption has been determined according to the power of the wastewater electric pumps, the treatment facility and the power draw of the lighting elements.

No.	Description of the consumer	No. of pcs.	Unit power kW	Installed power kW	Functioning power kW	Number of functioning hours [hours/day]	Energy consumed kWh/day	Energy consumed [kWh/year]
1	Submersible electric pump Q =1-2m ³ /h, H=12-47 mCA	3	1.00	3.00	2.00	11.00	22.00	8,030.00
2	Power draw of cleaning station	1	10.22	10.22	10.22	11.00	112.42	41,033.30
3	Exterior lighting elements	2	0.25	0.50	1.00	6.00	6.00	2,190.00
	TOTAL			13.72	13.22	-	140.42	51,253.30

The demand of raw materials for the two networks will be:

▪ **For the water delivery facility:**

Water consumption for the inhabitants supplied by the water system is:

$$Q_{zimed} = 68.2 \text{ m}^3/\text{day} \text{ or } 2.84 \text{ m}^3/\text{h}$$

Mean hourly sodium hypochlorite quantity is determined with the formula:

$$q = \frac{Q_{zi.med} \times D}{1000} [\text{Kg} / \text{day}]$$

Where: D is the sodium hypochlorite dosage which during disinfection is:

$$D = 1.2 \text{ mg/L (or g/m}^3\text{)}$$

From the above we determine the mean hourly quantity:

$$Q = 0.00341 \text{ Kg/day or } 1.2 \text{ Kg/year}$$

The number of containers needed given that one container holds 50 Kg pf chlorine:

$$Nb = 1.00$$

The yearly cost of the containers is:

$$1 \text{ container} \times 280 \text{ euro} = 280 \text{ euro}$$

▪ **For the drainage installation**

The running costs for the reactive compounds are based on the following quantities demanded by the volume of water meant to be carried and treated:

No.	Description of consumables	Unit of measure	Annual quantity	Cost (euro) w/o VAT	Total (euro) w/o VAT
1	Bio-compound for sediment stabilization	kg	1.50	98.00	147.00
2	Bio-compound for sediment mineralization	kg	1.50	98.00	147.00
3	Bio-compound for foaming reduction	kg	1.50	98.00	147.00
4	Bio-compound for fats break-up	kg	1.50	98.00	147.00
5	Potable water	m ³	20.00	0.40	8.00
	TOTAL CONSUMABLES				596.00

Looking at the classes of costs mentioned above we can determine the following annual costs and the cost for the quantity of potable water delivered or cleaned:

- For the water delivery facility

Total spending:

No.	Description of the expenditure	Unit of measure	Price per Unit [euro w/o VAT]	Annual quantity [Unit/year]	Annual expenditure [euro w/o VAT/year]
1	Electrical energy	kWh	0.08	7,446.00	575.58
2	Reactive compounds	Kg	280.00	1.00	280.00
3	Carried water	1000m ³	7.70	24.89	191.68
4	Maintenance, replacement parts and other costs		1,248.00	1.00	1,248.00
5	Personnel		7,680.00	1.00	7,680.00
	TOTAL				9,975.25

The cost of delivered potable water = $\frac{\text{total_expenditure}}{\text{volume_of_delivered_water}} = 0.40 \text{ euro/m}^3$

- For the drainage installation

No.	Description of the expenditure	Unit of measure	Price per Unit [euro w/o VAT]	Annual quantity [Unit/year]	Annual expenditure [euro w/o VAT/year]
1	Electrical energy	kWh	0.0737	51,253	3,777.37
2	Consumables		596.00	1.00	596.00
3	Maintenance, replacement parts and other costs		1,500	1.00	1,500.00
4	Personnel		7,680	1.00	7,680.00
	TOTAL				13,553.37

Qzimed = 61.01 m³/day

Cost of cleaned water = $\frac{\text{total_expenditure}}{\text{volume_of_cleaned_water}} = 0.61 \text{ euro/m}^3$

For the outflows the price of purchase of the products and services will be considered, as these are necessary for the functioning of the installations as well

for the supplementary services delivered. The financial inflows are based on the taxes and tariffs placed on the water delivery service. The tariffs for the collection and drainage of pluvial and residual waters will also be considered.

