



Article

Convergent Insights for Sustainable Development and Ethical Cohesion: An Empirical Study on Corporate Governance in Romanian Public Entities

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Abstract: The global financial crisis was decisive in reanalyzing the role of corporate governance based on the accountability and ethics of governance practices and its impact on sustainable development. The study aims to analyze the relevance of and the interdependencies between financial governance assessment indicators and income efficiency with synergetic effects on sustainable development and social cohesion, offering a distinct contemplation on errors in governance and financial reporting. Deviations concerning the accuracy of financial statements, flaws in the process of budget creation and budgetary execution, poor implementation of internal control systems, non-compliance with procedures of public procurement contracts, and ineffectiveness in sound financial management represent barometers for assessing managerial accountability in the public sector. This study is based on data reported by the Romanian Court of Accounts processed with the principal component analysis and proposes a global efficiency index as a benchmark indicator barometer in order to analyze the influence of managerial accountability and sustainable reporting compliance on revenue reported by public institutions in Romania. The results of the study are of empirical importance and explore the constant need to evaluate managerial accountability and ethics, with an emphasis on error, in order to improve public governance and enhance corporate accountability.

Keywords: corporate governance; public entities; sustainable development; accountability

1. Introduction

The need to implement, debate, reinvent, and constantly improve managerial strategies in order to consolidate leadership and better advance investors' interests is a topic widely debated. The literature has developed with relevant studies that document and develop the concept of corporate governance from different perspectives and economic domains. Corporate governance has been approached as a core link between corporate management and investors [1–3]; the foundational research in this direction was pursued by Berle and Means in 1932 and their significant research on control and ownership of a company [4].

The shareholder perspective on corporate governance has been widely debated in the literature and reflected in regulations and codes of practice, plotted in development by researchers ever since the need for policy updates became known, such as the Cadbury Report issued in 1992, the Greenbury Report,

the Combined Code agreed upon in 1998 and revised, and the Higgs Report [5]. These policies were the most resonant in the UK and inspired regulations in many European countries, while similarly in the US, the corresponding regulations, Sarbanes Oxley (SOX), settled the political and social structures for corporate governance mechanisms. The interdependencies between policy and corporate governance analysis represent a long-standing and nevertheless current topic [6], exploring shareholder-oriented need for reforms [7], comparative research on questions, concepts and explanatory paradigms on governance [8], with the recent emphasis on the importance of empirical studies investigating the nexus to company liquidity assessment [9], financial outcomes [10], and corporate transparency enhanced by assurance statements [11].

The need to study and constantly improve corporate governance inspired theoretical and empirical research. The Agent Theory, developed by Jensen and Meckling in 1976, concluded that publicly owned entities are "awesome social inventions" because a significant number of individuals voluntarily entrust billions of dollars to the care of certain managers, based only on a simple contract. The financial focuses of investors and managers are different and to some extent divergent, the latter manifesting predominantly the tendency to report those results that benefit them the most [1]. The significance of the models developed from the theory of agents has gained resonance over time, due to the possibility of being adapted to very diverse domains: Maskin and Riley (1984) used modeling of agents in monopolistic price discrimination [12], Tyrol (2006) developed a theory of corporate finance [13], and Schmitz and Patrick (2013) developed a public procurement model, demonstrating that in the public sector where the budget is limited, the division of attributions to several contractors is a way to reduce bonus payments [14].

The literature also focuses on developing the agent's theory in the public sector. Lane (2013) explored the theory of policy implementation and policy making in order to formalize assumptions about public performance and public performance evaluation [15]. On the other hand, Schillermans and Busuioac (2015) drew attention to the risks of the non-discriminatory application of agent theory to analyze managerial accountability. They document in their research the need to study additional factors that can noticeably influence managerial accountability in complex regimes [16].

An interesting approach to corporate governance through an economist's perspective was developed by Hart, in his research. He addressed lawyers and debated the distinct perception of the concept of "company". He contemplated in his research the divergence between the economic perspective on the firm and the legal perspective. [17]

The shareholder-oriented research and the agent theory studies converge in the economic sphere and set the premises for the development of research related to the accountability of boards and managerial performance [18–20]. Research regarding the assessment of social responsibility of public authorities points to a need for recognizable initiatives towards the achievement of sustainable development [21], as well as for comparative factors of socially responsible behaviors between public and private entities [22]. According to research, responsibility is linked with disclosure and sustainable reporting [23]. Empirical studies enhance the research domain of corporate social responsibility reporting with gender diversity approaches [24], by investigating the interdependencies between nonfinancial information disclosure and financial performance [25], or through exploring the interdependence between the ownership structure and voluntary disclosure of financial information [26], thus pointing to a constant need to improve implementation and governance support [27].

In 2002, Kaufmann and Kraay analyzed the relationship between revenue and governance, focusing on Latin America and the Caribbean. Their study began with the hypothesis that there is a strong correlation between per capita income and the quality of governance at a global level. The study's recommendation was to develop governance models and institutional reform strategies by promoting externally accountable, transparent, and participatory governance mechanisms. [28] Aguilera et al. focused on the interdependencies of the costs, complementarities, and contingencies of governance practices [29] in order to develop an analysis of the effectiveness of corporate governance mechanisms [30].

Research regarding the assessment of corporate accountability examined the relationship between turnover and financial performance [31], the relationship between managerial performance and the number of non-executive directors [32], and the implications of remuneration on improving board performance [33] or financial performance [34,35].

Research papers developed in the accounting field analyzed accountability in close correlation with transparency, particularly focusing on financial disclosure [36,37]. The link between corporate governance and financial reporting was reviewed by Cohen in connection with internal and external audits, acknowledging the influence of regulations, shareholders, and financial specialists [38]. The approach was developed with emphasized attention to the interrelation between public corporate governance and accountability [39,40].

