

ARCHIVES OF ECONOMIC HISTORY

Volume XXXII

No 1

January – June 2020

ΑΡΧΕΙΟΝ ΟΙΚΟΝΟΜΙΚΗΣ ΙΣΤΟΡΙΑΣ

Τόμος XXXII

Τεύχος 1

Ιανουάριος – Ιούνιος 2020

CONTENTS - ΠΕΡΙΕΧΟΜΕΝΑ

D. BALIOS – N. ERIOTIS – M. MENEXIADIS – D. VASILEIOU: Internal Controls' Effectiveness	5
N. STOUPOS: Bulgaria, Estonia, Lithuania and the European Common Currency	35
A. MANIATIS: The Greek Independent Authority for Public Revenue and Revenue Collectability	55
K. ANTONIADI: Urban Labs as a New Form of Urban Governance: Public Value Creation and its Measurement	65

ATHENS - ΑΘΗΝΑΙ, 2020

Το «Αρχεῖον Οικονομικῆς Ἱστορίας» δὲν φέρει οὐδεμίαν εὐθύνη γιὰ τὰ δημοσιευόμενα ἄρθρα
τὰ ὁποῖα ἐκπροσωποῦν μόνο τὶς ἀπόψεις τῶν συγγραφέων.

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INTERNAL CONTROLS' EFFECTIVENESS

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Abstract

The effectiveness of the Internal Control System should not be judged by the application of a large number of controls, but by the type and suitability of the controls applied, as well as by whether or not the control system of each operation is properly structured, if it responds to the needs and functions of the organization, the resources it needs to function, and the value it adds to the organization itself.

We must never forget the management's support for controls' effective implementation and the effective implementation of corporate governance in general.

JEL Classification: M14, M41, M42, M48

Keywords: internal control system, controls, corporate governance, internal audit

Research question

Internal controls are described and interpreted differently for each organization. Their common element is to provide an adequate safeguard against the risks and that they should serve the purposes of the organization.

It is therefore more important for each organization to have and operate effective controls than to have many and ineffective ones that will not fulfill the purpose for which they were designed and also to bring costs to the organization without actually being necessary.

On the basis of investigating whether or not, risk management is effective and the general risks arising from the activities of organizations, the research question is the following:

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- Is there a relation between the effective risk management through effective controls, with the capitalization of the PLCs in Athens Stock Exchange?

The basic defense tool when it comes to management of internal and external risks, is the internal audit who suggests best practices.

There is no definition in Greek and international bibliography on best practices. Best practices is a reality with no beginning or an end since organizations are dynamic and various issues have to be resolved on a daily basis.

Consequently, the best practice is the one that managers respond effectively to their duties and to the business challenges. As a result, discussing about best practices, is discussing on tailored need practices and controls for each organization. The internal auditor as consultant to the organization, due to the knowledge of the organization and the experience he has, he knows how every part of the organization operates and given his role, he is in a position to offer and suggest best practices.

The total of controls create the internal control system of each organization, while it helps all members to be aware of business risks and them to make decisions on accepting or not the risks that are related to their operations.

Internal Audit

Internal Audit has a theory of management that is based on internal controls. Internal auditors see themselves as experts in risk management (ICAEW, 1996). They understand the concept of risks while often the senior management fails to understand so.

Internal auditors should be independent of the activities they audit. Independence allows internal auditors to exercise their duties and judgment, free from any influence or purpose. Independence is achieved through corporate structure and objectivity (Menexiadis 2004).

Internal auditors should have the support of senior management and the board of directors in order to ensure co-operation with auditors and to carry out their work without any interference. As a consequence, the chief internal auditor should refer to someone in the organization who has the authority to promote the independence of the former and to ensure an adequate scope of control, adequate evaluation of the relevant reports, and appropriate action as corrective actions in the auditor's findings (Sheikh, Rees 1996).

The Chief Internal Auditor should have direct contact with the Board of Directors as well as frequent contact with the senior management to ensure that communication and briefing on audit matters is ensured.

Independence is also ensured by a written statute (Albrecht, Howe,

Schueler, Stocks 1998) of internal audit which should be approved by the board with relevant minutes. The statute defines the position of internal audit in the organization chart of the company, authorizes access to files, personnel and premises and finally defines the purpose of the audit. On the other hand, the internal auditor should periodically evaluate whether the matters mentioned in the statute responds to the needs of the organization in order to change it or remain the same. Communication on the statute should reach the board.

Objectivity is the behavior that internal auditors should maintain in the performance of their duties. Objectivity requires that internal auditors are not affected by the activities of their organizations and executives, while the results of their work and their judgment should be independent.

Their objectivity is not adversely affected when the auditor proposes standards for systems or activities and procedures prior to their implementation. On the contrary, systems design, installation and operation are not audit activities. Also, a rough draft is not an audit work. Consequently, such activities affect the auditor's objectivity.

Corporate Governance Codes

What is perceived to be a good/sound practice in terms of internal audit and controls, can be given from the "*Cadbury Code – The report of the Committee on the Financial Aspects of Corporate Governance*" and the combined code "*The Combined Code – Principles of Good Governance and Code of best practice*" which is the combination of "*Cadbury*" and "*Greenbury*" codes, as well as the "*Turnbull*" code and to compare them with the respective Greek legislation.

The codes develop a series of themes on internal control, audit committees, remuneration, etc., the roles of the board and more generally any aspect of which, it could be considered as good practice and add value to the organization.

Referring to the burning issues of internal control, the following should appear:

Cadbury Code (1992): Internal audit – internal control system: The management of each organization is responsible for maintaining accurate accounting books and financial statements. They should therefore have a financial management control system in place including procedures to minimize fraud. In addition, a set of criteria should be defined in order to evaluate the effectiveness of the internal control system.

So once the control system is installed, which is very important, the auditors should express their opinion on the proper functioning of the internal control system.

Concerning Audit Committees, it is suggested that independent Audit Committees be set up by non-executive directors, whose relationship with the management of each organization should be clear, written communication and meetings held at least twice a year. The members of the Audit Committee should be at least three.

The Committee's access to all information is assumed to be granted and in the event of a failure to perform a task due to a lack of know-how, the Committee will have the right to invite external partners.

As far as internal control is concerned, it is a good practice for organizations to set up internal control functions that will monitor the operation of controls and procedures. Internal auditors will act on behalf of the Audit Committees and will have access to the Chairman of the Audit Committee as a means of maintaining their independence.

Combined Code (2002): With regard to control system – internal audit – Audit Committee – Chartered Accountants:

The Board of Directors should maintain an internal control system in order to safeguard investor interests and company's funds. The internal control system should be reviewed at least annually for its effectiveness and shareholders should be given an overview. The review should include all risk management, financial, operational, and compliance regulations and legislation.

Organizations that do not have an internal audit function, should evaluate the need to obtain one, at least annually.

Concerning Audit Committees, they should consist of independent directors - non-executives whose relationship with each organization's management is clear, written communication and meetings held at least twice a year. The members of the Audit Committee should be at least three and their names included in the annual report.

Turnbull Code (2005): In terms of internal control and risk management, the control system of each organization plays an important role in risk management in order to achieve corporate goals. A good control system protects the interests of investors and protects the capital of the organization. Internal safeguards serve the effectiveness of corporate operations, enhance the reliability of financial statements and assist in compliance with existing legislation.

Effective financial controls, including proper bookkeeping, reinforce the

fact that the company is not unnecessarily exposed to financial risks and that the financial information used in the statements is reliable and accurate.

Control systems depend on the risks to which the organization is exposed. For this reason, risks can change. When defining policies and procedures regarding the internal control system, the following should be taken into account:

- Nature and extent of risks that the organization faces,
- Risks and their extent that is tolerable from the organization,
- Possibility of risks to happen and their impact to the organization,
- The organization's ability to manage risks,
- Cost of the control system compared to its benefits.

It is the responsibility of management to implement the control system, as well as that of employees, as part of achieving corporate objectives.

The internal control system includes policies, procedures, safeguards and behaviors that, taken together, should:

- Operates effectively responding to financial, operational and compliance risks in order to achieve corporate objectives,
- Enhances the objectivity and quality of internal and external reporting. This requires processes that aim to produce relevant and reliable information internally and externally from the organization.
- Enhances compliance with existing legislation and corporate regulations and policies.

Moreover the internal control system should:

- It is part of the philosophy and culture of the organization,
- Applies to the activities of the organization,
- Responds rapidly to risks and,
- Includes reporting procedures to the relevant executives of the organization.

Although many rules still remain voluntary, they maintain their adaptability and flexibility to suit the different environments and situations in which organizations operate. In addition, some corporate governance requirements do not appear to be relevant to all organizations, especially with regard to small ones or those in which the owner is also the manager. This saves organizations from significant costs that are unnecessary.

However, if the basis for applying these rules remains voluntary, there is always the risk that organizations –due to structure or size– not to apply them and that their shareholders may be at a disadvantage. It also contributes to such a situation, limiting the comparability of agencies and capital markets if not all organizations are subject to the same requirements, and makes it more difficult for shareholders to make decisions.

For Corporate Governance purposes, management should determine the corporate policy, including the policy to deal with any business risks, while also being responsible for the organisation's internal control system.

(a) *Policies*: Management is responsible for managing the organization, including defining strategy, budgets, employee management, asset retention, and ensuring that corporate governance rules are implemented. An important element in defining strategies is identifying and managing business risks. The Internal Audit department has a role in this.

(b) *Systems, controls and monitoring*: Management is responsible for establishing Internal Control systems, to apply the policies of the organization and the systems and to reduce the exposure to risks recognized by the organization.

Management is also responsible for monitoring the effectiveness of these systems. Internal Auditors play an important role in this regard, however, it is the management that decides whether or not the organization will have an Internal Audit function to assist it in its role or not.

Internal Control system means all the functions, rules, measures, principles and procedures that the organization implements in order to implement and adhere to the policies and principles of management, in order to safeguard its interests. It is the system through which Corporate Governance is practiced.

Internal control systems may not be the same for all organizations. The complexity of the organizations, the type of activities, the environment of operation, necessitates the development of different systems. For this reason, each Internal Control system should be tailored to the needs of the organization. Each part of the system should serve a specific purpose and even better serve what it was designed for, in the most efficient and cost-effective way possible. In other words, the costs of applying the procedure or the corresponding measure should always be taken into account in relation to the potential damage or risk that may arise.

The necessity of the Internal Control system is given to each organization, but in a different form as mentioned above. However, the existence of an organized Internal Control system provides through its controls the proper functioning of the business objectives. That is exactly what the management of the organization needs to ensure.

Regarding the effectiveness of the Internal Control system, the latter should not be judged by the existence of a large number of controls, but by the nature and suitability of the controls contained, as well as by whether they are properly structured, responds to the needs and functions of the organization, the resources it needs to function, the value it adds to the organization itself. The potential of the management to implement it effectively should never be forgotten, meaning full support on its part.

Internal controls are easier to work with in small organizations. This is because the owner of a small organization is well aware of its goals and can act personally to achieve those goals. Internal controls are described and interpreted differently for each organization. Their common element is the agreement to provide reasonable assurance and that the goals of the organization must be achieved.

The objectives that must be served based on Internal Audit practice are the following:

- Integrity and reliability of information,
- Compliance with policies, rules, procedures, regulations and laws,
- Safeguarding of assets,
- Effective and efficient use of resources,
- Achievement of organization's objectives.

To control means to audit. The essence of the audit is to make sure that the day-to-day operation is done as it should be. Checks take place from the lowest to the highest layers of the management hierarchy and can range from as simple as checking an invoice payment approval to as difficult as checking monthly statements. The extent of controls will depend on many factors, one of which is cost, but this should not be the determining factor. However, cost-effective control is certainly a key criterion for those involved with the control system.

The audit extends beyond the daily overview of work. The main purpose of the audit should be to minimize the occurrence of deliberate or unintentional errors and to be applied by all executives.

As already mentioned, in the context of the necessity of Internal Audit, the difficulty of the entities to directly supervise all its activities and operations, has led management of the organization to adopt organizational measures and rules to address this problem. Overall, the organizational measures taken to offset the reduction in personal supervision constitute the entity's Internal Control system.

From a practical point of view, the external auditor must have an adequate understanding of the Internal Audit activities as well as the Internal Control system to assist in the planning of the external audit and the development of an effective audit approach. In addition, the external auditor, when developing the audit approach, uses the work of the internal auditor, which means that in order to make use of it, the external auditor must first evaluate and verify its appropriateness.

Internal Control system

An Internal Control system, should include the following:

- Organizational chart, with levels of hierarchy and distinction of functions. The organizational chart should specify the area of responsibility per department.
- Job descriptions or responsibilities per department and organizational position.
- Operating procedures manuals by function and department.
- Program of action and implementation, per activity, with reference to the achievement of the objectives and the justification for the divergences.
- Statute where the goals of the organization are clearly stated.
- Corporate policies.
- M.I.S. and computerized systems.
- Levels of approvals, authorizations, and representation.
- General operating rules.
- Quality assurance system.
- Sub-committees of the Board of Directors.
- Internal Audit.

The Internal Control system is designed and operated to provide adequate assurance of the organisation's objectives. The system should operate at a reasonable cost, meaning that the costs of operating and operating the system should not exceed the benefits arising from its operation. On the basis of the above, the following may be mentioned with regards to the Internal Control system:

- To be a real tool of management in achieving its goals.
- Provide the ability to estimate and measure the financial result so that it can be compared to initial estimates.
- Be flexible and efficient, adapting to the specific circumstances and needs and ensuring the viability of each department.
- Enable the utilization and management of available resources, the utilization of productive means, human resources, and the safeguarding of assets.
- Provide valves to ensure that the risks are manageable, ensuring the interests and viability of the organization.
- Separate responsibilities, tasks and duties between departments and employees and contribute effectively to the degree of cooperation among employees.
- Provide assurance that decisions and authorizations are applied by all employees and hierarchy, given the policies and procedures that are decided by management.

Controls are designed to meet the goals of the management. When controls are sufficient and therefore effective, it is understood that the risks involved are adequately addressed. The Internal Control system should therefore be based on certain conditions or alternative principles.

The following principles of the Internal Control system may be set out in order for it to succeed:

- **Appropriate staffing:** executives with adequate training, skills and knowledge, have a higher chance of achieving goals. The above starts from the stage of selecting human resources. Furthermore, the exploitation of human resources for optimal use is considered an important element of the system's success. Management should ensure that it does not depend on the leave of qualified executives, ensure that knowledge and skills are shared among executives and avoids cases of single highly skilled employees.
- **Segregation of duties and responsibilities:** adequate and clear segregation of duties and responsibilities, at all levels of operation, are among the most serious faults considered in any audit. The executive should know exactly what his duties and responsibilities are, the limits of his responsibilities and powers, as well as who is accountable.
- **Management relies on the distribution of responsibilities, at all levels, to ensure optimum performance.** At the same time, the development of initiatives, the development of knowledge, the evaluation of any actions and the degree of achievement of objectives should be enhanced.
- **Approval-Authorization:** Serious or risky transactions should be accompanied by special authorization, which will most often be given by the Board, as opposed to those involving standard day-to-day operations, where relevant procedures and rules are in place. Delegation of specific responsibilities is the responsibility of the management. However, special authorizations should be limited.
- **Securing transactions:** each transaction should be ensured in accordance with the Corporate Governance policy. Each transaction should be properly represented and the probability of accounting errors minimized.
- **Issuance and entry of records:** each entry in the accounting books must be supported by the respective documents. This proves the authenticity and correctness of the relevant accounting entry, as well as the validity of the transaction depicted therein.
- **Monitoring of work:** systematic monitoring of human resources work provides the opportunity for immediate correction where necessary.
- **Designing processes according to risks:** the design and therefore the extent of the processes is a function of the size, nature of the activities and the risk

the organization is expected to face. Similarly, the cost of control should not exceed the benefits of operating and controlling the system.

- **Internal Audit function:** The Internal Audit function should be provided for the purpose of assessing the adequacy of the Internal Control system itself, which has operated as has been reported several times independently.
- **Ongoing evaluation:** Ongoing monitoring and evaluation of the system, based on its adequacy and quality, should be adhered to. The organization is dynamic and as it adapts to new data and situations, respectively the Internal Control system, it should be in dynamic evolution and adapted to changes in the organization. In order to secure the goals and achieve the objectives of the organization, the system should also be evaluated at regular intervals. The concept of a regular refers to about every two to three years, unless the needs dictate earlier.

Audit Committee

The main concern of the Audit Committees is to ensure that internal and external audits are carried out legally and unaffected by the organizations and to ensure effective communication between the Audit Committees and the Board of Directors.

The Audit Committee should be elected by the Board of Directors of the organization, which determines its responsibilities and how it operates.