1.4. Calculation of the net present value and of the internal rate of return for the starting year

The internal rate of return (IRR) is the value which, when used as a discount rate in computing the net present value (NPV), leads to $NPV = 0$, or respectively to an equal value of investment expenditure and of the sum of the discounted financial flows generated by the project. Also, the IRR describes the level of the interest rate which matches the discounted revenues resulted from the investment with the discounted expenditures/costs implied by the investment and which also makes the value of the discounted net revenue equal to zero.

The IRR is the solution to the equation:

$$NPV = 0 \Leftrightarrow \sum_{i=1}^n \frac{CF_i}{(1 + IRR)^i} + \frac{RV}{(1 + IRR)^i} = I$$

Where:

CF is the cash flow generated strictly by the project, without the influence of the current activity, calculated as the difference between the net financial cash flows generated by the enterprise when implementing the investment, and the net financial cash flows generated by the enterprise in option zero;

RV is the residual value;

I is the initial investment;

n is the total life of the project;

IRR is the discount rate for which the NPV is 0.

Another useful indicator in the evaluation of investment projects is the Net Present Value (NPV). The net present value is a very concise performance indicator for the investment project: it represents the present value of all the net flows generated by the investment, expressed through a single value.

$$NPV = \sum_{i=1}^n \frac{CF_i}{(1 + d)^i} - I_0$$

Where:

d is the discount rate;

CF_i is the cash flow for the "i" period;

I_0 is the value of the investment;

n is the number of years forecasted.

Project flows determined for the moment „t₀” 2006 - euro

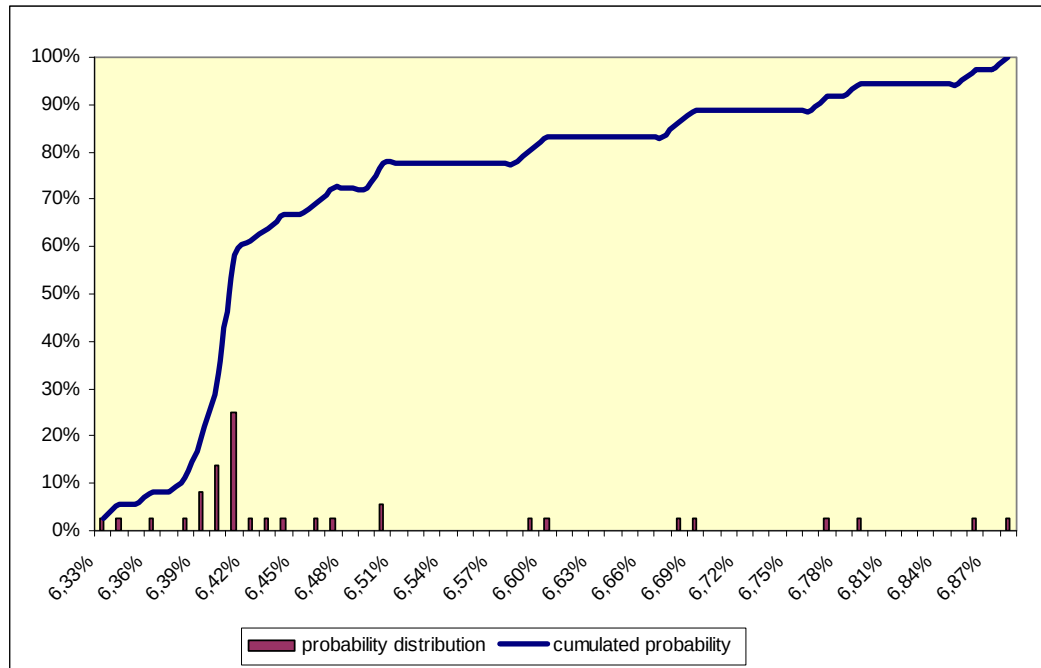
Indicators	1	2	3	4	5	6	7	8	9	10
Supply of household water	0	99,983	104,982	110,232	115,743	118,058	120,419	122,828	125,284	127,790
Supply of public water	0	1,095	1,150	1,207	1,268	1,293	1,319	1,345	1,372	1,400
Supply of water for irrigation and for animals	0	1,004	1,054	1,107	1,162	1,185	1,209	1,233	1,258	1,283
Supply of water for firefighting	0	0	0	0	0	0	0	0	0	0
Drainage and cleaning system	0	11,402	11,972	12,570	13,199	13,463	13,732	14,007	14,287	14,573
Revenues from services	0	113,484	119,158	125,116	131,372	133,999	136,679	139,413	142,201	145,045
Revenues from other services	0	0	0	0	0	0	0	0	0	0
Residual value of the infrastructure	0	0	0	0	0	0	0	0	0	0
Total revenues	0	113,484	119,158	125,116	131,372	133,999	136,679	139,413	142,201	145,045
Operation										
Labor force	0	15,360	16,128	16,934	17,781	18,670	19,604	20,584	21,613	22,694
Raw materials (reactive compounds and other materials)	0	1,068	1,121	1,177	1,236	1,261	1,286	1,312	1,338	1,365
Power for pumps and installations	0	4,353	4,571	4,799	5,039	5,140	5,243	5,348	5,454	5,564
Maintenance	0	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Cost of sludge removal	0	895	940	987	1,037	1,057	1,078	1,100	1,122	1,144
Total operating costs	0	23,176	24,260	25,398	26,593	27,628	28,711	29,843	31,027	32,266
Total costs for the investment	1,543,563	0	0	0	0	0	0	0	0	0
Replacement cost for short-life components	0	0	0	0	0	0	0	0	0	0
Total expenditures	1,543,563	23,176	24,260	25,398	26,593	27,628	28,711	29,843	31,027	32,266
Net cash flow	-1,543,563	90,308	94,898	99,718	104,779	106,371	107,968	109,570	111,173	112,779