Due to the array of vast and complex theories, perspectives, and multidimensional implications that corporate governance has on the economy, particularly on investments, social cohesion [41], and sustainable development, the literature points to the need to further study the relations between governance and performance in state-owned companies [42,43]. Researchers indicate the need to further investigate the interdependencies between internal control, viewed as a governance tool, and global responsibility and performance as sustainable development indicators [44,45].

Based on these assumptions, the present study aimed to identify the relevant factors of corporate governance accountability, starting with errors in governance and financial reporting, that can influence the way in which financial income is reported by public entities. The analysis focused on Romanian public institutions, based on the results of the audits carried out by the Romanian Court of Accounts during the period 2008–2018. The study investigates if the principal components extracted from six chosen variables that concern public governance financial performance assessment could be modeled into a key performance indicator for corporate governance in relation to government revenue.

The paper consists of several sections that substantiate the test's conclusions. In the next section, relevant milestones are presented in order to investigate the relationship between corporate governance indicators and their impact on financial reporting accountability. The following section presents the study methodology, results, and discussions. The last section presents the conclusions, describes study limitations, and formulates our suggestions for possible future research prospects.

2. Snapshot of Regulatory Incentives

The OECD principles on corporate governance require the appropriateness of corporate governance policies, structures, and procedures at the public entity level, and, distinctively, the implementation of internal control systems at the corporate level. The implementation and proper development of internal control mechanisms [45] and the appropriate set of key performance indicators are of particular significance for a company's ability to reach the proposed strategic objectives [46].

According to research studies, accountability, efficiency, and managerial transparency are essential requirements in order for governance to meet institutional objectives in the public sector and create synergetic premises for sustainable development. Measurement models in this direction need to be developed [47,48]. Our paper aims to fill a research gap concerning the possibility of a numerical investigation of corporate governance assessment in Romania.

The study focused on the possibility of creating a link between the statistical available data regarding internal control in public entities and the practical reality of economic concepts, with the purpose of bringing an empirical contribution to sustainable development in public entities and drawing concerns on the need to better anchor regulation and quantifiable assessment. The research is exploratory and aims to provide insights on corporate governance assessment methods and the way the governance system may impact the financial outcomes of public entities.

Attention to governance accountability and ethical evaluation has been raised in Romania since 1999, primarily because of the compulsory requirements to comply with OECD regulations [49]. The regulations adopted by Romania regarding corporate governance have evolved over time, being

harmonized with European principles. According to OECD values, good corporate governance is considered to have a positive impact on financial markets, growth, and investment maturity [46].

The approach of this study was also dedicated to understanding the dichotomy between the formal implementation of corporate governance processes and the importance of their transposition into real activity. At the same time, the study strove to encourage a stronger commitment to the implementation of accountability indicators in developing countries.

3. Research Methodology

The interdependence between the public governance assessment measures and the accuracy of institutional income reported by the Romanian public institutions was analyzed with the principal component analysis (PCA), the most used technique in multivariate analysis. The authors focused primarily on the relationship of internal control system measurements with the rest of the managerial appraisal points.

In the first stage of the study, following the steps mentioned in the literature [50,51], the principal component analysis was used in order to statistically investigate the correlations between the different reference points of corporate governance valuation.

At a later stage, the new variable obtained from principal component analysis was used to construct a global index of corporate governance efficiency (GCEI) in order to determine how information from Romanian Court of Accounts offers a synthetic view of inefficient use of public resources.

The research compiled the information and conclusions presented by Romania's Court of Accounts in its reports from 2008–2018. The role of the Romanian Court of Accounts is to assess the accuracy of the financial statements and budget execution accounts issued by public entities, to identify cases of incorrect or illegal use of public funds or public patrimony, to evaluate the effectiveness of the controls carried out by public institutions, to detect cases of inefficient use of public resources. By acknowledging the contribution of public financial auditors to the improvement of governance in Romanian public institutions, the study analyzed the results reported by the public auditors for each objective set out in their audits during 2008–2018 [30].

The compiled data and the population analyzed consist of the number of errors reported for each objective set for control by public financial auditors in the period 2008–2018. The results were considered benchmarks for corporate governance assessment in the public sector. The number of errors investigated in the current paper was identified by public auditors of Romanian Court of Accounts in the audited public entities, which are presented in a numerical view in Figure 1. The period 2008–2011 shows the effects that the global economic crisis had on public institutions. In addition, relevant information about the implementation and development of governance in Romanian public institutions has become more transparent since 2008, so the data set is limited by the interval 2008–2018.

The audited entities are major credit operators (MCO), secondary credit operators (SCO), tertiary credit operators (TCO), state-owned strategic national companies (CN), state-owned public interest national companies (SN), state-owned independent entities (RA), state-owned companies (SC), state-owned banking companies (SB), and other entities (OE).

The variables analyzed in this study were the following: errors during creation and assessment of budget execution (BVC), errors regarding the accuracy of financial statements (FS), poor implementation and development of internal control systems (SCIM), faults in the collection of government revenues (IBUG), increase of reported situations of ineffectiveness in sound financial management (ADMIN), non-compliance in the process of public procurement (PAQ). Limitations for an extended period of time and data reside in the scarce available information concerning the assessment of governance indicators in public entities in Romania.