The main responsibilities of the Audit Committee are to confirm reliable financial analysis and to ensure the proper functioning of the organisation's Internal Audit system.

Although the committee reports to the Board of Directors, it should always operate in the interest of all shareholders and other stakeholders in the organization, with whom it has ultimate responsibility.

The responsibilities of the Audit Committee for Corporate Governance are to ensure that the organization complies with relevant laws and regulations, to operate in a manner that promotes its ethical and social role and to maintain an effective Internal Control system.

The Audit Committee should also require the Chief Internal Auditor of the organization to report, at least annually, in written, the extent and scope of the Internal Audit Department's audit work on Corporate Governance.

The setting up of Audit Committees allows for a "clear" relationship with the board to which they are accountable and should report frequently. Such a committee helps independent members to judge independently and objectively but also to have a positive role as well as being a direct link to external auditors.

It could be said that the quality of the committee depends on the quality of its members. They need to be competitive and have time not only to attend meetings but also to meet with the staff of the organization, visit various parts of the organization and study important reports.

It should not be forgotten that the Audit Committee is an independent communication channel in the Board of Directors that monitors the control systems of the organization, and should therefore also have the power to influence the Board.

The Audit Committee can help the organization maintain its impartiality in preparing and auditing the financial statements.

The Audit Committee is a subcommittee of the Board of Directors which as best practice should include independent non-executive members of the Board.

The effective functioning of the audit committee gives the organization significant benefits such as:

- Determine the scope of activity of the Internal Audit Service.
- Providing guidance to the Internal Audit function on the performance of its work.
- Examine the activities of the Internal Audit Department in order to evaluate its effectiveness.
- Regularly briefing on the progress of the Internal Audit Department's work and confirming that significant issues and weaknesses identified, as well as related recommendations, have been communicated and discussed promptly with management, which has taken the necessary corrective action.
- Overview of the system of providing financial and administrative information to the Management of the organization.
- Improving the quality of the financial statements by reviewing them and their preparation process on behalf of the Board of Directors,
- Creating a climate of discipline and control that may reduce the likelihood of fraud,
- Objective judgment on various corporate issues,
- Supporting the Financial Department as a concern group that can be used to implement issues that are otherwise difficult or impossible to implement,
- Strengthening the external auditor's position as a communication and discussion channel for issues that concern them,
- Providing a framework in which the external auditor maintains his/her independence and at the same time can discuss issues that he or she disagrees with Management,
- Strengthening the functioning of the Internal Audit department by providing a high degree of independence from the management,

- Increase the confidence that the general public shows through the reliability and objectivity of the financial statements.
- Perhaps the most important advantage of having an audit committee is that it consists of independent members, providing the internal and external auditor with an independent benchmark, other than that of the executive members of management, which is particularly useful in cases of disagreement with management.
Other advantages of having an audit committee are the following:
- Increased confidence in the reliability and objectivity of financial statements, especially useful in the case of listed companies.
- With the expertise that members of the Internal Audit department have in dealing with the problems of preparing financial statements, they help the management to be more effective in dealing with them and to spend less time on these problems.
- In cases where the interests of the organization, members of management and its employees conflict, the audit committee may provide an independent opinion, useful to external auditors as well. It can also provide a channel of communication between internal and external auditors.
- The Internal Audit of the organization will be able to report its findings to the Audit Committee rather than management itself, which enhances its ability to be objective.
- The Audit Committee may be the management's advisor in ensuring that it complies with corporate governance requirements.

Testing of controls

The audit performed on the operation of the controls has no purpose other than to provide the Internal Auditor with sufficient audit evidence that the latter are:

- Effectively designed and integrated within these processes to be able to prevent or detect and correct a significant error,
- That they operate with the same effectiveness throughout the period under control.

Controls include the following:

- Overview of documents that support specific events that in turn substantiate that controls worked as designed.
- Exploratory discussions with entity personnel on controls that do not leave traceable evidence.

- Re-execution of controls e.g. re-executing a bank agreement to ensure that they were done correctly by the accounting office.
- Examine evidence of how management deals with specific situations/ transactions.
- Controls operating on fully computerized processes or faults related to the computer system as a whole such as: control of the system restricting access for users.
- Observe the operation of specific controls depending on how the control operates.
As part of their work, the Internal Auditors should consider:
 - How controls were implemented,
 - Whether they have been consistently applied throughout the controlled period,
 - By whom they were applied.

In the event of discrepancies in the operation of the controls, which may increase the risk of significant errors being avoided by the auditing procedures that the entity has established, the audits of the controls should be amended to confirm the effective operation of the procedure throughout the controlled period, before and after any change occurred.

When it comes to audits by the same Internal Auditor, the latter may rely on knowledge and evaluation of the effectiveness of the processes it has audited in prior periods, however, it should nevertheless update its understanding of the entity's systems and procedures, in order to evaluate whether it needs to receive, and in the current audited period, more audit evidence to support the assessment that controls work effectively, if any changes have occurred.

Empirical research

The following transaction cycles on which the research was based are the following:

- Human resources,
- Sales and accounts receivables,
- Stock management,
- Purchases and accounts payables,
- Fixed assets management,
- IT security.

The research method that was used, is the positive one (Ryan, Scapens, Theibald 1993). Data collection was conducted through questionnaires.

The questionnaires were sent at all the PLCs in Athens Stock Exchange, while seventy one (71) 40,34% replied.

The questions are by default preventive controls that offer both effective risk management and high cost of development, implementation and maintenance. Systems-based controls offer the maximum of effective risk management since this needs high investment and maintenance costs of the systems.

The questions are closed-ended ones with “YES” or “NO” answers for analyzing whether or not there is a control in place.

The data were collected and analyzed by SPSS statistical software. Averages, standard deviations and histograms were used primarily to draw conclusions about the responses received.

The statistical program does not analyze the cases of questions where the answers are all positive or all negative. For this reason, there are no histograms of such responses. Further, in cases where all the answers are positive, the mean takes the value of “1”, while the standard deviation takes the value of “0”. Vice versa, in cases where all the answers are negative, the mean takes the value “0” and the standard deviation takes the value “1”. In any case, there are no histograms for such cases. The above mentioned cases, refer to questions 1, 3, 4, 7, 13, 14, 16, 17, 18, 20, 21 and 24 based on the questionnaire, which is presented in Appendix 1.

Has HR digitalized all employees' files? (Figure 1)

The 29,58%, 21 organizations replied positively, while the rest 70,42%, 50 organizations replied negatively.

Is there a disaster recovery plan in case of total or partial collapsing of the system? (Figure 2)

A percentage of 91,55% of the organizations replied negatively that they do not have such a system. The mean is 0,8 and the standard deviation is 0,28 confirming that most organizations replied negatively.

The same results apply for question no. 15.

Does the system produce a report with all changes that took place within the system? (Figure 3)

44 out of 71 organizations, specifically 62% replied positively while 27 out of 71, 38%, negatively. This can be seen at the histogram where the mean is 0,62 showing that most replies reach the value 1 (“YES”). In this case the standard deviation is 0,489 meaning that below the 50% of replies are negative, reaching 0 (“NO”).

Figure 1: Has HR digitalized all employees' files?

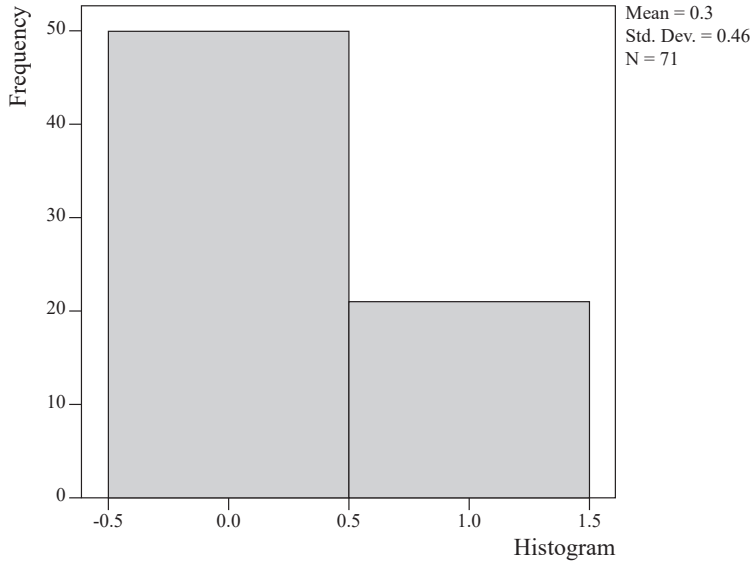


Figure 2: Is there a disaster recovery plan in case of total or partial collapsing of the system?

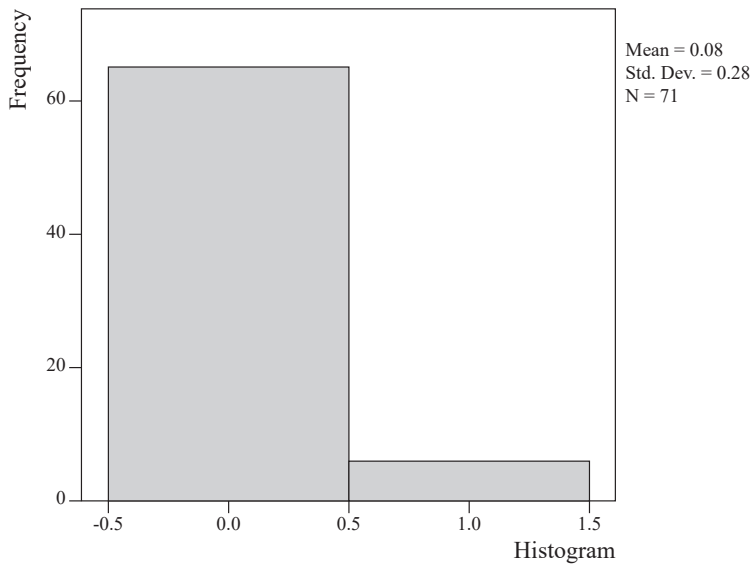


Figure 3: Does the system produce a report with all changes that took place within the system?

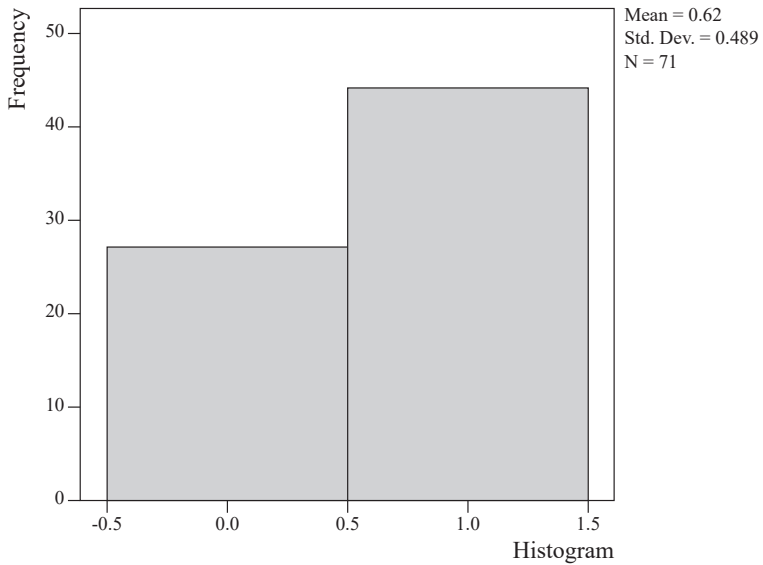


Figure 4: Has the BoD approved a maximum amount as loans to the employees?

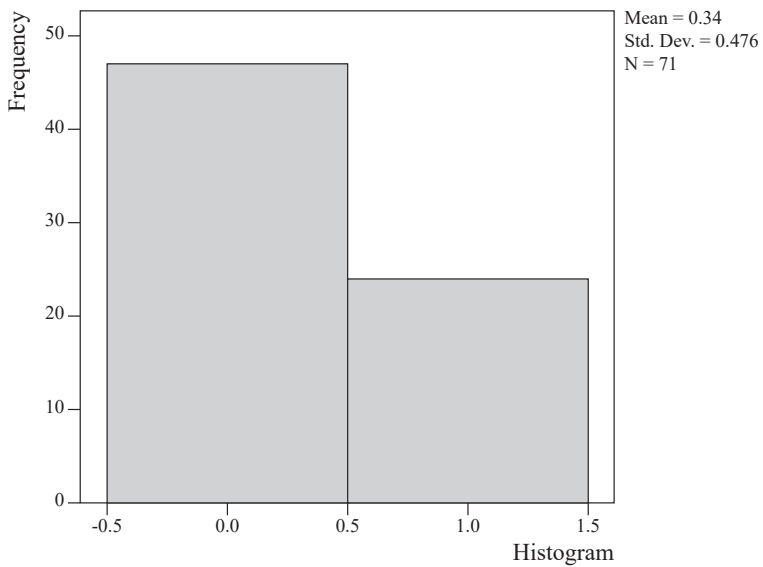


Figure 5: Is there a program in place for a second private pension?

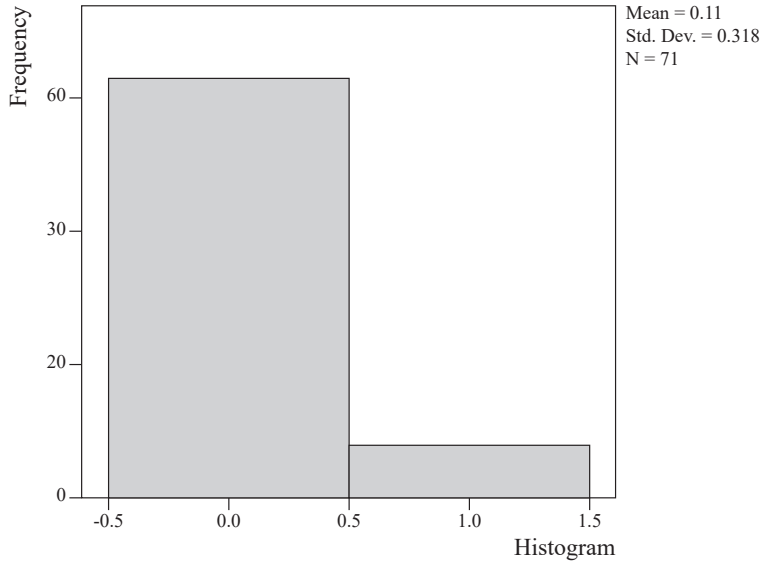


Figure 6: Is the evaluation of new customers conducted electronically through system?

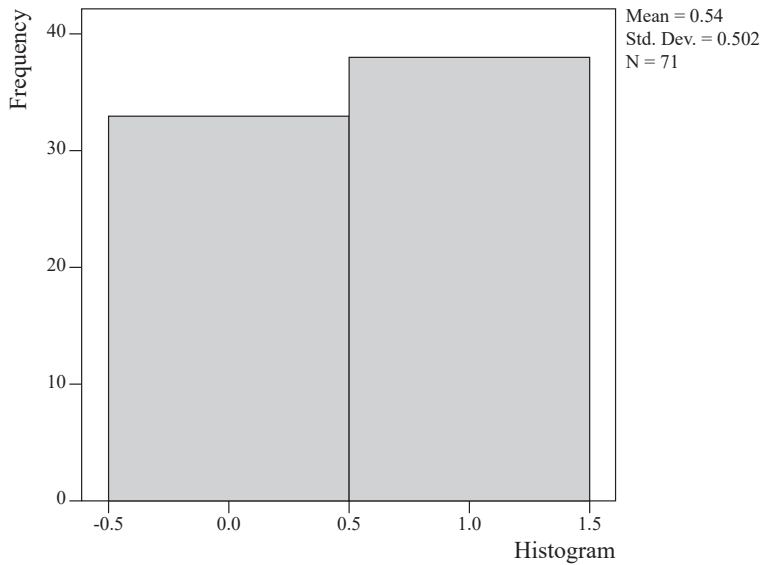


Figure 7: Are electronic files with all evaluations and credit worthiness of customers, maintained electronically?