Indicators	11	12	13	14	15	16	17	18	19	20
Supply of household water	127,790	127,790	127,790	127,790	127,790	127,790	127,790	127,790	127,790	127,790
Supply of public water	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400
Supply of water for irrigation and for animals	1,283	1,283	1,283	1,283	1,283	1,283	1,283	1,283	1,283	1,283
Supply of water for firefighting	0	0	0	0	0	0	0	0	0	0
Drainage and cleaning system	14,573	14,573	14,573	14,573	14,573	14,573	14,573	14,573	14,573	14,573
Revenues from services	145,045	145,045	145,045	145,045	145,045	145,045	145,045	145,045	145,045	145,045
Revenues from other services	0	0	0	0	0	0	0	0	0	0
Residual value of the infrastructure	0	0	0	0	0	0	0	0	0	0
Total revenues	145,045	145,045	145,045	145,045	145,045	145,045	145,045	145,045	145,045	145,045
Operation										
Labor force	22,694	22,694	22,694	22,694	22,694	22,694	22,694	22,694	22,694	22,694
Raw materials (reactive compounds and other materials)	1,365	1,365	1,365	1,365	1,365	1,365	1,365	1,365	1,365	1,365
Power for pumps and installations	5,564	5,564	5,564	5,564	5,564	5,564	5,564	5,564	5,564	5,564
Maintenance	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Cost of sludge removal	1,144	1,144	1,144	1,144	1,144	1,144	1,144	1,144	1,144	1,144
Total operating costs	32,266	32,266	32,266	32,266	32,266	32,266	32,266	32,266	32,266	32,266
Total costs for the investment	0	0	0	0	0	0	0	0	0	0
Replacement cost for short-life components	0	0	0	0	0	0	14,000	0	0	0
Total expenditures	32,266	32,266	32,266	32,266	32,266	32,266	46,266	32,266	32,266	32,266
Net cash flow	112,779	112,779	112,779	112,779	112,779	112,779	98,779	112,779	112,779	112,779

At the “ t_0 ” moment the following performance indicators for the project are being considered:

Indicators	Value
Internal rate of financial return	6.41%
Financial net present value	288,365 euro

Figure 2. The probability distribution and the cumulated probability of the internal rate of return



The curve of the cumulated probability allows us to consider a degree of risk, of the cumulated probability is greater or smaller than the reference value which is considered critical.