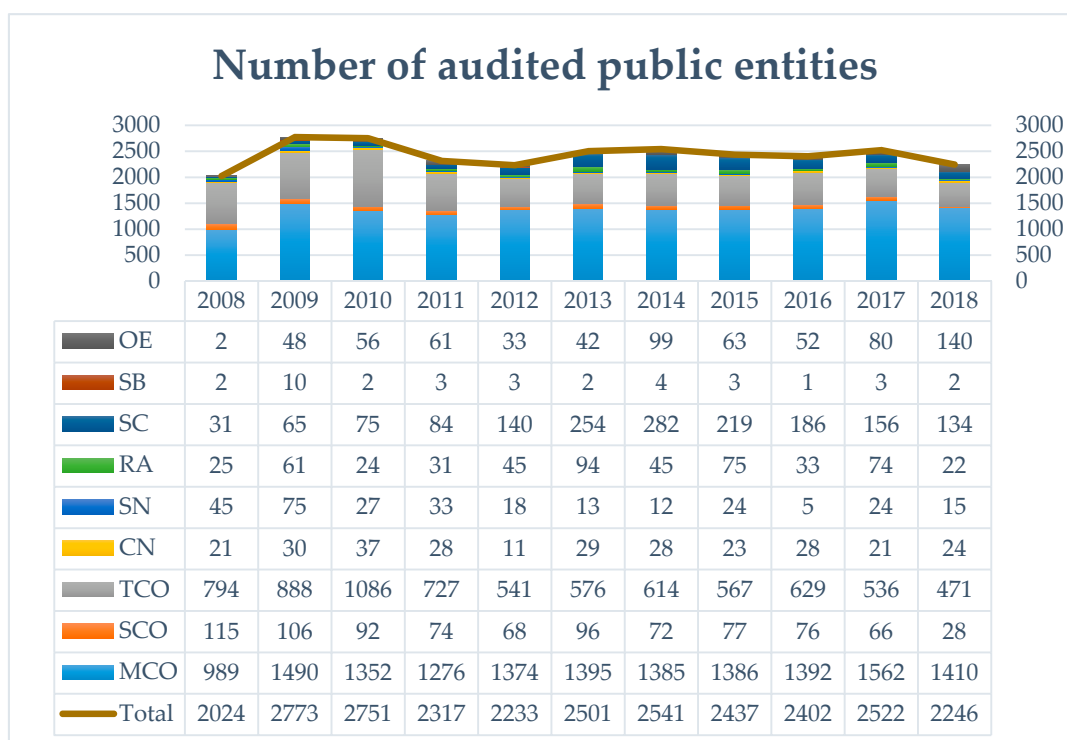


Figure 1. The number of audited public entities during 2008–2016. (Source: Authors' compilation based on the Annual Reports of the Romanian Courts of Accounts [30]) Abbreviations—major credit operators (MCO), secondary credit operators (SCO), tertiary credit operators (TCO), state-owned strategic national companies (CN), state-owned public interest national companies (SN), state-owned independent entities (RA), state-owned companies (SC), state-owned banking companies (SB), other entities (OE).

4. Results and Discussion

4.1. Discussion and Results Regarding the Correlation of Variables

At both the European and Romanian levels, the regulations regarding the implementation of an internal control system in the public sector have evolved significantly. Public awareness was raised in relation to the importance of internal control mechanisms, the need for maturity in risk management, and the rising need for appropriate procedures and policies in public entities [52]. In fact, the annual reports issued by the Romanian Court of Accounts present a distinct chapter for the assessment of internal control [30].

In order to achieve a thorough analysis of the selected reference points, this study focused on investigating the correlations between errors reported by external public auditors on internal control systems and the rest of the corporate governance assessment variables. The statistical method used was principal component analysis (PCA). The results indicated a strong correlation between the chosen variables as per the graphic representation of the calculated main components. The study took into consideration the number of identified errors and not also the value of such errors, because of the major differences between the categorized nonconformities identified by value. As per the reports of the Romanian Court of Accounts, the nonconformities attributed to internal control have no or insignificant value attributed, thus cannot contribute to a comparable analysis of indicators. The situation is somewhat interesting and points to a need to regulate the situation, as per the lack of sanction in case of errors or flaws in the implementation of corporate governance systems in public entities.

The most common errors identified during the public audits, that constitute the population of analyzed variables in the current study, were:

- Nonconformities described as BVC (regarding creation and assessment of budget execution) consist mainly of flaws concerning the provisions of salaries and personnel revenue, nonconformities in the evaluation of revenue dimension related to forecasted expenses, and flaws in the authorization or report of budget execution.
- Nonconformities described as FS (accuracy of financial statements) consist mainly of poor accounting evidence regarding assets, provisions, debt and receivables recognitions, and nonconformities in recognition of income and expenses.
- Nonconformities described as IBUG (procedures of collection of government revenues) consist mainly of failure to enforce measures of collection of public revenue according to legal regulations and hierarchical attributions, flaws of highlighting in accounting evidence, and lack of collection of own revenues, deficiencies in the pursuit for purpose of collection of own revenues.
- Nonconformities described as ADMIN (attributions concerning sound financial management of public patrimony) consist mainly of payment of budgetary expenses with disregard of legal procedures concerning payment procedures and authorization, illegal payments, and flaws of nonconformity during procedures of patrimony inventory.
- Nonconformities described as PAQ (public procurement operations) consist mainly of poor implementation of public procurement procedures, illegal transactions, and acquisitions that do not benefit the actual objectives of public entities.
- Nonconformities described as SCIM (internal control systems) consist mainly of flaws or formal behavior of managerial decision making during the implementation or development of internal control mechanisms.

The correlation matrix indicates a series of statistically significant connections between the variables considered, represented in black in the following table format. The variables represented in red suggest a low statistical connection between the compiled indicators (Table 1).

Table 1. Correlation Matrix.

	BVC	FS	SCIM	IBUG	ADMIN	PAQ
Correlation	BVC	1.000				
	FS	−0.799	1.000			
	SCIM	−0.075	0.280	1.000		
	IBUG	−0.675	0.927	0.471	1.000	
	ADMIN	−0.764	0.848	0.282	0.893	1.000
	PAQ	−0.484	0.563	0.400	0.727	0.712

Source: Authors' Computation.

The statistical data reported by the Court of Accounts for the period 2008–2018 indicates that the errors reported on the creation and assessment of budget execution (BVC) evolved in a reverse proportion to the faults in the collection of government revenues (IBUG), ineffectiveness in sound financial management (ADMIN), or public procurement errors (PAQ). It seems that a greater focus of financial auditors on creation and assessment of budget execution (BVC) led to a smaller number of errors reported for the remaining reference points.