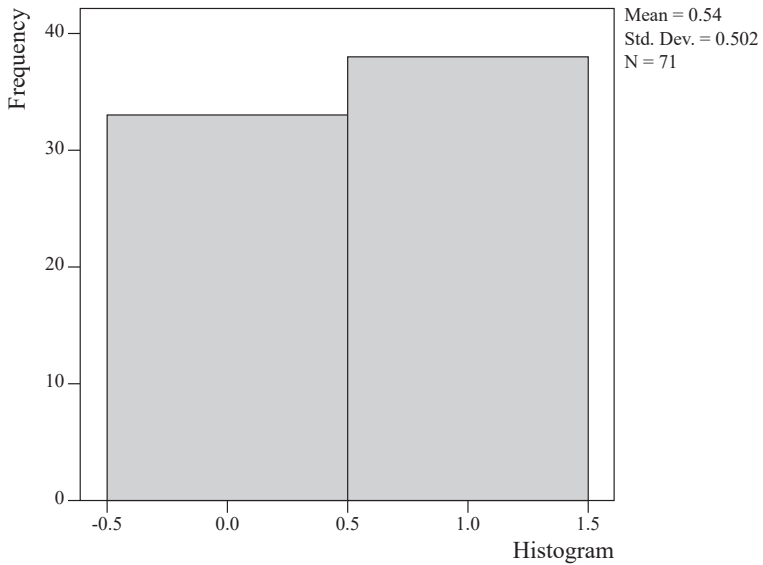


Figure 8: Is there a credit control system?

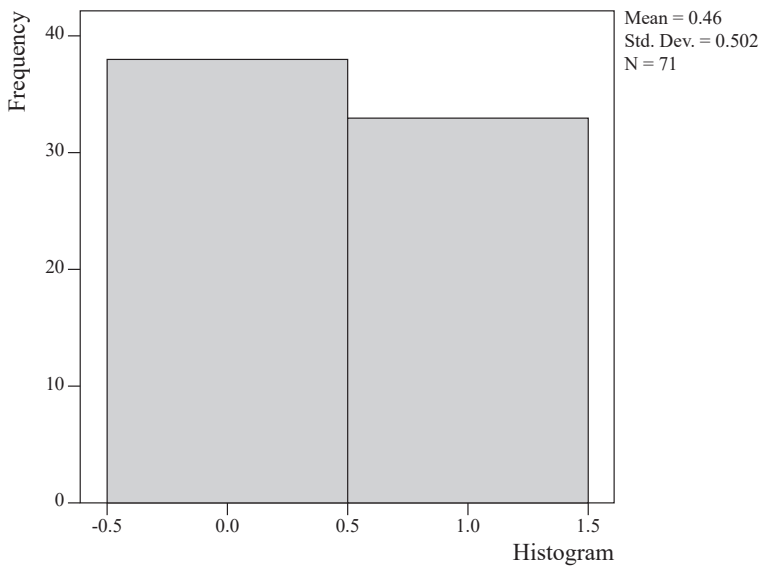


Figure 9: Is the suppliers' credit worthiness and transactional behavior evaluated with electronic means?

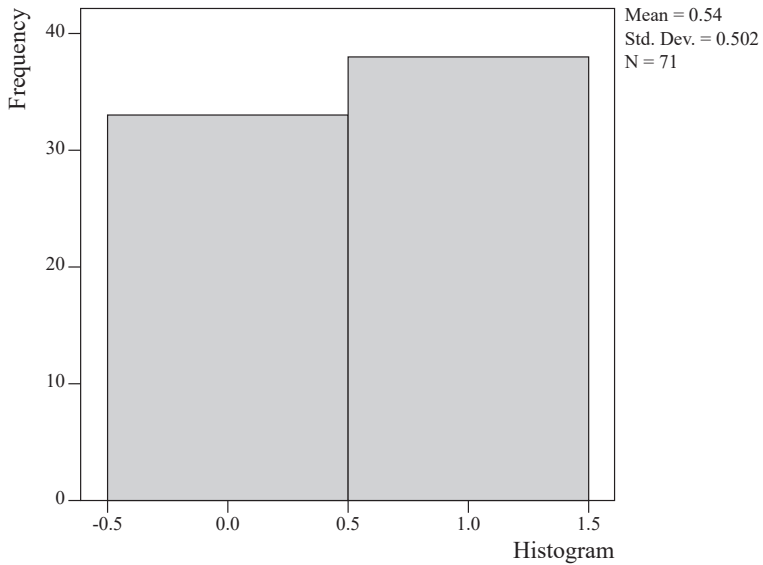
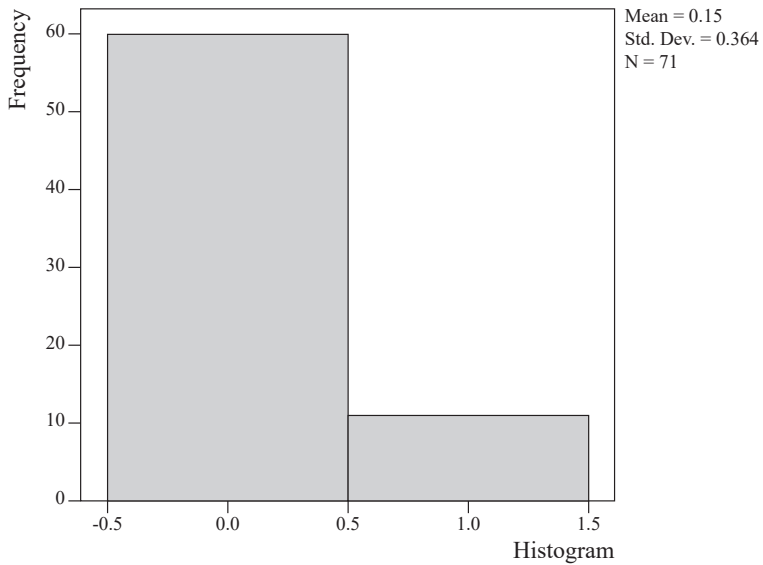


Figure 10: Is preventive/pro-active maintenance of all fixed assets and equipment, performed?



Has the BoD approved a maximum amount as loans to the employees? (Figure 4)

24 out of 71 organizations, 33,80%, replied positively, while 47 out of 71 organizations, 66,20%, replied negatively. The mean is 0,34, meaning that most organizations' replies tend to 0 ("NO"). In this case, the standard deviation is 0,476, meaning that above 50% of replies tend to 0 ("NO").

Is there a program in place for a second private pension? (Figure 5)

In 8 organizations (11,27%), the reply was negative. At the rest of them, 88,73%, the replies were positive.

Is the evaluation of new customers conducted electronically through system? (Figure 6)

Are electronic files with all evaluations and credit worthiness of customers, maintained electronically? (Figure 7)

Is there a credit control system? (Figure 8)

In all the above questions, the replies are the same with the mean at 0,54, meaning that most replies are positive close to 1. The standard deviation is 0,502, meaning that replies that are closer to 1 ("YES") are above 50%.

Is the suppliers' credit worthiness and transactional behavior evaluated with electronic means? (Figure 9)

The mean is 0,54, meaning that most replies are positive close to 1. The standard deviation is 0,46, showing that most replies that are closer to 1 ("YES") are more than 50%.

Is preventive/pro-active maintenance of all fixed assets and equipment, performed? (Figure 10)

11 out of 71 organizations, 15,49% replied positively and 84,51%, 60 organizations, replied negatively. The mean is 0,15 closer to 0 ("NO"). The standard deviation is 0,364, meaning that above 50% of the replies are negative closer to 0 ("NO").

Have the critical operations been identified and consequently the respective areas of continuity? (Figure 11)

Are penetration/hacking tests conducted on a yearly basis? (Figure 12)

Figure 11: Have the critical operations been identified and consequently the respective areas of continuity?

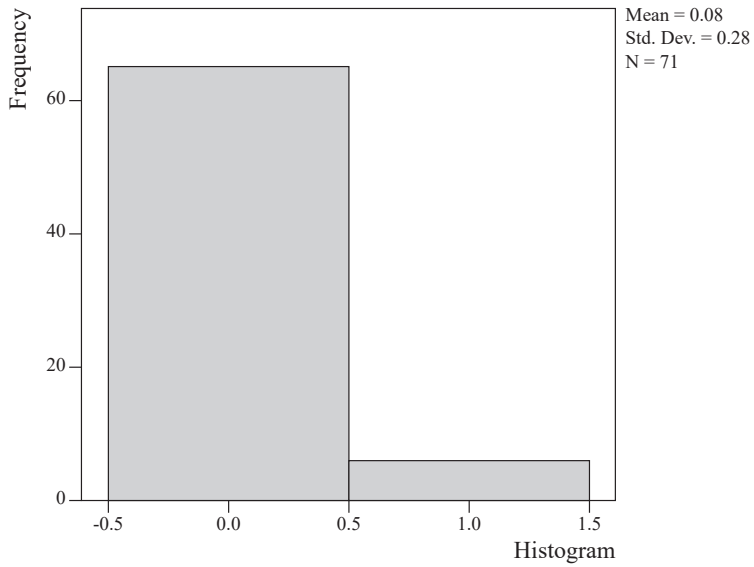


Figure 12: Are penetration/hacking tests conducted on a yearly basis?

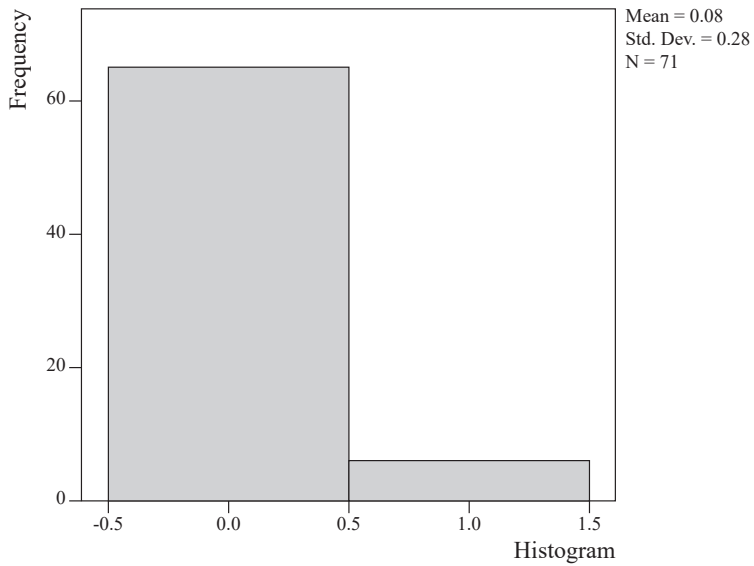
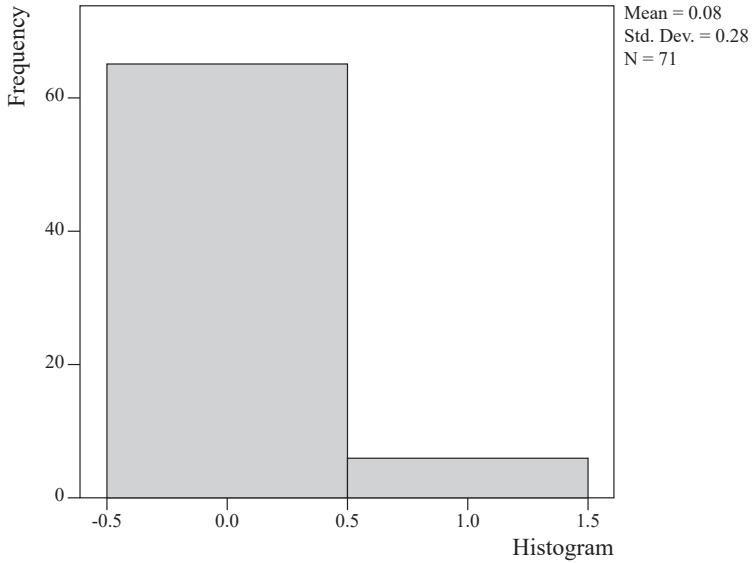


Figure 13: Is the organization certified by ISO 27001?

Is the organization certified by ISO 27001? (Figure 13)

91,55% of the organizations reply negative answers with the mean being at 0,8 and the standard deviation at 0,28 confirming the above negative answers.

Conclusions

The results of the survey conclude that most, if not all, organizations consider the operation of internal control systems, regardless of their capitalization as crucial, since the 71 organizations that responded to the questionnaire belong to different capitalization groups.

It is found that from the responses received, all organizations have invested in the systems and controls that they offer. It is also a good point that all organizations use systems for sales or evaluations, and even they enter into systems their agreements, which leaves no space for error thus minimizing the risk of errors either if it is intentional or unintentional. It makes perfect sense that where there is use of a system such as supplies, for example, it will apply to both sales and warehouses, since at management and corporate level it is not good practice to use controls in one sector and not in another.

Interesting are the conclusions related to issues of alternative operations plan, business continuity, critical infrastructures and applications, penetration tests and information security in general, where the positive responses as the existence of controls concern 8.4% of organizations. The low rate means that financial institutions due to heavy infrastructure and systems have progressed to higher levels of security of their information systems and the same applies to organizations that are considered to be large (in capitalization). It should be emphasized that by December 2020, cybersecurity legislation will come into force with the corresponding criteria – specific organizations being ready/organized to comply with it. Specifically, Law 4577/2018 requires organizations that are critical for the country, such as financial institutions, telecommunications, civil aviation, to have a business continuity plan by the end of December 2020, including completed impact analyses, set up relevant procedures, and try to bring their significant activities and systems back to pre-crisis levels. Based on the above, the percentage of 8.4% is explained, with organizations being in the process of preparing for compliance with the legislation. Another research for this issue, would be interesting to be conducted in one year time.

A common conclusion in the research is the advance culture of corporate governance to apply in all organizations regardless their capitalization.

Appendix 1: Questionnaire

S/N	QUESTION	ANSWER	
		Yes	No
Human resources			
1	Has the company invested in a payroll system i.e. SAP ?	71	0
2	Has HR digitalized all employees' files?	21	50
3	Is personal data protected in terms of payroll, social contributions and public insurance?	71	0
4	Are clock cards used or time sheets?	71	0
5	Is there a disaster recovery program in case of total or partial collapsing of the system?	6	65
6	Does the system produce a report with all changes within the system?	44	27
7	Is a personnel count taking place from someone independent from HR, with regards to gaining assurance that all employees are?	0	71
8	Has the BoD approved a maximum amount for employees' loans?	24	47
9	Is there a program in place for a second private pension?	8	71
Sales & accounts receivables			
10	Is the evaluation of new customers conducted electronically through system?	38	33
11	Are electronic files with all evaluations and credit worthiness of customers, maintained electronically?	38	33
12	Is there a credit control system?	38	33
13	Is there an approved contract for every case of sale?	71	0
14	Is the sales system electronic?	71	0
15	Is there a disaster recovery program in case of total or partial collapsing of the system?	6	65
16	Are provisions calculated and accounted at their real estimates?	71	0

Stock management			
17	Is there an MRP system for stock management?	71	0
Purchases & accounts payables			
18	Is there an electronic purchasing system in place?	71	0
19	Is the suppliers' credit worthiness and transactional behavior evaluated with electronic means?	38	33
20	Is the purchasing system connected with the company's budget?	0	71
21	Are all contracts registered within the system, so that all management is electronic?	71	0
Fixed assets management			
22	Is there a preventive/pro-active maintenance of all equipment and fixed assets?	11	60
IT security			
23	Have the critical operations been identified and consequently the respective areas of continuity?	6	65
24	Are IT security software and programs used?	71	0
25	Are penetration/hacking tests conducted on a yearly basis?	6	65
26	Is the company certified by ISO 27001?	6	65

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BULGARIA, ESTONIA, LITHUANIA AND THE EUROPEAN COMMON CURRENCY

N. STOUPOS*

Abstract

The enlargement of the Euro Area has been decelerated due to the sovereign-debt crisis in the European Union. It is true that the European economic integration has paused and plenty of EU member-states are very sceptical participating in the European Monetary Union. The aim of this research article is to re-examine the participation of Estonia and Lithuania in the Eurozone and explore a potential enlargement of the union to Bulgaria. We used the daily real exchange rates of Estonian kroon, Lithuanian litas and Bulgarian lev by combining the Error Correction Model with the Threshold GARCH. Our results express that the adoption of the euro was completely in favour for Estonia and Lithuania since their currencies followed the fluctuation of the euro. On the other hand, we arise plenty of doubts regarding to a potential circulation of the euro in Bulgaria, since the country is not ready yet to participate in the EMU, from a financial viewpoint.

JEL Classification: C13, F3, F31, G15, G17, G32

Keywords: exchange rate risk analysis, ECM, TGARCH, linkages, Eurozone enlargement, Slavic economies, EU integration, spillover effects

1. Introduction

The Post-Communist of the EU entered in the European Union during the 5th Enlargement of the EU in 2004. Actually, eight Central and Eastern European countries (the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, and Slovenia), plus two Mediterranean countries (Malta and Cyprus) joined on 1 May 2004. This was the largest single enlargement in terms of people, and number of countries, though not in terms of GDP. The less developed nature of these countries was of concern to some of the older member states. Some countries, such as the UK, immediately opened their job market to the accession states, whereas most others placed temporary restrictions on the rights of work of the citizens of these states to their countries. On 1st January 2007, the EU also welcomed two Balkan countries, Bulgaria and Romania, which were a part of the 5th EU Enlargement. However, these states

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faced a series of restrictions as to their citizens not fully enjoying working rights on the territory of some of the older EU members.