The probabilities for the IRR to be greater than a certain value can also be determined, in which case this value will be set as a limit. For the project under analysis the is null probability that the IRR is smaller than 6.33%.

With the passage of time different values from those initially forecasted will be recorded, both for the revenues as well as for the expenditures incurred by the project.

Thus, for the years 1 to 5 of project exploitation (and respectively the years 2 to 6 for the forecasts) the actual values of revenues and expenditures will be considered.

Bellow we can see the actual revenues and expenditures registered up to the 6th year of the forecast, with the rest of the values corresponding to the 7 to 30 forecasted years being left at the level provisioned in the initial year.

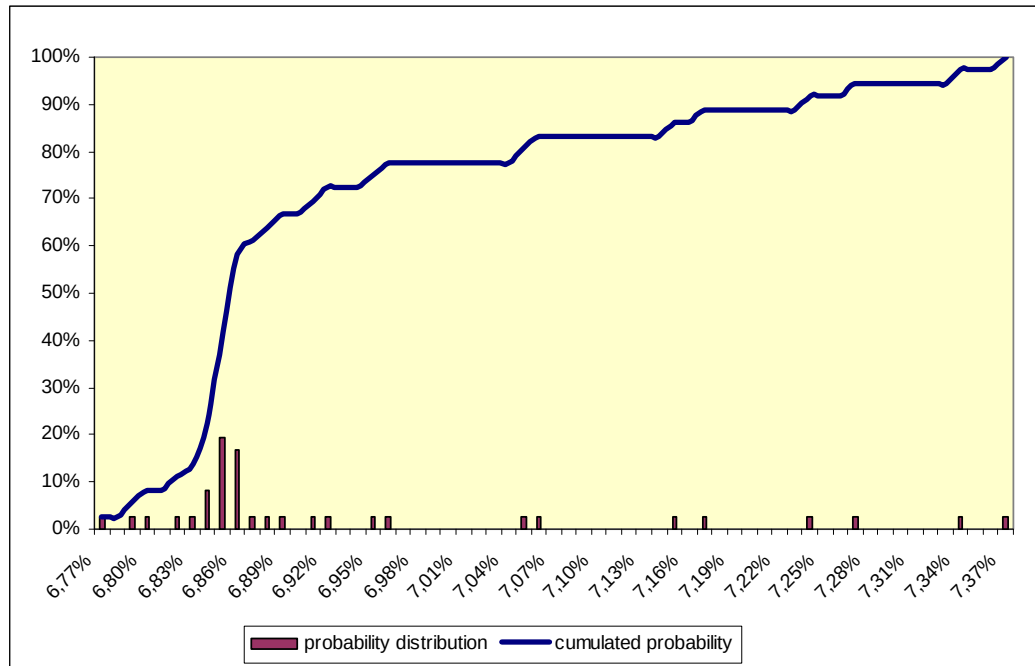
Project flow determined for year 5 of the exploitation period, year 2011 - euro