There is also a strong link between the errors in financial statements (FS) and the faults in the collection of government revenues (IBUG), ineffectiveness in sound financial management (ADMIN), or public procurement errors (PAQ). It seems that better collection of governance revenues, effectiveness in financial management, or increased compliance in public procurement resonated with more accurate financial statements. The same strong link of correlation in the same sense was also found in the relationship between ADMIN and IBUG, PAQ and IBUG, and PAQ and ADMIN.

An interesting result revealed by the correlation matrix is the relationship between the number of errors regarding internal control systems (SCIM) and the rest of the analyzed elements. According to Table 1, the correlation of the deviations reported by the external public auditors related to SCIM

with the rest of governance reference points is less than ± 0.5 . Practically, the matrix indicates a link gap between internal control systems and the rest of the governance valuation points. The very low correlation (marked red in Table 1) seems to indicate a very low impact of internal control systems implemented in Romanian public entities. The low result suggests that the effect of implementing and maintaining internal control measures is predominantly formal and has no significant statistical impact or practical utility for other governance processes carried out in public entities. The implementation of internal control seems to be carried out mainly for compliance with the regulatory framework. The practical utility of internal control may not be accomplished apparently for lack of proper understanding.

The statistical relevance of the model was checked using the Kaiser–Meyer–Olkin (KMO) indicator, which reveals that the values obtained by computation (0.708) are acceptable according to Kaiser [53]. The result of the KMO test is supported by Bartlett’s Test of Sphericity (p -value = 0.000), which indicates the suitability of the indicators set for the analyzed model. (see Table 2)

Table 2. KMO test results obtained with SPSS software.

Kaiser–Meyer–Olkin (KMO) Measure of Sampling Adequacy.		0.708
Bartlett’s Test of Sphericity	PAprox. Chi-Square	49.490
	Df	15
	Sig.	0.000

Source: Authors’ computation.

The result of the KMO test can also be correlated with the anti-image correlation table, with the individual variables calculated on the diagonal of Table 3.

Table 3. Anti-image matrices calculated with SPSS.

		BVC	FS	SCIM	IBUG	ADMIN	PAQ
Anti-image Covariance	BVC	0.192	0.062	−0.101	−0.033	0.066	0.068
	FS	0.062	0.056	0.021	−0.039	0.017	0.068
	SCIM	−0.101	0.021	0.474	−0.054	0.034	−0.019
	IBUG	−0.033	−0.039	−0.054	0.040	−0.037	−0.057
	ADMIN	0.066	−0.017	0.034	−0.037	0.138	−0.020
	PAQ	0.068	0.068	−0.019	−0.057	−0.024	0.324
Anti-image Correlation	BVC	0.693 ^a	0.596	−0.336	−0.378	0.407	0.273
	FS	0.596	0.656 ^a	0.131	−0.840	0.197	0.506
	SCIM	−0.336	0.131	0.643 ^a	−0.392	0.132	−0.048
	IBUG	−0.378	−0.840	−0.392	0.656 ^a	−0.497	−0.506
	ADMIN	0.407	0.197	0.132	−0.497	0.848 ^a	−0.112
	PAQ	0.273	0.506	−0.048	−0.506	−0.112	0.744 ^a

^a Measures of Sampling Adequacy (MSA). Source: Authors’ computation. Abbreviations—errors during creation and assessment of budget execution (BVC), errors regarding the accuracy of financial statements (FS), poor implementation and development of internal control systems (SCIM), faults in the collection of government revenues (IBUG), increase of reported situations of ineffectiveness in sound financial management (ADMIN), non-compliance in the process of public procurement (PAQ).

The results of the anti-image correlation matrix, in agreement with the KMO table, confirm that the main component analysis method is appropriate to interpret the correlation between the different valuation results of corporate governance measurements.

The patterns of the compiled indicators reported by the Court of Accounts are presented in Figure 2.

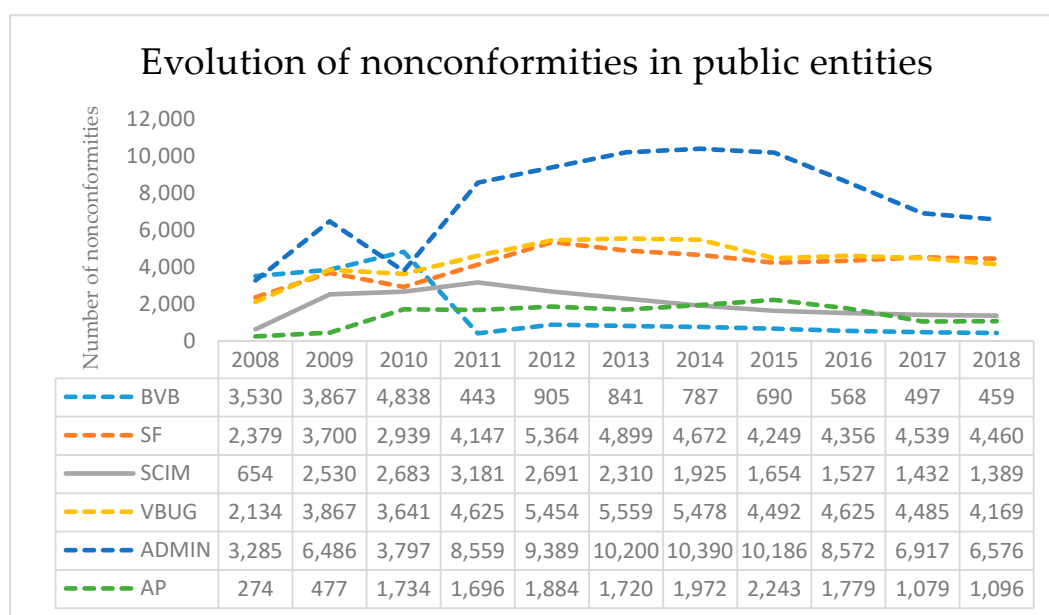


Figure 2. The evolution of errors divided into groups of governance reference points. Source: Authors' compilation based on the Annual Reports of the Romanian Courts of Accounts [30].