The main purpose of this research is to examine if the EU membership influences positively Bulgaria, Estonia and Lithuania. Also, we would like to examine if the economy of these countries were more integrated to the European economy, due to their EU participation. Finally, we shall explore if Lithuania and Estonia entered hopefully to the Euro Area. At first glance, we could assume that these countries have no common characteristics. However, there are two ordinary features; Post-Communist countries of the EU; and they have fixed nominal exchange rate against the euro.

As the Bulgarian lev was fixed to the Deutsche Mark at par, the lev's peg effectively switched to the euro, at the rate of 1.95583 leva = 1 euro, which is the Deutsche Mark's fixed exchange rate to euro. On the occasion of the signing of the EU accession treaty on 25 April 2005, the Bulgarian National Bank issued a commemorative coin with a face value of 1.95583 leva, giving it a nominal value of exactly 1 euro. Bulgaria is not still a member of the Euro Area.

Initially, the Estonian kroon was pegged to the Deutsche Mark at a rate of 8 krooni = 1 Deutsche Mark. After the introduction of the euro the fixed exchange rate of 1.95583 DEM to EUR led to an exchange rate of 15.64664 krooni to the euro. On 28 June 2004, as Estonia joined the ERM II-system, the central parity of the Estonian kroon was revalued (by less than 0.001%) to 15.6466 krooni per euro. Estonia became a member of the Euro Area on 1st January 2011.

From 1 April 1994 to 1 February 2002, the litas was pegged to the U.S. dollar at the rate of 4 to 1 (the litas was stable around 3.9 for half a year before the rate was fixed). The main reasons for this fixation was little trust in the emerging monetary system, fear of high fluctuations in currency exchange rates, desire to attract foreign investors, and International Monetary Fund recommendations. The peg was renewable every year. For a while a peg was considered to a basket of currencies: The European Currency Unit. On 2 February 2002 the litas was pegged to the euro at a rate of 3.4528 to 1 (1 LTL = 0.28962 EUR); this rate was not expected to change until the litas was completely replaced by the euro on 1 January 2015.

During the completion of this research, we used the real exchange rates of Bulgaria, Estonia and Lithuania against the US dollar in order to answer our aims. Actually, we would like to examine if there are possible linkages between the real exchange rates of the Post-communist countries and the real exchange rate of the euro. We utilized a combination of the Error Correction Model (ECM) with the Threshold GARCH. Therefore, we created an innovative

model, so called, ECM-TGARCH. The main characteristic of this model is that it reveals possible short- and long-term linkages among a group of variables and if their system is in equilibrium. Additionally, we could examine the volatility responses and the leverage effect. Basically, we inspired the research of Stoupos and Kiohos (2017), who combined the ECM with EGARCH model.

Kalcheva (2003) investigates to what extent the economies of Estonia and Bulgaria are affected by a strong appreciation (depreciation) of the euro as their anchor currency. She argues that currency risk cannot be neglected in transition countries pegged to euro. Cuaresma *et al.* (2010) used the exchange rates of Bulgaria, Croatia and Romania and they discovered that strong and persistent exchange rate misalignment may be a hindering factor in the period prior and during ERM II participation and bears the risk of speculative attacks. Errit and Uuskula (2014) studies the effect of a monetary policy shock in the euro area on the main Estonian economic and financial variables between 2000 and 2012. They found out that a monetary policy shock also has strong and sluggish effects on the housing loan and consumer credit interest rates. The estimated reaction of Estonian GDP and the GDP deflator-based inflation rate is about four times stronger than the reaction of euro area-wide aggregates. Feldmann (2013) explores the origins of the currency board and shows how institutions, interests, and ideas have contributed to Estonian exceptionalism in macroeconomic policy and to euro adoption. The author demonstrates that the Estonian experience can shed light on the political prerequisites of internal devaluations, which may be of great relevance both to current and future Central and Eastern European euro area members. In addition, Jurgutyte (2014) supports that the adoption of the Euro for Lithuania should therefore be of less concern than previously anticipated based on experiences from the years before the Lithuanian currency was fixed to the US dollar. Rubio and Comunale (2017) presented a two-country monetary union new Keynesian general equilibrium model with housing and collateral constraints calibrated for Lithuania and the rest of the euro area. In terms of macroprudential policies, their results show that the optimal policy in Lithuania with respect to the euro area may have a different intensity and that it delivers substantial benefits in terms of financial stability. Also, Stakenas and Stasiukynaite (2017) examined the effect of a (standard) monetary policy shock in the euro area on the Lithuanian economy. Their results suggest a stronger impact of monetary policy than that estimated using the Lithuanian model and a quite considerable degree of variation over time in the strength of monetary policy transmission. Finally, Rubio and Comunale (2018) studied the implications of macroprudential policies for macroeconomic and financial stability in Lithuania and the rest of the euro

area. The results show that both rules are effective in making the financial system more stable in both countries, and especially in Lithuania and an extended Taylor rule is effective in reducing the volatility of credit but comes with a cost in terms of higher inflation volatility.

In summary, our empirical results indicate that there is a negative short- and long-term relationship between the Bulgarian Lev and the euro. Actually, the EU membership of Bulgaria did not help the integration of the country with the Euro Area. This means that Bulgaria is not ready to join the EMU, from a financial viewpoint. On the other hand, our empirical evidence highly supports that there is neutral short-term effect of the euro on the ex-currencies of Estonia and Lithuania. The long-term impact is positive with an upturn tendency. This means that these countries were ready to be members of the Euro Area, since their economy was bound with the European economy.

2. Dataset Analysis

The present research uses the real exchange rates of two member-states currencies (Estonia and Lithuania) in the Eurozone and one member-state currency (Bulgaria) of the EU. Estonia and Lithuania joined the monetary union at different dates, but they have been participating in the EU since 01 May 2004. On the other hand, Bulgaria is not a member of the Euro Area, but it has been participating in the EU since 01 January 2007. These three countries seem to have no logical relationship. However, they show two features; Post-Communist countries of the EU and pegged exchange rate against the euro.

Particularly, we explore any possible relationships among the Euro, the Bulgarian Lev, the Lithuanian Litas and the Estonian Kroon. The examination period is different among the currencies (Table 1).

Table 1: Data Presentation (Source: European Central Bank)

Countries	Period	Acronym	Measure
Euro Area	01/01/99 – 31/12/17	EUR	€/€
Bulgaria	01/01/99 – 31/12/17	BGN	лв/\$
Estonia	01/01/99 - 31/12/10	EEK	Kr/\$
Lithuania	01/01/99 – 31/12/14	LTL	Lt/\$

This happens because Estonia and Lithuania had adopted the euro, as its own currency, at different dates when they fulfilled the euro convergence criteria. Also, Bulgaria is still not a member of the Euro Area. Essentially, our dataset covers a period of 19 years in daily basis. The data was gathered from the official database of the European Central Bank (ECB). The real exchange rate of each currency is calculated per US dollar (USD).

The data has been made by the authors by using the theory of real exchange rates. In particular, we used the following formula:

$$e_R = e * \frac{P_f}{P_h} \quad (46)$$

Where, e_R is the real exchange rate of a country, e is the nominal exchange rate, the P_f is the general price level of goods and services of host country (Eurozone/Bulgaria/Estonia/Lithuania) and P_h is the general price level of good and service of home country (United States).

The real exchange rate is the nominal exchange rate adjusted for the changes in purchasing power of the currencies concerned from base period 0. It is important that P_f and P_h are the percentage changes in the Consumer Price Index (CPI) from the base period. Essentially, P_f and P_h are the inflation rates of the respective nations from base period 0.

We decided to use the US dollar because it is historically the most tradable currency across the globe. The international markets still use more frequent the US dollar as their currency in order to receive and give payments. The dataset was divided into two periods in order to investigate the special features of each era. The cut point is the date of 01 May 2004 for Lithuania and Estonia when these countries entered in the EU. Additionally, the cut point is the date 01 January 2007 for Bulgaria when the countries became a member of the EU. Also, we explore the total period for each country in order to discover the overall trend.

The two periods are the following:

a) 01 January 1999 to 30 April 2004 or 31 December 2006

During this period the examined countries were not member-states of the European Union. Therefore, they had limited trade and economic relationships with the 15 countries of the EU. This happens because Estonia, Lithuania and Bulgaria are Post-Communist countries, historically they had strong political, economic and trade relationships with Russia. Finally, these countries had limited access to European Single Market as not participating in the union. Thus, no free trade flows were able to take place (quotas, taxes and custom fees).

b) 01 May 2004 or 01 January 2007 to 31 December 2010 or 2014 or 2017

The present period is related with the adoption of the euro for Lithuania

and Estonia. However, each examined country had adopted the euro at different dates. The aim of this era is to investigate the impact of the EU membership on the economy of each country. In addition, Bulgaria is not a member of the Euro Area during this period. We used the most recent (2017) available data for the real exchange rate of Bulgaria. The performance of each economy is measured by using the impact of the real exchange rate of the euro on the (old) currency of each country.

3. Methodology

3.1 Johansen's Co-integration test with structural breaks

The Johansen's Co-integration Test with structural breaks is based on a model which allows for any pre-specified number of sample periods (q) of length $T_j - T_{j-1}$ for $j = 1, \dots, q$ and $0 = T_0 < T_1 < T_2 < \dots < T_q = T$. It follows that the last observation in the j th sample is T_j while T_{j+1} is the first observation in sample period number ($j+1$). A vector autoregressive model of order k is considered. In analogy with the usual models without structural breaks, the model is formulated conditionally on the first k observations of each sub-sample, $XT_{j-1} + 1, \dots, XT_{j-1} + k$, and it is given by the equations

$$\Delta X_t = (\Pi, \Pi_j) \begin{pmatrix} X_{t-1} \\ t \end{pmatrix} + \mu_j + \sum_{i=1}^{k-1} \Gamma_i \Delta X_{t-1} + \varepsilon_t \quad (18)$$

for $j = 1, \dots, q$ and $T_{j-1} + k < t \leq T_j$. The innovations are assumed to be independently, identically normally distributed with mean zero and variance Ω . The parameters vary freely, so Π, Γ_i, Ω which relate to the stochastic component of the time series are the same in all sub-samples and of dimension ($p \times p$) with Ω being symmetric and positive definite, while the p -vectors Π_j, μ_j relate to the deterministic component and could be different in different sample periods (Johansen *et al.* 2000).

3.2 The Error Correction Model (ECM)

The general mathematic formula of the Error Correction Model, according to Engle and Granger (1987) is the following one:

$$\Delta Y_t = \omega + \varphi EC_{t-1} + \sum_{i=1}^p \psi_i \Delta Y_{t-i} + \sum_{j=0}^q \theta_j \Delta X_{t-j} + \varepsilon_t \quad (19)$$

where, φ presents the adjustment speed back to equilibrium, ψ expresses the short-term dynamics coefficient and θ displays the long-term dynamics coefficient (Brooks, 2014).

According to Engle and Granger (1987), the value of EC term should be strictly negative and statistically significant in order to have a successful long-term equilibrium between the two variables. Otherwise, a disequilibrium takes places.

An alternative expression of the ECM model is the following one, according to Brooks (2014):

$$\Delta Y_t = a + \sum \beta_1 \Delta X_{it} + \beta_2 (Y_{t-1} - \sum \beta_3 (X_{t-1})) + u_t \quad (20)$$

where,

β_1 shows the short term dynamics

β_2 displays the adjustment speed back to equilibrium

β_3 expresses the long term equilibrium relationship

The use of Error Correction Model is most suitable when we wish to explore simultaneously a dynamic short-term or long-term linkage among a group of variables. On the contrary, we decided not use the Vector Error Correction Model (VECM) because this statistic procedure is used when there is not co-integration condition among the examined series. VECM is most suitable to explore short-term relationships only (Brooks, 2014).

3.3. The Threshold GARCH model (TGARCH)

The TGARCH (Zakoian, 1994) model is similar to GJR-GARCH model (Glosten, Jaganathan, and Runkle, 1993). In TGARCH model the good and the bad news have different impacts on the conditional variance. The mathematic formula of the conditional variance of a TGARCH model is the following:

$$\sigma_t^2 = \omega + \sum_{i=1}^q \alpha_i \varepsilon_{t-i}^2 + \gamma \varepsilon_{t-1}^2 d_{t-1} + \sum_{j=1}^p \beta_j \sigma_{t-j}^2 \quad (27)$$

where $dt=1$ if $\varepsilon_t < 0$ (bad news) and $dt = 0$ if $\varepsilon_t > 0$ (good news). Particularly, when $\varepsilon_t > 0$ then the good news has an impact of α parameter. Also, then $\varepsilon_t < 0$ then the bad news has an impact on $\alpha + \gamma$. If γ parameter is positive and statistically significant, then the leverage effect resides and the bad news raises volatility. Additionally, if the γ parameter is not zero, then the news effect is asymmetric (So *et al.* 2002).

4. Empirical Evidence

4.1 Our Estimation Model

The use of Error Correction Model is most suitable when we wish to explore simultaneously a dynamic short-term or long-term linkage among a group of variables. On the contrary, we decided not use the Vector Error Correction Model (VECM) because this statistic procedure is used when there is not co-integration condition among the examined series. VECM is most suitable to explore short-term relationships only (Brooks, 2014). In specific, we used the following multivariate model in our research in order to explore short-term and long-term dynamics among the examined variables.

$$\Delta(\ln(CUR_t)) = \omega + \varphi EC_{t-1} + \psi(\Delta \ln(CUR_{t-1})) + \theta(\Delta(\ln(EUR_{t-1}))) + \varepsilon_t \quad (47)$$

where, the dependent variable $\ln CUR_t$ represents the natural logarithmic value of the real exchange rate of the Bulgarian Lev (BGN), or Estonian Kroon (EEK), or Lithuanian Litas (LTL), against the US dollar (USD). The independent variable ($\ln EUR_t$) is the natural logarithmic value of the real exchange rate of euro (EUR) against the US dollar (USD).

4.2 Preliminary Tests

We used the logarithmic expression because its small changes in the log of a variable are directly interpretable as percentage changes, to a very close approximation, in econometrics. This means that the prediction accuracy of the impulse responses would be higher and more qualitative.

The examination of a unit root is particularly important in time series analysis. This test is executed both in levels and 1st difference. The empirical results (table 2) reveal that each series is stationary in 1st difference.

Therefore, we are able to use Johansen Co-integration test in order to

examine if the series are co-integrated in the long run. We used a trend and an intercept in the equation of the Augmented Dickey-Fuller test.

Table 2: Estimation Results of Augmented Dickey Fuller Test (ADF)

Series	t-statistic (levels)	t-statistic (1 st difference)
Euro	-1.477	-70.599*
Bulgarian Lev	-1.486	-70.654*
Estonian Kroon	-0.959	-55.784*
Lithuanian Litas	-1.721	-65.265*

Note: (*) denotes statistically significant at 0.01 level

Tables 3, 4 and 5 show the empirical findings of the co-integration analysis. The co-integration test was executed by using the linear deterministic trend. We selected the deterministic trend assumption of test that there is trend and intercept in co-integrating equations (CE) and no intercept in VAR with one lag only. VAR selects a system of equations with 1 lag for each variable. The empirical findings of tables 60, 61 and 62 highly supports that there is at most one co-integrated vector at a level of significance equal to 0.01 ($\alpha=0.01$). Therefore, we cannot reject the null hypothesis of co-integration test.

Table 3: Johansen's Co-integration Structural Breaks Test in ln series BGN and EUR

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	Critical Value	Probability
None	0.005602	29.871	15.494	0.0002*
At most 1	0.000451	2.221	3.842	0.1362

Note: (*) denotes statistically significant at 0.01 level

In specific the results of Johansen's Co-integration test show that there is a long-term tendency between the euro and the Bulgarian Lev.

Table 4: Johansen's Co-integration Structural Breaks Test in Ln series LTL and EUR

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	Critical Value	Probability
None	0.007613	37.191	15.495*	0.0000*
At most 1	0.001310	5.446	3.842	0.0196

Note: (*) denotes statistically significant at 0.01 level

Moreover, we found out that a similar behavior exists between the Lithuanian Litas and the euro. These two currencies are co-integrated during the examined period.

Table 5: Johansen's Co-integration Structural Breaks Test in Ln series EEK and EUR

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	Critical Value	Probability
None	0.007124	27.538	15.495	0.0098*
At most 1	0.000286	0.8924	3.841	0.3448

Note: (*) denotes statistically significant at 0.01 level

A co-integration takes place between the euro and the Estonian Kroon during the total period.