Indicators	1	2	3	4	5	6	7	8	9	10
Supply of household water	0	95,074	116,347	155,621	147,439	165,439	120,419	122,828	125,284	127,790
Supply of public water	0	913	1,643	2,008	2,199	2,065	1,319	1,345	1,372	1,400
Supply of water for irrigation and for animals	0	1,186	1,460	2,373	2,463	3,833	1,209	1,233	1,258	1,283
Supply of water for firefighting	0	0	0	0	0	0	0	0	0	0
Drainage and cleaning system	0	11,402	11,949	13,572	13,572	13,572	13,732	14,007	14,287	14,573
Revenues from services	0	108,575	131,399	173,572	165,672	184,908	136,679	139,413	142,201	145,045
Revenues from other services	0	0	0	0	0	0	0	0	0	0
Residual value of the infrastructure	0	0	0	0	0	0	0	0	0	0
Total revenues	0	108,575	131,399	173,572	165,672	184,908	136,679	139,413	142,201	145,045
Operation										
Labor force	0	17,069	18,288	19,934	20,432	21,863	19,604	20,584	21,613	22,694
Raw materials (reactive compounds and other materials)	0	1,368	2,121	2,376	2,494	2,868	1,286	1,312	1,338	1,365
Power for pumps and installations	0	6,205	6,217	8,573	8,770	9,273	5,243	5,348	5,454	5,564
Maintenance	0	1,350	2,541	1,450	2,145	1,584	1,500	1,500	1,500	1,500
Cost of sludge removal	0	895	871	1,223	1,172	1,612	1,078	1,100	1,122	1,144
Total operating costs	0	26,887	30,038	33,555	35,014	37,200	28,711	29,843	31,027	32,266
Total costs for the investment	1,543,563	0	0	0	0	0	0	0	0	0
Replacement cost for short-life components	0	0	0	0	0	0	0	0	0	0
Total expenditures	1,543,563	26,887	30,038	33,555	35,014	37,200	28,711	29,843	31,027	32,266
Net cash flow	-1,543,563	81,687	101,361	140,018	130,658	147,708	107,968	109,570	111,173	112,779

At the end of the fifth year of exploitation the following recalculated performance indicators for the investment project are being registered:

Indicators	Value
Internal rate of financial return	6.86%
Financial net present value	370,407 euro

Figure 3. *The probability distribution and the cumulated probability of the internal rate of return calculated for year 5 of the exploitation*



For the project under analysis in the fifth year of exploitation there is a null probability that the IRR is smaller than 6.86%.

The conclusion which can be inferred would be that at the end of the fifth year of exploitation (year 2011) the efficiency indicators for the project are looking better due to greater revenues being achieved than it was initially forecasted. The growth rate of the revenues was clearly superior to the growth rate of the expenditures incurred by the exploitation of the project.

1.5. The comparative analysis if the net present value and of the internal rate of return throughout the exploitation of the project

Reviewing the project phases presented above, we can see that a fundamental principle and an essential component in the evaluation of water supply and drainage infrastructure projects is the time factor, due to its impact on the efficiency of the investment.

The dynamic approach to project evaluation is meant to reveal and to convey the impact of the time factor in measuring, describing and analysing the economic and financial efficiency of such infrastructure investments.

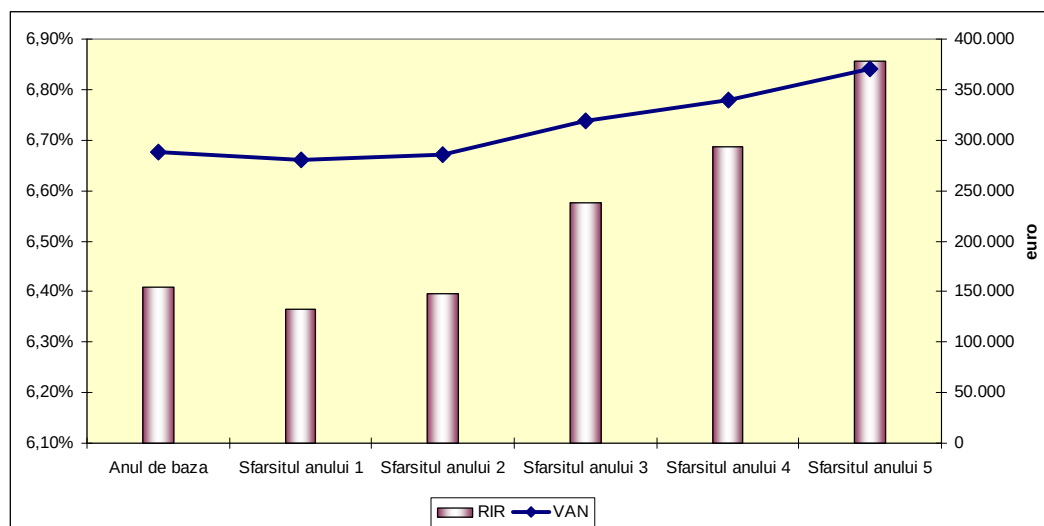
The concept of the dynamic evaluation of the efficiency of infrastructure projects from the perspective of local administrations offers extended options for the consideration of various aspects, effects and consequences, either positive or negative, of the impact of the time factor throughout the life cycle of the project or for each stage or phase within it.