According to the graphical representation of the compiled data, the reported errors for SCIM have an oscillating trajectory until 2011. After 2011, the level of errors found in this domain had a sustained downward trajectory, while the evolution of the remaining indicators was oscillating. In practice, a decreasing number of deviations of SCIM indicates a growing degree of compliance of public institutions with the implementation of internal control management systems. Starting with 2011, the uniform trajectory of the SCIM indicator, analyzed along with the oscillating trajectory of the other indicators, seems to confirm the formal grounds of the internal control processes, rather than suggest a real practical applicability.

The dilemma that arises in this situation seems to be: "Why 2011? What is the reason for the new pattern of SCIM?" A brief analysis of the relevant events in this direction revealed that in 2011, the Romanian Court of Accounts published the "Guidelines for the assessment of the internal control system in public entities". The paper aimed to support the external public auditors of the National Court of Accounts in the process of evaluating the internal control systems implemented at the level of the audited public entities. At the same time, the guide strove for an outcome of better understanding of the internal control system in public institutions [54].

From the graphical representation analysis in Figure 2, it can be noticed that the role of the guideline for internal control assessment has uniformized the reported results of audits in the period following 2011. The explanation seems to be that the audited subjects complied formally with the recommendations of public auditors (the number of errors reported decreased). The real utility of internal control, however, does not resonate by harmonizing the evolution of the remaining benchmarks analyzed by external public auditors. The rest of the governance assessment indicators do not seem to be influenced by compliance with the implementation of internal control systems.

With respect to the use of principal components analysis, it is very important to understand how sample size influences the results. The literature shows divergent opinions regarding the dimension of the analyzed sample in order to obtain a more precise estimate of population loadings and more stable results. In this study, the sample size was limited by statistical registration, but it respects the MacCallum et al. recommendation according to which "the minimum level of N or the minimum N:p ratio ... is dependent on some aspects of the variable ... the level of communality plays a crucial role" and the mean level of communalities must "be at least 0.7, preferably higher", [55] see Table 4.

Table 4. Communalities calculated with SPSS.

	Initial	Extraction
BVC	1.000	0.902
FS	1.000	0.887
SCIM	1.000	0.927
IBUG	1.000	0.947
ADMIN	1.000	0.901
PAQ	1.000	0.673

Extraction Method: Principal Component Analysis. Source: Authors' computation.

The compiled communalities show the percentage of variance explained by the extracted components. The "extraction" column shows high values for the variables, thus indicating a very good representation of variables by the extracted components.

Table 5 indicates that two main components were extracted out of the six variances analyzed, the first two account for 87.295% of the total variance.

Table 5. Total variance explained calculated with SPSS.

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.106	68.438	68.438	4.106	68.438	68.438
2	1.131	18.857	87.294	1.131	18.857	87.295
3	0.410	6.831	95.835			
4	0.175	2.913	98.748			
5	0.053	0.888	99.636			
6	0.022	0.364	100.000			

Extraction Method: Principal Component Analysis. Source: Authors' computation.

The first two components are clearly represented in the scree plot compiled with the PCA model (Figure 3) and prove to be quintessential in explaining the model [56] (Table 6). The inflection point suggests the appropriate use of PCA. The first compiled main component is strongly correlated with five of the original variables and accounts for the maximum amount of total variance in the observed variable. The first component increases with the decrease in the number of errors in creating and assessing budget execution (BVC). The increase in the first major component is directly proportional to the increase of the original FS, IBUG, ADMIN, and PAQ variables. The second component accounts for the maximum amount that is left to be explained. The second component increases relative to a single value, respectively the increase in the number of reporting errors regarding the managerial internal control.

Table 6. Component matrix.

	Component	
	1	2
BVC	-0.795	0.519
FS	0.931	-0.144
SCIM	0.399	0.876
IBUG	0.967	0.106
ADMIN	0.945	-0.093
PAQ	0.788	0.231

Extraction Method: Principal Component Analysis. 2 components extracted. Source: Authors' computation.

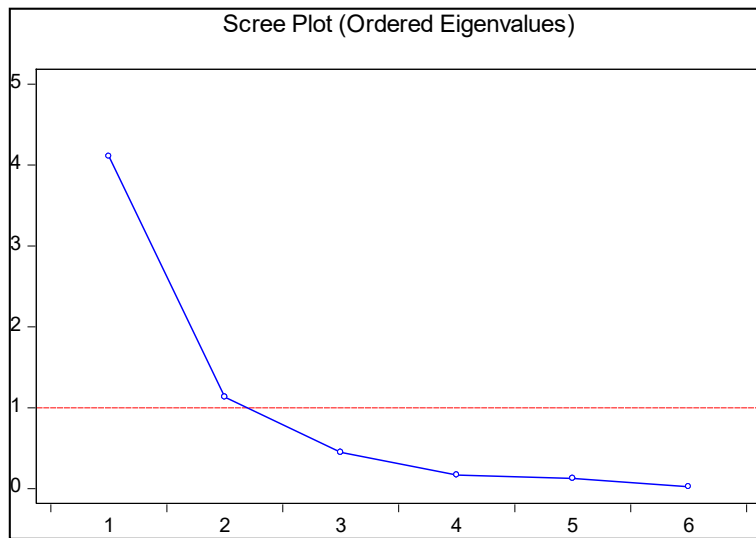


Figure 3. Scree Plot.

The conclusions drawn in the preceding paragraphs can also be graphically explained by the component plot in Figure 4.