4.3 Advanced Tests

Table 6 presents the estimation results of Error Correction Model for the Bulgarian Lev. The dependent variable is the real exchange rate of the Bulgarian Lev (BGN) against the US dollar (USD) and the control variable is the real exchange rate of the Euro (EUR) against the US dollar (USD).

One interesting feature of the results reposted in Table 6 is the speed with which the exchange rate adjusts to its equilibrium value (ϕ). The empirical evidence of ECM supports that a disequilibrium exists between the real exchange

Table 6: Estimation Results of Error Correction Model - BGNvsEUR

Parameter	Total period	1 st period	2 nd period
ω	-0.003 (-0.046)	0.005 (13.27)*	0.001 (0.78)
ψ	-0.495 (-7.34)*	-0.492 (-4.53)*	-0.477 (-2.05)*
ϕ	0.095 (219.08)*	0.094 (168.40)*	-0.179 (-1.56)
θ	-0.492 (-7.28)*	-0.493 (-4.58)*	-0.479 (-2.06)*

Note: (*) denotes statistically significant at 0.05 level

rate of BGN/USD and the real exchange rate of EUR/USD before the participation of Bulgaria in the EU. The adjustment speed back to equilibrium is 9,4% (statistically significant) and then the 9,4% of a deviation from the error correction mechanism is corrected within 1 day before EU membership. Additionally, it is obvious that the euro influences negatively the Bulgarian lev in the short-run. This means that possible reductions of the euro influenced positively (overvaluation) the real exchange rate between the Bulgarian lev and the US dollar. Also, the long-term dynamics reveals a negative tendency between the Bulgarian lev and the euro before EU membership. Therefore, opposite sign bilateral effects took place between the euro and the Bulgarian lev in the long run. Furthermore, we observe that there are negative short-term linkages between the euro and Bulgarian lev after EU participation.

This means that possible fluctuations of the euro have negative impact on the real exchange rate between the Bulgarian lev and the US dollar. Also, a negative adjustment speed back to equilibrium takes place after EU membership (disequilibrium). Its value is equal to -0.179 or -17,9% which indicates that -17,9% of a deviation from the error correction mechanism is corrected within 1 day.

The most important finding is that the long-term dynamics after EU participation between the variables are strictly negative. This indicates that possible increases of the euro have negative impact on the real exchange rate between the BGN and the USD. Actually, whereas the euro increases, the real exchange

Table 7: Estimation Results of Error Correction Model - EEKvsEUR

Parameter	Total period	1 st period	2 nd period
ω	0.003 (0.81)	0.004 (12.98)	-0.004 (-6.57)*
ψ	0.231 (-0.95)	-0.027 (-2.68)*	-0.037 (-2.18)*
ϕ	-0.023 (0.94)	0.001 (5.98)*	0.001 (3.09)*
θ	0.056 (2.10)*	0.029 (2.72)*	0.037 (2.14)*

Note: (*) denotes statistically significant at 0.05 level

rate of the BGN/USD decreases. This may occur because the Central Bank of Bulgaria followed different monetary policy instead of the European Central Bank from 1999 to 2017. Especially, the interest rate of Bulgarian Lev was significantly higher than the interest rate of euro until 2009. Also, the inflation of Bulgaria was extremely high (10%-15%) from 1999 to 2009. On the other hand, the Euro Area enjoyed a stable inflation which was close to 2-3%. The Bulgarian inflation did not follow the inflation behavior of the Euro Area from 2010 to 2017. Actually, the Bulgarian inflation presents high volatility in a range from -1% to 5%.

Table 7 displays the estimation results of Error Correction Model for the Estonian Kroon. The dependent variable is the real exchange rate of the Estonian Kroon (EEK) against the US dollar (USD) and the control variable is the real exchange rate of the Euro (EUR) against the US dollar (USD).

We observe that the coefficients short- (ψ), long-term (θ) and the error correction term (ϕ) is statistically significant for each period, except the total period where the coefficients ψ and θ are not significant. Particularly, the real exchange rate of the euro has no short-term effect on the real exchange rate of the Estonian Kroon for the entire period. However, the impact is negative during the first period where Estonia was not a member of the EU. Also, the short-term impact of the euro on the Estonian Kroon is negative when Estonia joined the EU in May 2004. We observe that the long-term effect of the euro on the Estonian Kroon is positive when Estonia became a member of the EU.

Table 8: Estimation Results of Error Correction Model - LTLvsEUR

Parameter	Total period	1 st period	2 nd period
ω	-0.008 (-0.97)	-0.003 (-2.27)*	0.001 (1.19)
ψ	-0.005 (-0.19)	-0.059 (-1.55)	0.065 (2.49)*
ϕ	0.002 (2.91)*	0.002 (2.51)*	0.002 (2.06)*
θ	0.011 (2.19)*	0.009 (2.93)*	0.065 (2.49)*

Note: (*) denotes statistically significant at 0.05 level

This means that the euro influences positively the past currency of Estonia. The impact became greater after the EU membership of the country.

Also, the coefficient of error correction term (ECT) expresses that an upwards adjustment during the 1st and 2nd period is expected. The adjustment speed is extremely low (close to zero). The adjustment speed back to equilibrium is approximately zero and then the 0% of a deviation from the error correction mechanism is corrected within 1 day between Estonian Kroon and the euro. This may occur because the Estonian Central Bank followed similar monetary policy as the European Central Bank in order to become a member of the Euro Area. Also, the Estonian Kroon entered in the ERM II on 28th June 2004. The Lithuanian economy presents steady inflation rate from 2010 to 2017. The stabilization of the inflation rate was very important for the participation of the country in the European Monetary Union.

Table 8 shows the estimation results of Error Correction Model for the Lithuanian Litas. The dependent variable is the real exchange rate of the Lithuanian Litas (LTL) against the US dollar (USD) and the control variable is the real exchange rate of the Euro (EUR) against the US dollar (USD).

Specifically, the short-term effect of the euro is neutral (statistically insignificant) on the Lithuanian Litas during the 1st period. The impact changes to positive during the 2nd period. Actually, the magnitude of the euro on the past increases significantly during the second period when Lithuania became a member of the EU. Additionally, the long-term impact of the real exchange

rate of the euro is positive on the real exchange rate of the Lithuanian Litas. The effect remains positive within the two periods, but it is clear that the magnitude's effect increases during the 2nd period. Particularly, the entrance of Lithuania in the EU influenced positively the dynamic relationship between the euro and the Lithuanian Litas.

The adjustment speed back to equilibrium is approximately zero and then the 0% of a deviation from the error correction mechanism is corrected within 1 day between the ex-Lithuanian currency and the euro. This may occur because the Lithuanian Central Bank followed similar monetary policy as the European Central Bank in order to become a member of the Euro Area in 2015. Also, the Estonian Kroon entered in the ERM II on 28th June 2004. The Estonian economy presents stable inflation rate from 2004 to 2017. The stabilization of the inflation rate was very important for the participation of the country in the Eurozone.

Moreover, we decided to combine two econometric procedures in order to create an ECM-TGARCH model. Particularly, the Error Correction Model (ECM) was used as a mean equation and the typical mathematical expression of TGARCH model as the conditional variance equation. We used the errors of the ECM in order to run a GJR-GARCH (1,1) with 1 threshold. TGARCH is the most suitable in order to explore leverage effect as well as the impact of the bad and the good news on the volatility.

The properties of the TGARCH model are very similar to the EGARCH model which both are able to capture the asymmetric effect of positive and negative shocks. The TGARCH and the EGARCH may both be considered for the same series and it is hard to distinguish a criterion for choosing either one of the two models (Xekalaki and Degiannakis, 2010).

Table 9 shows the empirical evidences of TGARCH methodology for Bulgaria. We used in mean equation the real exchange rate of the Bulgarian Lev as the dependent variable and the real exchange rate of the euro as the independent variable. In addition, we utilized the errors of the ECM in order to execute a TGARCH(1,1) with 1 threshold.

The sum of ARCH and GARCH coefficients is very close to unity, expressing that Bulgarian Lev's volatility shocks are quite persistent.

Also, the coefficient of the lagged squared is positive and statistically significant. Thus, we are able to support that strong GARCH effect is apparent. The coefficient of lagged conditional variance is statistically significant, but its price is lower than the one. This means that the effect of the "old" news on volatility is significant. The size of the GARCH coefficient is medium. This indicates that there is a medium memory in the variance within the two

Table 9: Estimation Results of Threshold GARCH - BGNvsEUR

Parameter	Total period	1 st period	2 nd period
Constant	0.0033 (12.64)*	-0.0005 (-7.73)*	0.0006 (15.40)*
ARCH	0.172 (15.17)*	0.225 (5.99)*	0.302 (2.15)*
γ	0.085 (4.17)*	0.067 (-3.46)*	-0.261 (-1.87)
GARCH	0.794 (26.79)*	0.569 (22.17)*	0.638 (-2.67)*

Note: (*) denotes statistically significant at 0.05 level

periods. The present effect seems to have an upturn tendency within the two periods. The γ parameter is positive during the 1st period indicating that the news' impact is asymmetric and the bad news of the euro has larger effect on the volatility of the Bulgarian Lev.

The present effect seems to have an upturn tendency within the two periods. The γ parameter is positive during the 1st period indicating that the news' impact is asymmetric and the bad news of the euro has larger effect on the volatility of the Bulgarian Lev. Finally, the γ parameter is neutral (statistical insignificant) during the 2nd period indicating that the news' impact is symmetric and the bad and the good news of the euro has similar effect on the volatility of the Bulgarian Lev.

Table 10 presents the empirical results of a TGARCH model by using in mean equation the real exchange rate of the Estonian Kroon as the dependent variable and the real exchange rate of the euro as the control variable.

The sum of ARCH and GARCH coefficients is approximately close to unity, expressing that the Estonian Kroon's volatility shocks are medium persistent. Also, the coefficient of the lagged squared is positive and statistically significant. Thus, we are able to support that strong GARCH effect is apparent. The coefficient of lagged conditional variance is statistically significant, but its value is lower than the unity. This supports that the impact of the "old" news on volatility is significant. Also, the magnitude of the GARCH coefficient is medium. This means that there is a medium memory in the variance. The

Table 10: Estimation Results of Threshold GARCH - EEKvsEUR

Parameter	Total period	1 st period	2 nd period
Constant	0.0038 (0.45)	0.0004 (0.73)	0.0004 (0.66)
ARCH	0.151 (3.64)*	0.158 (2.36)*	0.167 (2.78)*
γ	0.052 (0.32)	0.048 (0.20)	0.053 (0.24)
GARCH	0.605 (22.04)*	0.681 (14.62)*	0.703 (16.42)*

Note: (*) denotes statistically significant at 0.05 level

present effect seems to have an upturn tendency within the two periods. The γ parameter (leverage effect) is neutral (statistical insignificant) during the 1st and the 2nd period indicating that the news' impact is symmetric and the bad and the good news of the euro has similar effect on the volatility of the Estonian Kroon.

Table 11 presents the empirical findings of TGARCH methodology by using only one threshold in the equation. We used the errors of the Error Correction Model (mean equation) in order to execute a TGARCH(1,1) (conditional variance equation). The dependent variable in the ECM equation was the real exchange rate of the Lithuanian Litas and the control variable was the real exchange rate of the euro.

We observe that the sum of ARCH and GARCH coefficients is very close to unity, expressing that the Lithuanian Litas' volatility shocks are quite persistent. Furthermore, the magnitude of the GARCH coefficient is high and stable within the two periods. Therefore, we may support that a long memory in the variance exists during these periods. This effect seems to have an upturn trend within the two periods. The γ parameter, which represents the leverage effect on the conditional variance, is not statistically significant for the 1st period. This means that the bad or the good news of the euro has no impact on the volatility of the Lithuanian Litas. Finally, the γ parameter is positive during the 2nd period indicating that the news' impact is asymmetric and the bad news of the euro has a larger effect on the volatility of the Lithuanian Litas.

Table 11: Estimation Results of Threshold GARCH - LTLvsEUR

Parameter	Total period	1 st period	2 nd period
Constant	0.0018 (2.45)*	0.0019 (19.24)*	0.0014 (54.45)*
ARCH	0.131 (8.94)*	0.205 (7.51)*	0.185 (11.57)*
γ	0.473 (6.52)*	0.059 (1.27)	0.515 (27.06)*
GARCH	0.803 (12.79)*	0.713 (14.19)*	0.749 (55.38)*

Note: (*) denotes statistically significant at 0.05 level

4. Conclusions

The aim of the present research is to re-explore the Euro Area participation of Estonia and Lithuania. Also, we examine if Bulgaria could be a member of the European Monetary Union. Particularly, we wanted to discover if these new member-states of the EU favoured by the EU membership and if they are/were ready to enter in the Euro Area. We used the real exchange rates of two member-states of the Eurozone, Estonia and Lithuania, which have adopted the euro recently. Also, we used the real exchange rate of non-member of the Euro Area (Bulgaria) in order to approve that this country is not eligible yet to adopt the European common currency.

Our empirical findings are based on three pillars, volatility shocks persistence, leverage effects and short-term/long-term linkages. The results of the Error Correction Model support that there is a neutral short-term impact of the euro on the old currencies of Estonia and Lithuania. On the other hand, the short-term effect of the euro seems to be negative on the Bulgarian Lev, despite the EU membership.

Moreover, we observed a greater positive and long-term impact of the euro on the Estonian and Lithuanian currencies after the EU membership of these countries. On the contrary, we discovered that the join of Bulgaria in the EU had a negative and a long-term impact in the relationship between the euro and the Bulgarian currency. As a matter of fact, the EEK, the LTL and the EUR seem to be a same currency in response to US dollar.

Moreover, the ECM-TGARCH(1,1) results highly support that the volatility shocks are quite persistent for each country. The leverage effect is neutral for Lithuania and Estonia before their EU membership. Thus, the bad news of the euro had similar effect on the volatility of their old currency. Also, the leverage effect is positive for Bulgaria, indicating that good news of the euro has lower impact on the volatility of the Bulgarian Lev. In addition, we discovered that the leverage effect is positive only for Estonia and Lithuania after their join in the EU. On the other hand, it is clear that there is no leverage effect between the euro and the Bulgarian Lev during the second period.

In conclusion, our results express that the adoption of the euro was completely in favour for Estonia and Lithuania since their currencies followed the fluctuation of the euro. This is reasonable because Estonia and Lithuania followed similar monetary policy, as the European Central Bank and they made great efforts in order to harmonize and stabilize their inflation rate. Our results are against the empirical evidence of Kalcheva (2003), who proposed a totally different direction for Estonia and Bulgaria. On the other hand, we could mention that our findings are aligned with the studies of Cuaresma *et al.* (2010), Errit and Uuskula (2014) and Jurgutyte (2014) concerning Lithuania. Finally, we agree with the outcome of Stakenas and Stasiukynaite (2017) research.

In summary, our estimation is the adoption of the euro significantly aided the economies of Post-Communist countries, such as Lithuania and Estonia. On the other hand, we arise plenty of doubts regarding to a potential circulation of the euro in Bulgaria, since the country is not ready yet to participate in the EMU, from a financial viewpoint.

Our opinion is that the Estonia and Lithuania should continue to improve the economic and political relations with the other members of the union in order to avoid side-effects due to Euro Area membership. At the end, Bulgaria should focus more to this direction if they wish to participate in the EMU without any collateral losses. Otherwise, they would face the fortune of Greece because the euro is a really strong currency and it is not suitable for weak and vulnerable economies of Europe which have no sufficient adjustments.

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THE GREEK INDEPENDENT AUTHORITY FOR PUBLIC REVENUE AND REVENUE COLLECTABILITY

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Abstract

The Independent Authority for Public Revenue (IAPR), established by law 4389/2016, has achieved important targets, such as the activation of the “electronic cross-check system for bank deposits and tax affairs” and the resolution of tax disputes, without leading tax payers to tribunals in cases, for which they really deserve a favorable treatment. However, criticism has been raised against it, given that it has essentially marginalized the Ministry of Finance as for its normal mission and it appears almost as a one-man authority. The powerful figure of this authority has in English the majestic title of Governor, which is quite indicative for the substitution of the Government by a troika-centered Governor, under the supervision of an Expert, pre-selected by European Commission.

JEL Classification: K00

Keywords: Governor, Independent Authority for Public Revenue (IAPR), memorandums of understanding, public economic law, revenue collectability, tax evasion

1. Introduction: Independent authorities in the Greek legal order

Independent organs within Public Administration have not been a totally unknown institution in the history of Administrative Law, but a very uncommon one. For instance, the Council of State and the Court of Auditors constitute the two classical organs endowed with a double legal nature: they have been not only administrative tribunals but also parts of Public Administration, as for their administrative competencies. From the 1980s and on, there has been a new trend within Public Administration, in comparative Public Law. It is about the institutional model of independent administrative authorities. This model consists in administrative organs, usually within the legal person of the State, which enjoy a status of personal and institutional independence against the rest organs of the State and exercise various administrative competencies. This trend was introduced in the Greek legal order for the first time in

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1989, through the legislative institutionalization of the National Broadcasting Council.