In the dynamic approach for evaluation the efficiency of infrastructure projects, the criteria and the indicators will present time as a multiplying factor of costs and advantages, they will look at the dynamic and the variation in time of the financial flows which correspond to the processes and phenomena occurring within the established timespan or within the project's lifespan.

No.	Description	Starting year	End of year 1	End of year 2	End of year 3	End of year 4	End of year 5
		2006	2007	2008	2009	2010	2011
1	IRR	6.41%	6.37%	6.40%	6.58%	6.69%	6.86%
2	NPV	288,365 euro	280,547 euro	286,130 euro	319,284 euro	339,561 euro	370,407 euro

Thus, by reanalysing the performance indicators each year we discover that these can be either above or below the initially established level, a situation in which the decision makers – the administrators of the infrastructure – will have to adopt decisions specific to each case, in order to maintain the minimum of performance which has been established for the project.

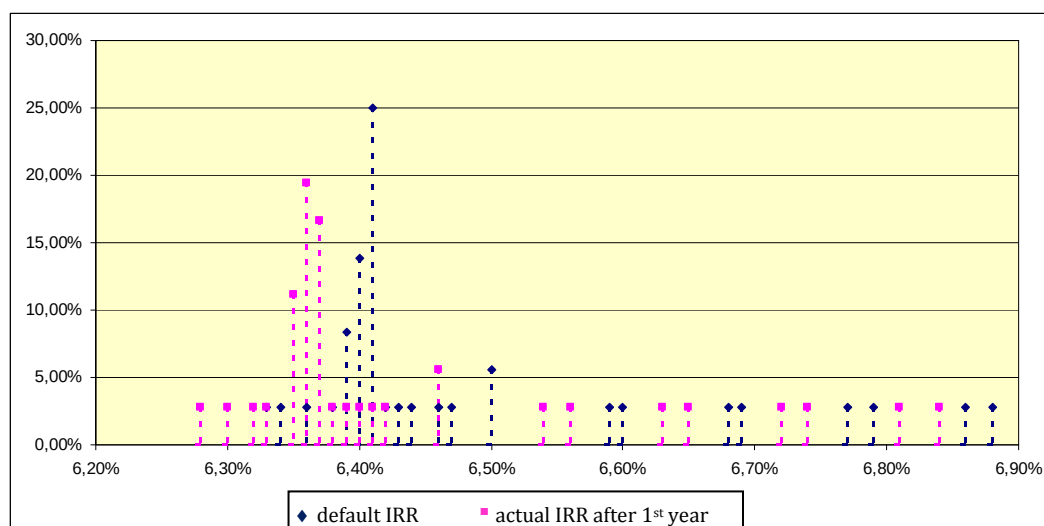
Figure 4. *The evolution of the IRR and NPV indicators through time*



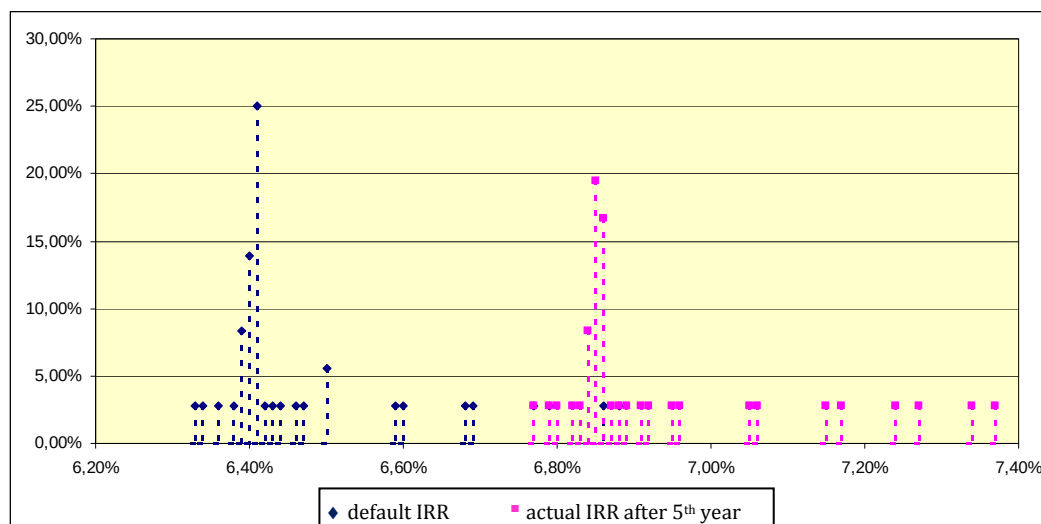
The annually recalculated efficiency criteria and indicators help identify aspects such as:

- The effect of the delay in the need for replacement investments when dealing with greater periods of exploitation. This shows up in a more distant future when compared to the cases with a shorter span of useful life;
- The effects of faster replacement and of reducing the number and value of spending on capital repairs whenever the total service lives are shorter;
- The additional cost of investment demanded by the guarantee of a longer service life;
- The influence of a drop in efficiency coupled with the increase in maintenance and repairs costs in time, as the degree of wear increases, in the case of greater periods of exploitation;
- The reduction of annual amortization in the case of longer service lives;
- The increase in the specific consumption of raw materials, energy etc. and in the end the increase in the exploitation costs when dealing with greater periods of functioning.

Figure 5. Comparative view of the relative probability curve of IRR calculated for years “0” and “1”



From the graphic above we can deduce that at the end of the first year of exploitation (year 2007) the efficiency indicators for the project are below the initially forecasted level due to the registration of lower revenues to the ones foreseen in the beginning. The growth pace of revenues was inferior to the rhythm in which project related expenditures have developed. This predicament was reached because in the first year of exploitation of the water supply and drainage networks not all of the households which have agreed to connect during the conception of the project have actually done it.

Figure 6. *Comparative view of the relative probability rate of IRR calculated for years “0” and “5”*

The increase in the volume of water supplied, drained and cleaned has led to an increase in total revenues, but to a greater extent to that of the costs, when considering the nature of fixed and variable costs. The variable costs have grown together with the increase in the volume of water supplied, drained and cleaned, while the fixed costs have stayed relatively constant, thus reducing the cubic meter costs of the supplied drinking water, drained water and cleaned water.

At the end of the fifth year of exploitation (year 2011) the efficiency indicators of the project are above the initially forecasted level due to the occurrence of greater revenues than originally provisioned. The growth rhythm of revenues in the 2008-2011 period was superior to the growth rate of expenditure associated with project exploitation. This was due to the fact that after the first year of service a greater number of households than originally scheduled have connected to the water supply and drainage networks. Also, there was a revenue increase due to a greater consumption of network-supplied potable water by the population and by animals and due to a shunning of the “unsafe” water from wells.

As such the dynamic evaluation of the efficiency of infrastructure projects throughout their lifespan will provide:

- A dynamic reflection of the provisioned flows in the costs of exploitation and in the estimated advantages, for each year of their respective stages.
- A picture of the economic effects of the multiple consequences brought by the differences in the variable exploitation periods of component elements and their impact on the efficiency of the project.

- A determination of the optimal period of economic exploitation and of the optimal moment for the replacement of used machines and equipment.

Conclusions

Financial analysis at the start of the investment project is useful because it provides the calculation for the project's internal rate of return and compares it to the discount rate. With the dynamic approach in evaluating the efficiency of infrastructure projects, the indicators will reflect the dynamics and the time variation of financial flows corresponding to the phenomena and processes which take place within the analysed period or for the entire project's life cycle. It is useful for any investor, even if they are public administrations, to be able to follow the actual evolution of their investments throughout their period of exploitation. The positive or negative deviations from the performance indicators may determine them to take specific decisions in different situations in order to maintain the minimum level of performance established for the project.

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