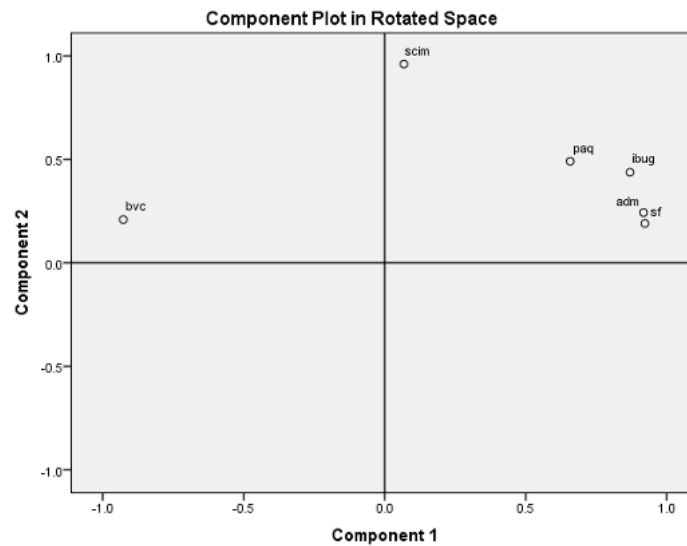


Figure 4. Component Plot. Source: Authors’ computation.

In conclusion, the statistical interpretation of the first research stage indicates the need to further research the correlation between the reported errors in the implementation and maintenance of the internal control and the evolution of other corporate governance benchmarks.

4.2. Discussion and Results Regarding the Efficiency Corporate Governance Index and Its Influence on Government Income

The next stage of the study focused on whether the nonconformities signaled by the Court of Accounts, assembled into an efficiency corporate governance index (ECGI), may be transposed into an effective economic sustainability measurement tool for public entities. The observations and flaws in compliance signaled by public financial auditors create a global assessment image on the performance and financial efficiency of public governance, which can be modeled, as the present study showed, into a single indicator pointing to a certain level of trust regarding sustainable reporting of public revenue and the accuracy of financial statements.

In the public sector, the creation, evolution, and reporting of income are of utmost importance for socio-economic activities. The financial performance and sustainable reporting of public entities are core elements that shape the lives of citizens [27], and the literature shows that empirical studies concerning this topic need to be developed [57–59]. Hence, exploring the links between the efficiency corporate governance index (ECGI) and institutional revenue, from a global economic perspective, may facilitate the understanding of public managers' approach towards equity, efficiency, resilience, compliance, and prudence, as part of the economic sustainability process.

Studies on compliance and disclosure level with regard to financial statements [60,61], as well as the importance of improving the credibility of the information reported by auditors [62], represent an active concern of academics. A global perspective on public financial statements analyzed with the help of ECGI broadens the picture of compliant sustainable reporting.

The results of the first research stage were furtherly acknowledged and used in this stage. The authors' consideration is that managerial accountability can be measured by the benchmark indicators presented by public auditors' reports, aggregated into a single indicator. Principal component analysis helps us understand the extent to which errors reported by external public auditors have revealed an influence on the declared income of public institutions and to construct an efficiency corporate governance index (ECGI). Considering that a small value of ECGI indicates good governance at the institutional level, the indicator is able to efficiently concentrate the contribution of the benchmark indicators followed by the public auditors and thus offers incentives on possible influence towards a sustainable revenue of public entities.

Using the principal component techniques, we constructed an efficiency corporate governance index (ECGI) that describes the aggregate influence of errors reported by external public auditors. In computing the two principal components (noted PC1 and PC2), we used the popular alternative so we consider the scores and the loading to be equal.

In computing the ECGI, we applied Equation (1):

$$ECGI = 68.438/87.295 PC1 + 18.857/87.295 PC2 \quad (1)$$

The value of indices may be positive or negative, which may induce difficulties in interpretation but, nevertheless, also represents a good signal for the management to improve its' efficiency.

The value of the ECGI during the 2008–2018 period is presented in Figure 5.

The higher the compliance of managerial assessment, the lower the value of ECGI obtained and the more accurate the income statements seem to be. A decreasing level of nonconformities SCIM was registered in 2012 and 2013 and the ECGI shows this tendency with a decreased trajectory after a period of practice in the implementation of "Guidelines for the assessment of the internal control system in public entities" (2011) when the process of evaluating the internal control system become formally compliant. We can consider that after 2011, the efficiency of corporate governance increased based on new procedures implemented. Now we can look at ECGI in relation to the revenue indicator and total nonconformities reported by the Romanian Court of Accounts in the period 2008–2018 in order to see a simple picture of management efficiency.

The revenue indicator (INC) reported by the public institutions in the period 2008–2018 was compiled from the reports of the Romanian Court of Accounts, in correspondence with the public reports of the official website of the Romanian Ministry of Finance. The evolution of reported financial indicators (revenue—INC, expenditure—EXP, and the profit/loss indicator—PROF) during the analyzed period is presented graphically in Figure 6.