The crucial time of the short history of this category of authorities was 2001, in which some authorities were incorporated (or previewed for the first time) in the Greek Constitution and so acquired a constitutional status like the aforementioned two (supreme) administrative tribunals: it is the case of the National Broadcasting Council, the Data Protection Authority, the Ombudsman, the High Council of Personnel Selection and the Authority for Communications Security and Privacy.

It would be interesting to take an approach to a new similar authority, the Independent Authority for Public Revenue, broadly known as IAPR, and to examine it particularly in the matter of revenue collectability.

We suppose that IAPR constitutes an authentic independent administrative authority modernizing tax Public Administration.

2. From the Secretariat General for Public Revenue to IAPR

IAPR was established on 01/01/2017 by memorandum-centered law 4389/2016. Initially, in 2012, the State proceeded to the institutionalization of the Secretariat General for Public Revenue, in the period of Memorandums of Understanding (MoU), which began in 2010 and went on to August 2018 (Maniatis, 2018a). The initial scheme, suggested by international creditors, was established in order to be transformed gradually into an independent authority, namely as it has been nowadays.

The Governor of IAPR is a freelance lawyer, who took on the duty of the (last) Secretary General in January 2016. An authority that is independent should also thoroughly appear as an independent one.

It is notable that IAPR is not the first independent authority to have been created under the pressure of European Commission, in current era of memorandums (Maniatis, 2017). By law 4013/2011 was introduced in the Greek legal order the Single Independent Authority for Public Procurement. This institutional model is competent for legal aspects and also managerial ones of the works, supplies and services public contracting. So, from 2012 and on, Greek Public Procurement Law has been marked by a set of the following public independent organs exercising administrative (not judicial) competences: “Single Independent Authority for Public Procurement–National Broadcasting Council– Court of Auditors”. The Greek State did not avoid the error of institutional inflation as for the independent authorities, by activating in 2017 an original independent authority in the same sector, the Authority for Prejudicial Recourses Examination.

The old authority for public contracting, which initially had a rather marginal mission on the matter, was essentially downgraded through the addition of the new mechanism. It is notable that the newly-created organization of quasi-judicial mission, which has not been imposed by international creditors, could decongest the burden of the courts. So, it results another significant characteristic of the era of memorandums, consisting in the use of independent authorities to avoid trials.

3. No independence as for the selection of the –ambivalent– leaders of IAPR

IAPR has been explicitly characterized as “autonomous”, by its doubters (Panagiotou and Ioakeimidou, 2018). As implied by the use of the quotation marks, there is no autonomy, at least in juridical terms. In other words, this authority would be autonomous as long as it could be capable to emit regulations (in form of administrative acts) without a legislative authorization, namely independently to formal laws. Public Administration is endowed with a regulatory competence on the basis of legislative authorization, so it has no autonomy in terms of initiative and determination of normativity.

According to article 1 of establishing law, IAPR enjoys operational independence (whilst law in reality does not attempt to consecrate only the operational independence but also the personal one) as well as administrative and financial autonomy. It is not subject to scrutiny or supervision by government bodies, State carriers or other administrative authorities. However, it is subject to parliamentary scrutiny, in accordance with the Parliament’s Rules of Procedure and the procedure laid out in article 4 of the same law.

IAPR has got two separate management bodies, the Management Board and the Governor, exercising the powers laid out in articles 9 and 14 respectively, of the aforementioned law. It is to signalize that the majestic title “Governor” is used in English by IAPR itself (IAPR, 2017). This title is rather abnormal for a chief of an administrative authority, let alone the fact that this authority has no legal personhood. The title in Greek should be literally translated in English “Administrator” and not Governor whilst the concept of Governor has essentially a rather authoritarian dimension (for instance, being related to colonization of other territories).

The mode of selection of the Board is odd, as the legislator has invented a new organ, the so-called independent “Selection Committee”. Besides the 5 members of national designation, the Committee comprises, uniquely for the first 7 years of operation of the Authority, two representatives that are

designated by European Commission. The Minister of Finance, who anyway controls some of the 5 aforementioned members, has the competence to select the members of the Board among the candidates short-listed by the Committee, with the agreement of the Institutions and Transparency Commission of the Parliament.

As far as the person occupying the office of the Governor is concerned, it is selected by the Minister. According to par. 1 of article 15, the selection of the Governor is held through open tender whilst the aforementioned independent Selection Committee shortlists the 4 leading candidates and, according to par. 4 of article 15 and par. 4a of article 9, the Management Board classifies the two leading candidates and submits the relevant proposal to the minister, who selects the Governor by emitting a motivated decision.

Besides, according to par. 4b of article 9, the Board gives its agreement on the conformity of the Governor's performance contract to the targets included in the strategic and business plan and follows up the execution of this Governors' performance contract.

During the first five years of operation of IAPR, there is a figure typical of the era of memorandums, the so-called Expert. This technocrat is supposed to provide his advice to the Management Board and is endowed with the right to participate in its meetings without the right to vote, like the Governor does. So, it is about essentially a supervisor, acting on behalf of European Union, and particularly of European Commission. However, the Expert is selected uniquely by the Minister, from a list of three candidates, which is formed by European Commission.

4. Scope and competencies of IAPR

Article 1 par. 1 of the establishing law announces the (unique) scope of IAPR, which is the following:

“determination, certification and collection of tax, customs and other public revenues falling within the field of its competencies”. Nevertheless, the competences go beyond this official mission of public collector. This is valid at least for the following competence, previewed in article 2 par. 2.6:

“Taking and implementing the necessary measures for the protection of public health, the environment and the interests of consumers, contributing to the sound operation of markets, enhancing the competitiveness and innovation of the chemical industry and providing relevant scientific support to judicial, police or other State authorities and services”.

So, IAPR is involved in the field of other ministries of the government,

like the ministries competent for health and environment, so it has to do with a multidisciplinary approach of the mission of the government, not limited uniquely to the mission of the Ministry of Finance, as it would be normal due to its official scope. For instance, it is not limited to block tax evasion in the sector of alcoholic beverages, but also it has to do with public health policy.

Besides the aforementioned scope (which constitutes its first competence), it has inter alia the following powers (IAPR, 2017):

- Identification of tax evasion, smuggling, tax fraud, illegal trade and the shadow economy, and imputation of undisclosed income;
- Taking and implementing the necessary measures for the effective and efficient operation of its tax, customs and other services, in the areas of combating tax evasion, smuggling, tax fraud and the shadow economy;
- Implementing tax and customs law, assessment and collection and improving public revenue collectability;
- Providing and supporting e-services to citizens, businesses and public sector bodies, with a view to facilitating transactions, reducing red tape, simplifying processes and achieving tax fairness and transparency;
- Determining its IT strategy concerning the design and development of e-governance applications and services;
- Identifying cases of corruption, non-transparent processes, lack of efficiency, low productivity or low quality of services provided and non-compliance, that may occur in the course of the operation and activities of its tax, customs and other services;
- Strategic and operational planning for the activities of all its services and setting targets and performance indicators;
- Preparing and executing its budget and procurement program aiming at the smooth operation of its services.

The community of civil servants has made use of the judicial procedure to protest against the legislative framework on IAPR. In the beginning of March 2018, the judicial recourse of three syndicates and six public employees was examined before the Council of State (Panagiotou and Ioakeimidou, 2018). The plaintiffs support that the creation of this authority is unconstitutional and they consider inter alia that the authority essentially abrogates in practice elementary, key competencies of the Ministry of Finance.

We believe that this authority has blocked the normal governance, a mission which is intrinsically accomplished by the government. Indeed, IAPR accomplishes the function of generalized administration, with a mass impact on citizens. An extended block of organs and services has been transferred from the field of competence of the Ministry of Finance to this authority. The

current structure of IAPR is quite indicative of this problematic situation. It comprises the Central Services, the Special Decentralized Services under the Governor or under the General Directorates and the Regional Services (“Public Economic Services”, Customs and Chemical Labs) (IAPR, 2017).

Furthermore, we consider that the power on the public health and environmental issues is quite unfamiliar not only to the mission of IAPR but also of the Ministry of Finance itself and so IAPR blocks more widely the normal function of the government.

Besides, we estimate that the authority differs essentially from the rest Greek independent authorities, which have a limited mission against the mission of the competent Ministry (with the unique exception of the Ombudsman that constitutes by nature an authority of persuasion, without emitting executive administrative acts). Each authority is “supervised” by a Ministry, which may bring legal action (before the Council of State) against it, in the framework of the intrusive trial (State vs. State). In a similar way, the rest authorities are endowed with a very limited amount of services and organs, supporting and executing the competencies of the (Management) Council of each authority or of the Ombudsman, as far as the Ombudsman is concerned. In the case of IAPR, there is an uncommon transfer of a very high number of organs and services, the decentralized ones included, to an authority substituting drastically and almost globally their normal manager, which is the government. Article 26 par. 2. of the Greek Constitution, on the classical principle of separation of State powers, mentions: “*The executive power shall be exercised by the President of the Republic and the government*”. The executive function (in other words the administrative service) of the State, even for public revenue, is reserved to the chief of the State and the government, not to independent administrative authorities or “governors”, so independent authorities may have a very limited field of competence, without substituting the mainstreaming, “normal” exercise of executive power, by the aforementioned two top organs. It is normal for independent authorities to enact mainly a role of regulation, supervision and sanctioning of a sector of socioeconomic activity.

Last but not least, the unconstitutionality of IAPR is likely to be localized in other aspects, exemplified by its internal allocation of powers. The authority formally consists in a collective organ, but (in contradiction to the rest independent authorities consisting merely in a Management Board) it has essentially another figure as a protagonist, the “Governor”. It is almost reduced to one-man authority, having the Governor as the substitute of the classical figure of the Minister of Finance. In this context, the Management Board is supposed to enact the odd role of “arbitrator” between them, like the President of the

Republic serves as a referee and not a player in the political game among the political parties. According to par. 4 of article 5, in case of dispute between the Minister of Finance and the Governor, in the matter of application of tax policy, the question is submitted by the Minister to the Management Board. Duality (President of the Republic – Government) is normal at the summit of the executive power of the State, according to the aforementioned par. 2 of article 26 of the Constitution, due to historical and political reasons, in the framework of a Parliamentary Republic with no executive Republican President, such as the Greek State. It is not the case for the internal organizational structure of an independent authority, therefore a regime reminding of the State regime of Greece (Management Board like the President of the Republic – Governor like Government) is abnormal. Of course, this anticonventional institutional approach to the Governor is more problematic, as long as this figure does not have a normal working status but a performance contract on the basis of bonus to get. This neoliberal approach, coming from the market of private economy, is not compatible with the status of a leading organ of an independent administrative authority, let alone the fact that the policy of the memorandums of understanding has hit drastically the total of public servants, judges and prosecutors, mainly as far as their salaries are concerned.

5. The question of the contribution of IAPR to revenue collectability

Public Administration perhaps seems to be satisfied with the recent jurisprudence of the Council of State, which blocked tax evasion sanctions. With more than one decisions the tribunal has judged the legislative measure consisting in prolongation of the control periods (exempted from prescription) as unconstitutional. So, as a general rule, tax Administration, nowadays IAPR, may control the income of tax payers only for a 5-year period. According to the press criticism, this development has led Public Administration to close definitely thousands of tax income cases till 2011, of financially powerful tax payers, who are included in the notorious lists of suspects for an extended tax evasion (Panagiotou and Ioakeimidou, 2018).

The prolonged phase of “reorganization” of tax public services in the years of application of memorandums and the systematic downgrade of the Service of Economic Crime Prosecution were the factors that led thousands of cases to prescription. So, it results the synergy between the tax evasion and the interweaving of interests, in the period prior to the legislative adoption of IAPR. That perspective had been signaled in time by the syndicalist movement

towards both the political leadership of the Ministry of Finance and the leadership of IAPR.

Besides, the press has highlighted the serious case of the delay of the prosecutor's control on the question whether the write-off and the reduction of taxes, occurred by the competent service of the Minister of Finance, for the period from 1/8/2013 till 31/7/2016, were illegal or not. It is notable that the Dispute Resolution Directorate (which actually is a part of IAPR), in the beginning of its operation, in 2013, proceeded to a very small number of write-offs whilst in 2015 and in 2016 write-offs increased drastically (Panagiotou and Ioakeimidou, 2018).

However, it is common belief that the "electronic cross-check system for bank deposits and tax affairs", put into practice by IAPR just in March 2017, was a necessity (Panagiotou and Ioakeimidou, 2018). Doubters of IAPR support that if this system had been applied earlier, the great part of the "tax payers elite" would not have remain unexamined, particularly in combination with the aforementioned jurisprudence on prescription. It is also to signalize that from 9 May 2018 and on, tax payers have been endowed with the possibility to submit in electronic way their recourse before the Dispute Resolution Directorate against the acts of 5 public economic services.

6. Conclusion: Post-democracy: from Government to ... "Governor"

IAPR is considered to have enacted an important role in the national economy, not only in symbolic terms but also in real ones, in the crucial phase of the economic crisis of Greece.

It is notable that criticism against IAPR, coming from the press, does not adopt a single approach but a rather unclear one, as for the mode of designation and the way of accomplishing its mission. According to this approach, the authority, on the one hand, constitutes an organ exempted from national (governmental and administrative) control but not from international one and, on the other hand, it tends to favorize the non-perception of public revenues.

As far as the paper hypothesis is concerned, it cannot not be (fully) confirmed, as the authority does not constitute, at least clearly, an authentic administrative authority in terms of independence and of amount of powers against the Ministry of Finance. It is obvious that it has contributed in a significant way to the modernization of tax Administration, although some aspects of this attempt have been prepared before its creation, like the activation of the "electronic cross-check system for bank deposits and tax affairs". The community of

professional accountants and tax consultants recognizes particularly the value of the important mission of the Dispute Resolution Directorate, from 2013 and on.

However, in terms of Constitutional and Administrative Law, the quality of the Greek political regime has been essentially altered through the European Union institutional interventions (Kamtsidou, 2015). As far as IAPR is concerned, it has significantly aggravated the image of the sovereign Greek Republic in the authoritarian direction of post-democracy (Kamtsidou, 2014): from democratically legitimized Government to troika-centered “Governor”. Post-democracy is emblematic for European Union itself whilst the jurisprudence of European Union Court of Justice has raised severe criticism on the matter (Yannakopoulos, 2017). Anyway, post-democracy has begun to become essential even for the Greek State... (Farah, 2016). It is crucial to attempt to avoid bankruptcy, let alone the political one... (Yannakopoulos, 2013).

Furthermore, it is remarkable that the last decades tax evasion has led States to enhance the content of European Union and national normativity, in both branches of Administrative Law and Criminal Law (Maniatis, 2018b). Last but not least, the fight against tax evasion brings together the administrative power, particularly the quasi jurisdictional mechanism of independent administrative authorities, and the judicial power of the State and exemplifies the new concept of the mixed (Administrative and Criminal) Law of Repression, particularly as far as economic offences are concerned. In the current 4G era of consecration of fundamental rights, the policy against tax evasion is enhanced by promoting the rule of law and the respect for human rights...

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URBAN LABS AS A NEW FORM OF URBAN GOVERNANCE: PUBLIC VALUE CREATION AND ITS MEASUREMENT

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Abstract

Urban labs emerge as a solution to current and future local challenges. The article examines the concept of public value creation in urban lab projects. It attempts to explain “what, how and for whom” it is created. The article introduces a tailored tool that measures public value creation in projects. The results prove that evaluative processes are highly affected by different perspectives and stakeholders and that not all values appear necessarily at the same extent. Time possesses a substantial role, which needs to be acknowledged in pursuit of avoiding any misinterpretations. What should not be forgotten, is that urban labs and their projects are dynamic processes and they should be considered as such and assessed in every step of their progress.

JEL Classification: D46, D60, L38, O20, O21, Q01, R00

Keywords: Urban labs, public value creation, value measurement, public administration, local governance, growth

1. Introduction

The world is constantly changing. Human society is both the producer and receiver of transitional developments. Problems that appear globally can be better resolved locally. Urban labs rise as a new approach towards such complex matters. They are inextricably linked with present and future policies that call for a balance between society, environment and economy; a balance that will lead to a more sustainable future. Local authorities do not decide for themselves. Their actions and activities affect directly the society and all the actors included in it. Thus, it is reasonable to introduce a new form of governance that embraces all stakeholders in an active manner. Public value indicates how a project contributes to the common good and enhances the engagement of different actors within their community. Several researchers attempted to find a way of measuring public value creation. It is of great difficulty to develop an effective measuring method or tool in a way that will not be criticized by its

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users or researchers. It is rightly recognized that applying theory to practice and translating concepts and theoretical approaches into scores are of substantial difficulty, but also necessary for providing the information needed in future policy making and governance.