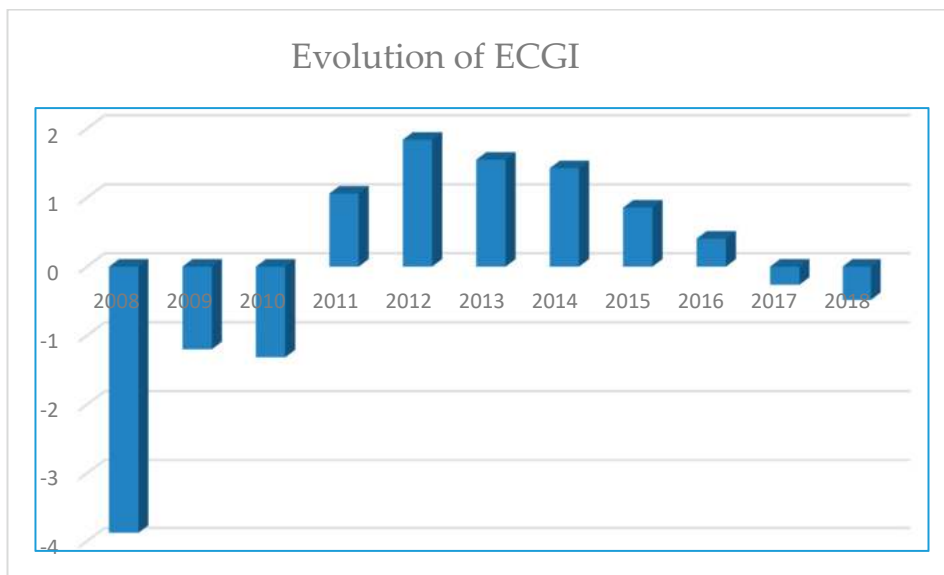


Figure 5. Evolution of efficiency corporate governance index (ECGI). Source: Authors’ computation.

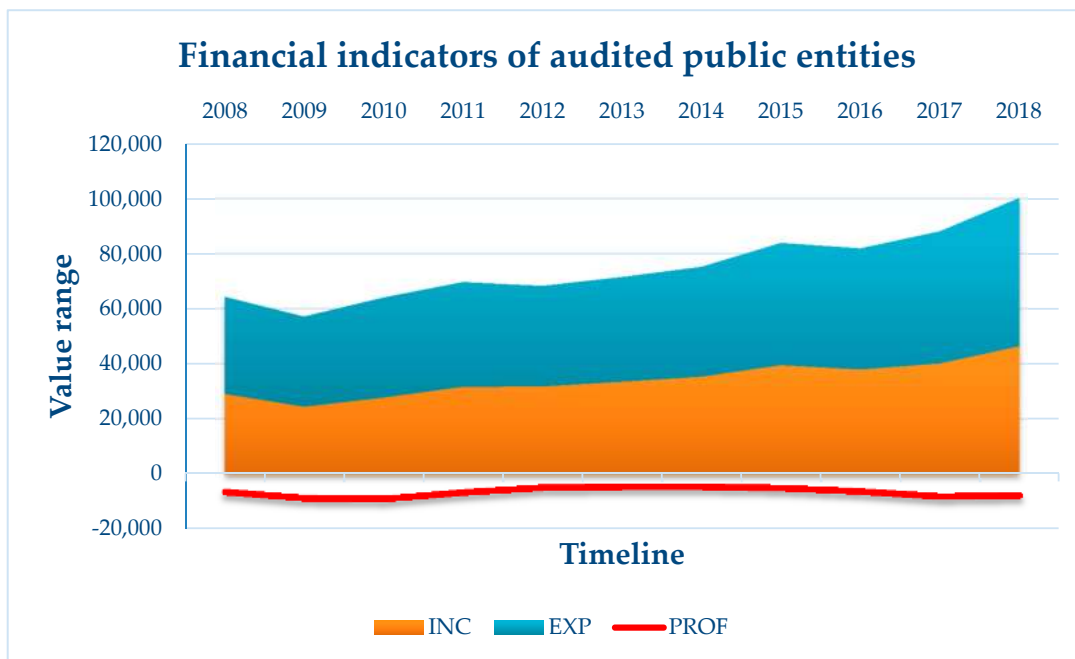


Figure 6. The evolution of total income of Romanian public institutions Source: Authors’ compilation based on the Romanian Court of Accounts Reports and the official site of Romanian Ministry of Finance (www.mfinante.ro). Abbreviations: revenue—INC, expenditure—EXP, and the profit/loss indicator—PROF.

According to the available data, the total income reported by the Romanian public institutions had an oscillatory pattern with slight growth tendencies during the analyzed period. The public revenues were exceeded by total public cost, thus resulting in a negative result of public profit and loss statement. Our study focused on studying the reported income, primarily because in the public sector it is considered an important performance indicator for stability measurement when it comes to public governance [63].

The evolution of the total nonconformities, the ECGI, and the income of public institutions are presented graphically in Figure 7.

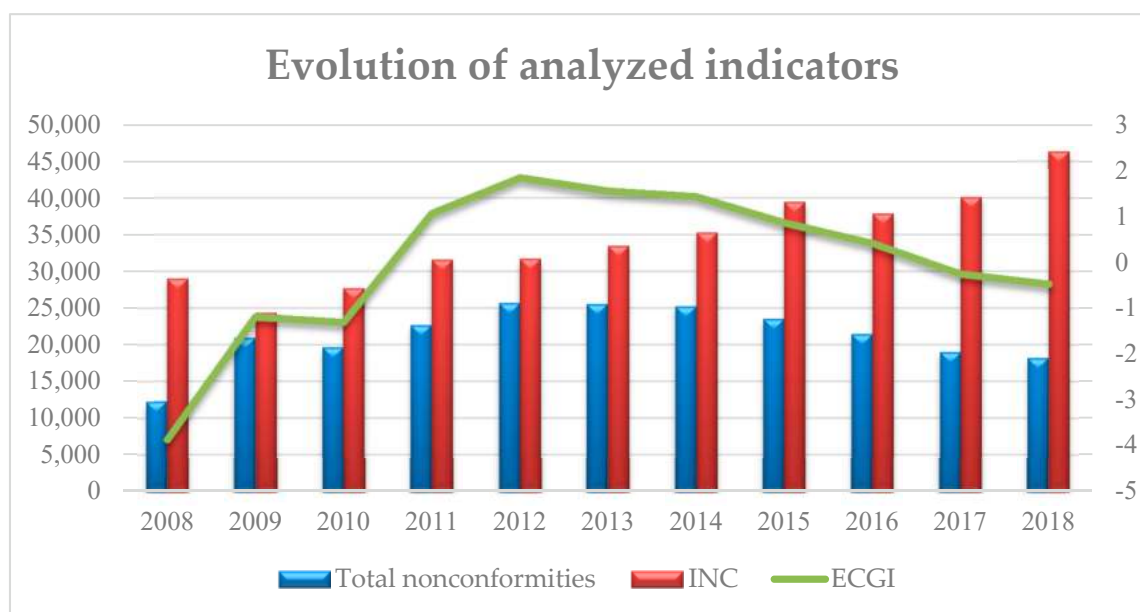


Figure 7. Evolution of income, total nonconformities, and efficiency corporate governance index.
Source: Authors' computation.