Local authorities that consider establishing urban labs, as well as researchers and other actors, face a substantial knowledge gap that constraints their efforts of implementing and/or improving an urban-lab initiative. Thus, more research on public value as such, as well as on its measurement is essential.

1.1. Sustainable Development

Sustainable development is a concept that penetrates our contemporary world. There are numerous definitions, but this particular research is based on Brundtland's report:

"Sustainable Development is the development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987).

According to the report, there are three main pillars of sustainability that represent the main aspects of human life on the planet. These are economic growth, environmental protection and social equality (WCED, 1987). All three are interrelated and interdependent. Thinking schematically, they could be placed on the vertices of a triangle. A change in one of them affects the other two sides. Of course, in reality the described system is much more complicated compared to this simplified theoretical approach. In order to find a balance between the pillars, it seems necessary to adapt the governing structures. Dominant practices where a group of people used to decide for the whole society seem to belong to the past.

1.2. Research Strategy

1.2.1. Aims, Objectives and Research Question

The aims of the research were to:

- Examine what, how and for whom public value is created in urban labs.
- Define indicators that are relevant for measuring/evaluating public value creation as they help understand how different actors perceive the concept of public value.
- Develop a method for approaching and a tool for measuring public value (creation) in urban lab projects.

The research focused on public value creation in four projects developed in two urban labs (M-Lab Maastricht, Stadslab 2050 Antwerp). They served as a case study that provided substantial information for answering the research question “How do urban labs create public value?”.

1.2.2. Methods

A comparative case study has been completed in order to answer the research question. Therefore, a number of completed and currently running projects established by two urban labs, M-Lab in Maastricht and Stadslab 2050 in Antwerp, have been examined. There were specific criteria used for choosing the projects. Firstly, they had to be implemented under the “urban lab” label. In addition, citizens should be involved either as “producers” or receivers of public value since the latter had to affect the society as a whole in order to be considered “public”.

M-Lab emerged in 2012 as a solution to the consequences of the economic crisis a few years earlier, which affected both the economic and demographic data of the area. It is a temporary non-legal platform that is based on the development of new coalitions between different actors, experimentation and learning (de Kraker, Cörvers, Scholl, & van Wanroij, 2016, van Wanroij, personal communication, May 3, 2017). The research examined two projects namely, Brandweerkazerne and Operatie Steenbreek. The first aimed in repurposing an empty building, whereas the latter attempted to stop the trend of paving domestic gardens in order to create environmental awareness.

Stadslab 2050 started in 2011 as a platform and evolved into an urban lab with the aim of transforming Antwerp into a sustainable city in the long-term. Regarding its projects, Amador was a shared kitchen that ran from October 2015 till May 2016. Its main goals were to enhance social relationships in the city and create environmental awareness in relation to food. The second project, 500 Woningen Renoveren was co-initiated by Ecohuis¹ and Stadslab. It has a double aim: firstly, to renovate apartments towards a more energy efficient mode; at the same time, the initiators would like to affect people’s behavior and make them act in a more sustainable manner.

A mixture of quantitative and qualitative data has been collected with open and closed-ended questions. Concerning the amount of data collection, a number of stakeholders, 2-5² from each project have been interviewed in order to gain a better view of the public value created. As stakeholders, I considered all kinds of legal and non-legal entities as well as individuals who participate in a project and are affected and at the same time affect the creation of public value, in other words, anyone who has a stake. Companies, NGOs and any

other economic actor have been grouped and called urban professionals. It was important to have at least one representative of each municipality as they had considerable knowledge about the projects and could provide useful information for the research. Individuals could be both actively and non-actively involved and thus, have different views on the examining project based on the role they possess.

2. Urban Labs and Public Value Creation

This chapter provides further information about the main concepts examined namely, urban labs and public value and presents some of the different approaches in pursuit of measuring public value.

2.1. Urban Labs

The term urban lab covers a wide range of different forms of local governance including Living Labs and City Labs. “There is no uniform definition of living labs” (Schliwa, 2013, Voytenko et al., 2016). They can be defined as partnerships between various actors –public, private, people– (Ballon & Franz, 2015, Nevens, Frantzeskaki, Gorissen, & Loorbach, 2013, Voytenko et al., 2016), where universities play a crucial role in evaluating the engagement, the exploration and the experiments in such initiatives (Evans & Karvonen, 2010, McCormick, 2017). However, universities are not the only actors that have to be taken into consideration; entrepreneurs (economic actors) and citizens are also an integral part of urban labs and therefore, essential in the evaluating processes (McCormick, 2017).

On the other hand, city labs are “projects initiated or at least partly supported by departments of local authorities” (Höflechner & Zimmermann, 2016, Scholl & Kemp, 2016, Scholl et al., 2017). They “generate ideas for city projects and explore visions of, for example, sustainability and governance” (Scholl & Kemp, 2016). The common concept between the two types is the production and/or implementation of innovative ideas, experimentation, co-design and learning (Höflechner & Zimmermann, 2016); the creation of a forum for innovation where interactions between different actors take place (JPI Europe, 2013). The slight differences between living labs and city labs allow for the use of the term “urban lab” to refer to both these types (M-Lab recognizes itself as a living lab, whereas Stadslab as a city lab).

Urban labs are not virtual platforms; rather they are placed in an existing geographical area (ENoLL, n.d., Voytenko et al., 2016). Moreover, innovation

and experimentation are not the only elements; participation of different actors as well as leadership (in terms of proper coordination and management) are essential to make an urban lab function efficiently. It appears to be “an instrument for the active inclusion of citizens in urban projects” (Ballon & Franz, 2015). The actors’ interaction results in the creation of value, both public and private. At the same time, flexibility is crucial for a healthy cooperation among different actors, their interests and abilities (Höflechner and Zimmermann, 2016). Finally, evaluation and monitoring help the learning process of the participants and those who are interested in establishing an urban lab or just examine this new form of governance.

To sum up, there is considerable variation between urban labs. The “type of challenges they address, the way they operate, the role of research institutions as well as the role of sustainability in the lab’s agenda” (Höflechner & Zimmermann, 2016) result in the absence of one universal definition. Perhaps, it is not necessary to struggle to find the *one and unique* definition as it would alienate the “colorful” diversity of the labs. It is important though, to continue examining their role as an integral part of contemporary local governance and the challenges the latter needs to tackle towards a more balanced life.

2.2. Public Value

The concept of public value was introduced in the public sector for the first time in 1995 by Moore (Dearlove & Crainer, 2007, Meynhardt, 2009; 2017). Moore (2013) considers it as the output of a project, policy, or activity that contributes to the common good. It can be expressed in economic, social and ecological benefits, which coincide with the three pillars of sustainability (Moore, 2013, Scholl et al., 2017). He argued that public value is created when “the society is successful or unsuccessful in achieving a desired goal” and not when someone collects all the individual satisfactions (in Dearlove & Crainer, 2007). It is not clearly mentioned though, whether the level of success is decided by the society itself or by a higher authority, such as the government.

To continue, Bozeman introduced the theory of public value failure according to which, the conditions are not always generating public value. This happens when “the public sector does not provide the goods and services required to achieve public value” (Bozeman, 2007, Bryson, Crosby, & Bloomberg, 2014). Actually, there is a creation of the latter but with a negative sign. In practice, it means that the “consumers” of value are dissatisfied from the outcomes of a project or activity. But is it truly only the citizens that consume? What about the authorities or economic actors such as enterprises? It has to be

noted that Bozeman has been criticized for neglecting the role of noncitizens (Bryson et al., 2014).

Furthermore, Meynhardt (2012; 2015) supports that public value is created by implementing a project, policy or other activity that generates benefits for the common good. He (2009, 2012) sees it as “the extent to which a relationship between an individual and a social entity influences the fulfillment or change of basic needs”. It has to be mentioned, though, that public interest and public value are not necessarily interlinked as the former refers to the legalist aspects of welfare and common good of the community as a whole, whereas the latter is linked to the managerial perspective of public value creation (Meynhardt, 2012). Meynhardt’s explanation remains elusive because the relation between interest and value is not clear enough. “What is valuable for society varies over time and across cultures” (Meynhardt et al., 2017). It “tends to take shape in response to the material and social concerns that arise in a specific area” (Alford & O’Flynn, 2008; 2009), in one word its surroundings. “The facts may not necessarily lead to the same appreciation by different people” (Meynhardt, 2012).

There are various definitions for the concept of public value as it happens to be the case for the urban labs as well. Personally, I receive it as the benefits and/or disadvantages³ for the public during the design and implementation of a project, meaning by “public”, all those legal and non-legal entities that exist, the society as a whole as well as individuals. In this intellectual turmoil, some researchers attempted to go one step further and develop a method or tool that measures the creation of “their” definition of public value.

2.3. How can we measure public value (creation)?

There have been various suggestions concerning ways of measuring public value creation. Some existed before the emergence of the concept, like Utilitarianism and Cost-benefit Analysis (CBA), whereas others have been developed particularly for public value.

Focusing on the tailored category, Moore and Meynhardt attempted to develop a Scorecard to support their theoretical approach. Moore presented his Strategic Triangle⁴ according to which, “a strategy for a public-sector organization must meet three criteria: legitimacy and support, operational capability and value creation” (Alford & O’Flynn, 2008, Meynhardt et al., 2017, Moore, 2013). Public managers are responsible for trying to meet these criteria and “lead their organizations towards the production of greater public value” (Moore, 1995). The framework helps them to estimate the “constraints and

responsibilities within which they work” (Williams & Shearer, 2011). However, it remains unclear “how value objectives are to be pursued” both in theory and practice (Williams & Shearer, 2011). Moore does not explain how the three criteria interrelate. How is it possible to measure public value when it serves at the same time as a means and an outcome?

Another approach is that of Meynhardt (2012; 2017), who argues that there are four different perspectives from which someone evaluates public value: moral-ethical, hedonistic-aesthetic, utilitarian-instrumental and political-social. These represent the ways one approaches the examining concept and are quite subjective as every person is characterized by their own values. In addition, Meynhardt (2012; 2015) explained that “without a financial measure, a Public Value scorecard may find no acceptance by practitioners”. Meynhardt fairly supports the idea that if something does not produce any financial benefits, decision makers and practitioners will be reluctant in taking it into consideration since it is of vital importance for justifying their policies. Hence, he added the concept of economic value to the aforementioned⁵. The respondents are asked to “rank the five values according to their importance by answering to a number of statements (Meynhardt, 2012; 2015; 2017). The Scorecard “helps to weigh future decisions and analyze risks and opportunities of public value contribution goals. This is not always easy, though, and usually, needs time. The method is highly subjective as it depends on personal values and constraints to understand what is valuable for the public as such rather than only its individual parts that is, the respondents. (Meynhardt et al., 2017). On the other hand, Meynhardt (2012) himself recognizes that every effort to measure public value “needs to be tailored to specific circumstances” due to different situations.

“The concept of public value can help organizations to better engage with their community and to benefit from it” (Meynhardt et al., 2017). “A clear definition remains elusive” (O’Flynn, 2007), which makes it difficult to develop any measuring practices without omissions that affect its outcome. In this confusion, I attempted to develop a method that measures public value creation in urban labs and tried to overcome some of the constraints of previous efforts analysed in this chapter. Still, measuring public value requires effort and recognition that the result might still be criticized as a subjective perspective.

3. Towards an Assessment Tool for Public Value Creation in Urban Labs

3.1. Measuring Public Value Creation

Researchers McCormick and Frantzeskaki explained that there are various ways of assessing projects, policies and activities implemented by an urban lab which depend on the goals of each lab. Qualitative analysis seems to be easier as some concepts, such as wellbeing or entrepreneurship, can only be described. Certainly, this does not exclude the option of conducting a quantitative analysis. In every case, if one wants to be effective, they have to monitor such an analysis throughout the process and have a clearly defined final goal from the beginning (Frantzeskaki, personal communication, May 12, 2017). Pantopicon (Rijkens, personal communication, May 12, 2017) underlined the necessity of considering *everyone* when evaluating a process since public value affects the society as a whole.

In general, the interviewees recognized the constraints of their methods and urged the importance for having one tool tailored to the urban labs' needs. At the same time though, they underlined the difficulty of creating such a tool since every urban lab and every project have their own dynamics.

3.2. Types of public value

There is no *one* type of public value that can be created. It usually depends on the aim of a policy or activity. Knowing the types of value that are pursued and those that are actually created supports the decision-making of those involved who need to know what exactly they should take into consideration concerning future decisions. Based on empirical research, I developed a list of several types. Some of the elements have been included in the main types of value created. That does not mean that it would be wrong to keep them separately, and grouping does not downgrade their worth.

3.3. Indicators of public value creation

There are several ways to indicate public value creation. Still, it remains difficult as the indicators can be expressed both objectively and subjectively. The former is generally recognized as such. Still, there are subjective indicators that depend on one's personal perspective. But these indices are not

definite, and their meaning builds upon personal values and ideas. Certainly, a number of tools is developed in order to define the existence or absence of such concepts, but they remain descriptive and highly dependent on personal viewpoints. Therefore, there cannot be a fixed list that accompanies them.

Moving to the research, some specific indicators have been identified in the literature and confirmed by the interviewees, who take them into consideration regarding their projects and decisions. Active involvement and level of satisfaction are highly linked to the main characteristics of the urban labs. Certainly, there might be more indicators that are either not relevant to the examined projects, therefore, not mentioned, or not taken into consideration by the initiators for practical reasons⁶.

Concerning innovation and learning, the respondents found it very difficult to define them as they argued that these specific types of value appear implicitly. In other words, they explained that knowing whether something is innovative or promotes learning is “something people can just see and feel without being able to prove it” was a common answer. All indices can be applied to all projects, but they do not necessarily appear in every one of them because projects might not (aim to) generate them. The following table shows the integrated list of types and indicators that have been identified and grouped appropriately.

3.4. For whom is this public value created?

As it has already been mentioned, public value means that the values are for the wider public namely, the society as a whole, as well as all its individual components that are members of the human community and each one has its own role and function. However, urban processes need time to be established broadly in order to include all the actors of the society. Hence, it might be too soon to appreciate whether a value is “public” or will eventually become one (Rijkens, personal communication, May 12, 2017).

For the research, the beneficiaries have been subdivided into smaller groups based on their role in a project. Hence, “local authorities” and “citizens involved” stood on their own. Moreover, “non-involved citizens” referred to individuals that have not been actively involved still, were affected by the outcomes of the project. “Urban professionals” are the economic actors of the society that had a stake, tangible or intangible. It is mainly specialists, such as private enterprises, SMEs and other companies. Finally, the “no-one” option was added in case someone considered the examined project ineffective.

3.5. Tool for measuring public value creation in urban labs

Measuring public value creation is essential for understanding the impact of an urban lab project. The suggested tool consists of two main phases namely, expectation and reality. The users of the tool set their goals by indicating what they would like to see as project results at a certain moment (what ought to). These are what will be called, *Expected value*. In the second phase, the users evaluate the facts they are experiencing in order to examine the *Real value*. As a final step, one has to compare the two results and conclude about the project's successfulness. The closer the results, the more the reality meets the expectations, which means that the project can be considered quite successful. According to the interviewees, it's up to the decision-makers, whoever they might be, to conclude whether the results are satisfying or not since they have the final say regarding the project. In every case, it is advised to define how acceptable the difference between real and expected value can be by using a deviation freedom of $x\%$.

Since the main characteristics of a lab are among others, innovation and learning, they have been considered the first priority for an urban lab project. Certainly, that does not mean that all the other elements should be excluded or neglected. For active involvement, I used double weighting as it is one of the main characteristics of an urban lab but only partly embraced, whereas the previous two are separate categories of value and hence, they stand on their own. Since active involvement refers to citizens, it is included in the social category.

The participants have been asked to score from -2 to 2 the indicators based on what types of value have been generated (real value) and on what they would like to see (expected value). In the second case, the indicator of satisfaction has not been taken into account as it is unfeasible to be satisfied for something that does not exist. The result is two numbers, less or equal 2 and more or equal -2. The one represents what outcomes the respondents would like to see. The other presents the reality given by personal perceptions and estimations of the participants.