The Granger causality test may offer an image of the statistical causal relation between ECGI and income. According to the data graphically presented in Table 7, we cannot reject the hypothesis that INC does not Granger-cause, in the statistical sense, ECGI at lag 1. We do reject the hypothesis that ECGI does not Granger-cause INC, so we can consider that Granger causality runs from ECGI to INC as we expected with a lag of one period. This lag may be explained as the time elapsed between the issuance of recommendations by the Court of Accounts and the implementation or appeal against those recommendations.

Table 7. Granger causality test at lags 2.

Null Hypothesis:	Obs	F-Statistic	Prob.	Obs	F-Statistic	Prob.
INC does not Granger-cause ECGI	10	0.00022	0.9886	9	8.21471	0.0383
ECGI does not Granger-cause INC	10	3.71834	0.0952	9	1.43875	0.3383

Source: Authors' computation.

The research revealed that the total income reported by public institutions was influenced by governance factors included in ECGI, such as problems in the creation and assessment of budget execution, inaccurate financial statements, poor implementation and development of internal control systems, and faults in the collection of government revenues. In other words, when problems signaled in the public audit reports tend to increase in number, the indicator of public general income reported by public institutions tend to decrease or stagnate, especially during the first years of analysis. The situation suggested that the directions of assessment of corporate governance audited by the Romanian Court of Accounts are very effective in detecting situations of misleading income statements, of fault, or intention of managers to diminish reported public incomes. The scandal provoked by the public auditors' report on the Romanian Financial Guard (a former institution invested with operative control attributions) led to the dissolution of the audited institution, because significant failure in collecting governance taxes and corruption incentives were revealed.

Nevertheless, it seemed that the decrease of reported situations of ineffectiveness in sound financial management and non-compliance in the process of public procurement, which is strongly correlated with the trajectory of ECGI, lead to a certain increase of public general income. The situation

is interesting, since the decrease of ECGI indicates better compliance in sustainable reporting of revenues in the public sector. The result can be interpreted as an indicator of the fact that errors reported in the specific directions calculated with ECGI are connected with the managerial attitude towards compliance and efficiency in better strategies meant to increase public institutional revenue. Thus, ECGI incorporates the dimension of errors and flows that globally manifest in the public sector and, at the same time, is an indicator that may give important insights on the possible trajectory of public income.

5. Conclusions

The present study is concerned with the investigation of relevant governance factors that influence general income reported by public institutions in their statements. The reflections of the current paper proposed an empirical approach of the assessment and better understanding of the practical implementation of corporate governance in public entities, starting from the analysis of errors in financial reporting and corporate governance. By acknowledging the gaps in the literature regarding the current topic, we considered that empirical studies are of utmost importance in defining a better regulatory framework and raising awareness on the active role that internal control may bring to corporate governance in terms of setting the premises for sustainable development. The influence of errors reported by public financial auditors was aggregated into an efficiency corporate index (ECGI), able to broaden the picture of compliant sustainable reporting. The interdependencies between the indicators of errors in financial reporting and governance revealed interesting incentives regarding the need to raise awareness on the practical usefulness of internal control among governance tools in the public sector, as well as an impetus for transparency regulatory attention.

A first perspective profiled by the results of the research indicated a currently low utility of the mechanism for the implementation and follow-up of internal control mechanisms in Romanian public institutions. The low utility can be explained by perceiving this mechanism with an eminently formal purpose to comply with the legal requirements. The low correlation between internal control systems and the rest of the governance processes suggested that internal control has little influence on the real improvement of the institutional system as a whole.

Another possible perspective for the low correlation of internal control with the rest of the corporate governance processes may be that the assessment of internal control (both internally and externally) is treated with a certain degree of superficiality. The errors reported as a consequence of assessment were not significantly valued and did not impose retaliation for faulty management. A possible interpretation of errors found for internal control implementation is that the noncompliance does not impose a significant or sufficient coercion of managerial factors. The situation may be corrected by a more accurate valuation for deviations of internal control systems and the establishment of sanctions against the managerial factors that cause such deviations.

The conversion of formal internal control mechanisms into a real and functional governance tool could also be achieved by setting up an effective motivational system addressed to management factors. It is well known that managers of public entities are assigned certain key performance indicators to which supplementary remuneration may or may not be granted. However, statistical data indicate that this motivational measure is not sufficient to raise the awareness of the real need to establish internal control in public entities.

Depending on the impact analysis of coercion by sanctioning or increasing the degree of motivation for compliance, the mix of the two measures can be debated for implementation in order to bring value and usefulness to the implementation of internal control systems among public institutions. Data in this direction is extremely limited and, consequently, may represent an incentive of policy transparency development in order to support sustainable reporting and governance assessment.

The research statistically points that governance assessed with ECGI has a great impact on institutional revenue. Since internal control mechanisms tend to be primarily formal, managerial accountability is measured by independent benchmarks that may be better combined in a more

meaningful system of valuation models starting with the current research approach. As our study showed, errors in financial reports and corporate governance mechanisms are an important assessment tool that may bring valuable support for corporate accountability and compliant sustainable reporting.

In terms of perspective, the research's goal was to expand the continuous evaluation mechanism to a continuous improvement cycle and to develop a better understanding of internal control in public entities. The process involves not only the evaluation step, but also the need for risk assessment, the decision making, and the improvement of goal achievement.

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