Table 1: Indicators

Types of Public Value	Indicators	Description
Economic	Local Income	Any kind of monetary impact: positive or negative change, money invested
	Competition	Economic rivalry among actors with monetary interest
	Entrepreneurship	Business development
	Cooperation	Cooperation for economic profit
Environmental	Energy Efficiency	Proper use of energy, Measured with technical means
	Resource Efficiency	Proper use of natural resources, Measured with technical means
	Environmental Quality	Environmental conditions that differ among ecosystems. There are various aspects like: biodiversity, air quality, soil quality and water quality
Social	Community wellbeing	There are numerous ways of approaching such a concept. Based on the interviews, it is linked to people's psychology, the feeling of being safe
	Social relationships	Development and or enhancement of human interactions, networking
	Active Involvement	Participation in the design, implementation and or evaluation process of a project
	Satisfaction-Successfulness	Being happy for the outcomes and or the progress one notices regarding a project
Innovation	Physical Outcomes	Tangible developments, for example building renovation
	Prototype Idea	Novelty, action that has not been implemented before
Learning	Awareness	Being informed and eager to change personal behavior towards a certain goal

Expectation Function:

$$\{[\text{Local Income} + \text{Competition} + \text{Entrepreneurship} + \text{Cooperation}] / 4 + [\text{Energy Efficiency} + \text{Resource Efficiency} + \text{Environmental Quality}] / 3 + [\text{Community Wellbeing} + \text{Social Relationships} + \text{Active Involvement} * 2 + \text{Satisfaction}] / 4 + \text{Innovation} + \text{Learning}\} / 5$$
Reality Function:

$$\{[\text{Local Income} + \text{Competition} + \text{Entrepreneurship} + \text{Cooperation}] / 4 + [\text{Energy Efficiency} + \text{Resource Efficiency} + \text{Environmental Quality}] / 3 + [\text{Community Wellbeing} + \text{Social Relationships} + \text{Active Involvement} * 2 + \text{Satisfaction}] / 5 + \text{Innovation} + \text{Learning}\} / 5$$

The decision-makers derive conclusions based on a pre-defined deviation freedom. If the expectations exceed the reality beyond the allowed limits, the project could be considered unsatisfying. This refers to Bozeman's suggestion that inadequate conditions lead to dissatisfaction and public value failure (Bozeman, 2007).

Example: Assuming the real value was 1.12 and the expected 1.32, the difference would equal 0.2. In other words, the real value would be 15.15% less than expected. So far, everything remains neutral. If the decision-makers defined a deviation freedom of 5%, the results would be dissatisfying. Still, if their deviation freedom is looser, for example 20%, the minimum acceptable would be at 1.056. In that case, real value would be within the acceptable limits.

4. Public value creation in practice & Comparative Analysis

Chapter 4 applies the assessment method to four urban lab projects and helps understand its usage. Four projects have been examined of which, three have already been completed namely, Brandweerkazerne, Amadorand Operatie Steenbreek. 500 Woningen Renoveren is still ongoing. All of them generated more than two kinds of value. Brandweerkazerne aimed to enhance mainly social values by creating a meeting space for individuals, urban professionals and any other actor that might be interested. Operatie Steenbreek intends to enhance environmental awareness and green the city. Similarly, 500 Woningen Renoveren points at improving energy and resource efficiency of households. Finally, Amador's main goals were strengthening of social relationships and greener thinking in terms of reduced meat consumption.

According to the results shown in table 2, most of the projects contributed

to social public value, learning and innovation. Only 500 Woningen Renoveren supported environmental value at a high level, whereas Operatie Steenbreek, which also aimed at greener activities, ranked this type only at the fourth place. As explained by Beumer (personal communication, April 10, 2017), the project involved mainly private yards. Greening private properties is possible even without external support. The project's novelty that has been considered more important was its social aspect. Exchanging pavement with plants turned out to be an opportunity for meeting people. Economic public value has also been supported on a smaller scale with only exception the case of Operatie Steenbreek, where it received a slight negative sign. Project leaders van Wanroij and Vandermosten (van Wanroij, personal communication, May 3, 2017, Vandermosten, personal communication, May 10, 2017) explained that the main reason for low economic value creation is explained due to the urban labs' goals. They argued that the local authorities have other departments responsible for the economic and financial development. Thus, the urban labs should focus mainly on other kinds of value.

Still, economic implications appear discretely as they are linked to the projects' activities. For example, Brandweerkazerne offers working spaces for entrepreneurs and hosts a cafeteria at the ground floor. All actors pay rent and the cafeteria has an X income. Hence, there is economic activity within the project which may not directly affect the public as much as innovation and social interaction. Similarly, Amador focused on societal aspects with an immediate impact on the environment (reduction of food waste) and circular economy. Finally, 500 Woningen Renoveren influences energy demand in renewables while entrepreneurship and economic cooperation thrived in Operatie Steenbreek as a result of learning and innovation.

Table 2: Types & Indicators

Type & Indicators (T&Ind)		Projects	
Type of Public Value	Indicators	Brandweerkazerne	
		Weighted Average	Average
Economic	Local Income	0.461	0.615
	Competition	0.153	
	Entrepreneurship	0.923	
	Cooperation	0.923	
Environmental	Energy Efficiency	-0.53S	-0.343
	Resource Efficiency	-0.416	
	Environmental Quality	-0.076	
Social	Community Wellbeing	0.923	0.828
	Social Relationships	1.076	
	Active Involvement	0.083	
	Satisfaction-Successfulness	1.23	
Innovation		0.692	0.692
Learning	-	0.833	0.833

The numbers range from -2 to 2

Projects					
Operatie Steenbreek		Amador		500 Woningen Renoveren	
Weighted Average	Average	Weighted Average	Average	Weighted Average	Average
-1.125	-0.156	0.235	0.65	1	1
-1.375		-0.058		1	
0.25		1.058		0.75	
1.625		1.368		1.25	
0	0.5	0.764	0.923	1.75	1.583
0		1.058		1.5	
1.5		0.947		1.5	
1.25	1.343	1.1	1.343	1.5	1.125
1.5		1.368		1	
1.375		1.157		1.25	
1.25		1.75		0.75	
1.125	1.125	1.055	1.055	1.5	1.5
0.75	0.75	1.058	1.058	1.25	1.25

Table 3: Indicators of Public Value

Indicators & Sub-indicators	Amador	Brand- weerka- zerne	Operatie Steen- breek	500 Woningen Renov- eren
Satisfaction-Success	X	X	X	X
Expectation				X
Local Income		X		
Money Invested	X			X
Competition		X		X
Cooperation	X	X	X	X
Entrepreneurship	X	X		X
Energy Efficiency				X
Technical Means ¹				X
Resource Efficiency				X
Technical Means				X
Environmental Quality			X	
Water capture			X	
Biodiversity			X	
Heat Wanning Effect			X	
Air Quality			X	
Community Wellbeing	X	X	X	X
Citizens' Psychology			X	
Social Relationships	X	X	X	
Citizens' Active Involvement	X		X	X
Physical Outcomes		X	X	X
Prototyping	X	X	X	X
Awareness	X		X	X

Table 3 present which indicators and sub-indicators appeared in each project. Moving to the beneficiaries, inclusion of citizens in urban lab projects is a main characteristic, which supports the participation of different types of stakeholders. A common line concerning the beneficiaries' groups was the unequal distribution of benefits. Hence, the first category that received most of the benefits has been the actively involved citizens followed by urban professionals. Local authorities and individuals affected by the outcomes of the project have also gained some slight profits, though not as much as the previous groups. In relation to the "no-one" group, all respondents gave a negative or neutral answer, which led to negative results. Interpreting the numbers showed that all the examined projects generated several kinds of public value that benefited at least one group of beneficiaries. It appears that the higher the level of involvement, the more the benefits one receives, which contrasts to the notion of "public" value. At this point, it is important to remind that not all values are public but may eventually become in the future. For example, in Operatie Steenbreek the involved citizens transformed their own properties by replacing their pavement with plants. Private value had been generated immediately as the garden owners were benefitting by the changes. After a while, though, non-participants and urban professionals started realizing the public values created, such as social and learning. Therefore, the element of time should be taken into consideration when making decisions (Rijkens, personal communication, May 12, 2017). The most contentious results appeared in Brandweerkazerne and Operatie Steenbreek because of the responses' high dispersion regarding "non-involved citizens" and "local authorities" adequately. In these cases, half of the respondents scored highly negatively and the rest highly positively. The answers proved the difficulty to understand who is a public-value "consumer" at a certain moment.

Table 4: Projects' Beneficiaries

Beneficiaries	Projects			
	Brandweer- kazerne	Operatie Steenbreek	Amador	500 Woningen Renoveren
	Weighted Average			
Local Authorities	0.636	0.428	-0.411	1.333
Urban Professionals	0.909	1.142	0.062	1
Citizens Involved	0.727	1.142	1.11	2
Non-involved Citizens	-0.083	0.142	0.266	1
No-one	-1.916	-2	-1.625	-2

The numbers range from -2 to 2

4.1. Measuring Public Value

Only Amador achieved to generate real value higher than expected. The remaining projects had higher expectations. In 500 Woningen Renoveren the gap was relatively small that is, around 11%. In contrast, Brandweerkazerne and Operatie Steenbreek had bigger differences namely, 57% and 47.41% adequately.

There are several reasons that explain the big percentages in Brandweerkazerne and Operatie Steenbreek. Regarding the Brandweerkazerne, there was a lack of motivation as the renting costs were relatively high and the interested actors were not able and/or willing to pay. In addition, some participants argued that there was also a lack of activities on a regular basis, which could enhance the involvement of more actors. Furthermore, it has been criticized for lack of transparency driven by the decisions of the elite, meaning the local authorities who own the building (van der Linden, personal communication, May 31, 2017). Lastly, it is usually thought that authorities, as owners, have the means to achieve more than other interest groups, which results in higher

expectations from the evaluators. Considering Operatie Steenbreek, the initiator explained that the main difficulties were exchanging information about everyone's progress and controlling the process since the project referred to private properties (Beumer, personal communication, April 10, 2017).

One could assume that Stadslab's projects are more successful than those of M-Lab. From a first sight, it seems true. However, every urban lab has its own criteria to evaluate and decide upon such matters. M-Lab's expectations could be considered "too optimistic", as well as Stadslab's opinion regarding the real value of their projects. Similarly, it might be the opposite case: M-Lab's projects might be "too pessimistic" when scoring the real value and Stadslab could be too modest with low expectations. Whatever the case, each urban lab has its own dynamics and if compared to other labs, it should be taken into consideration that there are some differences in the way they operate and develop ideas, as well as in the challenges they address. To conclude, the results show the potential differences and/or similarities between projects with divergent goals. The participants' roles affect the outcomes, while external policies and activities might determine the projects' goals and directions.

Table 5: Projects' Expected & Real Public Value

Type of Public Value	Projects							
	Brandweerkazerne		Operatie Steenbreek		Amador		500 Woningen Renoveren	
	Expected	Real	Expected	Real	Expected	Real	Expected	Real
Economic	0.909	0.615	0.718	-0.156	0.719	0.65	0.937	1
Environmental	1.178	-0.343	1.375	0.5	1.01	0.923	1.416	1.583
Social	1.121	0.679	1.562	1.35	1.267	1.425	1.437	1.15
Innovation	1.384	0.692	1.5	1.125	1	1.055	1.75	1.5
Learning	1.166	0.833	1.625	0.75	1	1.058	1.75	1.25
Total	1.151 > 0.495		1.356 > 0.713		0.999 < 1.022		1.458 > 1.296	

The numbers range from -2 to 2

5. Conclusions & Future Research

Urban labs are a new form of governance that appeared as part of a solution to the emerging urban challenges. One of their main objectives is to enhance the co-creation of public value by embracing all stakeholders in an active manner. In pursuit of examining how “public” the values are, one has to find the types and indicators of value as well as who receives the benefits. Further, the researcher calculated the expected and the real value and compared the results in order to examine how much has been achieved based on what was expected. Can one consider the projects successful or failed based on these results? The answer is negative. The person or group that is responsible for the project and more specifically, the actors that have been chosen to assess the project’s successfulness, analyze the outcome having in mind a deviation freedom, which helps them to determine whether the results are satisfying or not. For example, if the deviation freedom was 5%, all the projects except Amador would fail. On the contrary, if the deviation freedom was 15%, 500 Woningen Renoveren would also be successful. Moreover, the results depend on the number of respondents. The more the answers, the higher the possibilities of having a better insight into the project’s progress.

Weighting of indicators and/or beneficiaries is optional and depends on the needs defined during the different stages of a project. In this research, the weighting procedure, as well as the indicators, have been based on the information provided by the interviewees. Grading was affected by the role the actors played but at the same time, by their identity (personal background, culture) and their surroundings. Finally, measuring indicators is relevant. Contrary to Moore’s Strategic Triangle which presents three pre-defined criteria for measuring public value, I argue that there are numerous ways for calculating the same object. Therefore, it’s up to the decision-makers or in general, the users of the method to choose what to take into consideration since it’s their way of approaching the examining issue.

Still, it remains flexible and can be adapted as it leaves space for changes. One can add or remove indicators or even kinds of value if it’s considered necessary. At the same time, it is possible to adapt the weighting system to every occasion as it depends on the needs and the goals of the project. To note, the functions introduced can and should be applied in every stage of the project’s design and implementation. There is no need to wait for its completion. Indeed, examining evaluations during the design and implementation stages would efficiently support decision-makers in their next steps.

Considering the method, there were three main limitations. Firstly, there

was a lack of indicators regarding innovation and learning. Some respondents argued that there are no indicators besides common sense. The second limitation was the high dependence on the decision-makers. If the team is not a fair representation of the society, it risks of being criticized as an elite who is interested only for the few. Finally, the grading system tries to quantify the examining elements, which is not always possible since there are some qualitative concepts that are difficult to be rated (e.g. competition, community wellbeing and social relationships).

There is space for improving the method. As a starting point, it would be essential to introduce more indicators, especially for the values of innovation and learning⁷. Innovation appears when a project contributes to the amelioration of a situation and/or combines different educational backgrounds in pursuit of achieving a desired goal. Moreover, learning had only one indicator, that of awareness. Personal knowledge creation and behavioral change are equally important. Finally, participation –referred as “active involvement” in the research– could be assessed by the level of involvement: co-creation, exploration-experimentation and evaluation. The more the indicators, the more the information regarding the values generated, which could provide a useful insight for future analyses and decisions. Moreover, having a bigger sample would increase the level of reliability. The more people provide their opinion, the higher the chances for resulting intersubjective outcomes, which lead to a better understanding of the examining case. Furthermore, it would be essentially helpful to distinguish the indicators according to their time scale, meaning the moment they start becoming recognized. Values are not always public at the moment they are generated but might eventually become by gradually affecting more actors in the society. It is a matter of time and has to be taken into consideration when judging how “public” something can be today and in the future. In other words, it is important to distinguish the indicators that emerge in the short-term from those that appear after some time. I consider it an integral part of the method as it would help to understand and explain the results in more depth. Finally, *who* decides depends on the project and the structure of the urban lab. There is no “one” best option. However, it should be clear “who” and “how” one decides about the project as their judgement affects its future.

To conclude, the suggested method should be seen as a flexible approach because it has been developed for dynamic processes, these of urban lab projects. The method developed in the article needs also further research. Quantitative means, such as calculators, are not always able to substitute qualitative notions, for instance, wellbeing and happiness. Hence, developing a qualitative

measurement would support the creation of a heterogeneous approach without underestimating any elements. Multi-criteria analysis could be a helpful tool but needs to be accompanied by additional means if one explores the potentialities of a project. Finally, one of the main aims of an urban lab is co-creation of values and participation of multiple stakeholders. It is not clear though, which participatory method is more suitable for urban lab projects. Further exploration of this field would improve the active involvement of various actors and reinforce the creation of public value in urban lab projects. The method's outcomes as such will not provide a definite answer; it depends on the approach its users adopted when they decided to design, implement, evaluate or just examine a project. What should be kept in mind is that urban lab projects are dynamic processes that need to be assessed in every step of their progress.

Notes

1. A centre open to the public responsible for providing information regarding environmental and energy issues.

2. The number, of course, depends on the type of project since some did not allow the participation of many people at the time of the research. Citizens are also included.

3. Disadvantages as I recognize the potential existence of Bozeman's negative public value.

It has to be mentioned that, at first, the Strategic Triangle was a theoretical tool that acted as a guide for public managers. Only, in 2013 Moore introduced a checklist of values that transformed the Triangle into a Scorecard (Meynhardt et al., 2017).

Certainly, the economic aspect can be considered part of the utilitarian-instrumental value, but Meynhardt believes that since it is one of the motivating powers of human society, it has to hold a distinct position.

Some indicators are difficult to be expressed quantitatively and qualitative assessment options are not always favored by the initiators regarding their decision making. Hence, sometimes it is preferable to exclude them or better, exchange them with quantifiable means.

Such as level of improvement and interdisciplinarity for innovation; personal knowledge creation and behavioral change for learning; and as presented in the second chapter, co-creation, exploration-experimentation and evaluation for "active involvement".

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