2nd International Conference ‘Economic Scientific Research - Theoretical, Empirical and Practical Approaches’, ESPERA 2014, 13-14 November 2014, Bucharest, Romania

GDP Correlation Analysis with Structural Elements of Added Value

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Abstract

Carry out this research has as a starting point the idea economic specialists according to which the sum of the values added as grown from inside the country, on a sector, an economic branch or on areas of activity reflect/appends gross domestic product created by the work carried out within the country concerned, in the sector of economic or branch of the scope of the activity. So, starting from how to determine the gross value added at the level of enterprises, namely the additive method, I watched the correlation between the components of value added and gross domestic product. The correlation itself is important idea that provides information on the factors that influence the gross domestic product starting from the structure gross value added. Thus at the end of the paper we can draw some important conclusions about how the rate of remuneration of employees, depreciation regime, fiscal policy, the rate of remuneration of investors and financing policy of the firm affects GDP.

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Selection and/or peer-review under responsibility of the Scientific Committee of ESPERA 2014.

Keywords: gross domestic product, value added, structure, additive method, correlation, regression

1. Introduction

The starting point of this research work is the idea that the GDP of a country is given by gross value added of all sectors, industries and business areas of the country.

The main objective of this paper is to follow depending on the correlation between the structure of added value elements of its gross domestic product at a country level. Also aims and the degree of influence that policy mounts, gasket, fiscal and financial and wage levels and motivation of investors have on the gross domestic product of industry.

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The paper is divided into four major parts as follows: the first part of the theoretical, the authors bring to the attention and define specific terms used within the computing work and relationships used; second part of the research methodology is presented here emphasizing authors used data sources, software, statistical indices used, the necessary tests performed in order to obtain a possible regression model; third party in which the authors illustrate all this research through a case study in the section hotels and restaurants, hotels group, drawn from the BVB; the last part the authors have separated some important conclusions about how gross domestic product, based on added value structure can be influenced by a certain time.

The study is limited to financial data for the year 2013, the companies belonging to your domain of activity in the hotel, which is extracted from the financial accounting documents presented to every company on the BVB.

2. Concepts and terms used

For a better understanding of the terms used, method of calculation and the relationships that exist between these terms we conducted a review of them, making each definition and characterization.

The first term is the added value, which is common in financial analysis works from home and abroad, an indicator that measures the level of production activity.

A definition of the added value we meet Lucian Buse et al: "Value added is a synthetic indicator that expresses the added value (wealth) created by a company as a result of effective use of the potential it has, over the use of factors of production coming from third parties."

Author Marian Siminica defines the value added in a more simplistic, it is "a synthetic indicator that expresses the value of work created new productive enterprises in a certain period of time."

Another added value we meet the definition of C. Stanescu, A. and A. Baicusi Isfanescu, this indicator is defined "by expressing increasing value added content (positive) wealth that is produced by technical-productive activity."

Whether we refer to the author of the study and the above, we find a remarkable added value ie "better express the added effort of every enterprise directly to GDP creation". This phrase representing the key starting point in making research paper.

To highlight the structural elements of added value we used to one method of calculation related to this indicator, namely the additive method.

Additive method consists in summing all data elements in the form of spending that reflects input elements to create enterprise value plus profit for the investor and that the Romanian state taxes and fees.

\[ \text{VA} = \text{Cs} + \text{Cf} + \text{A} + \text{IT} + \text{PN} \]

Where: 
- \( \text{Cs} \) - wage costs
- \( \text{Cf} \) - financial costs
- \( \text{A} \) - depreciation
- \( \text{IT} \) - taxes and import
- \( \text{PN} \) - net profit.

Another term encountered since the beginning of the work, in fact the core of the work, is the gross domestic product (GDP).

A definition of this indicator is "Gross Domestic Product (GDP abbreviated) is a macroeconomic indicator that reflects the sum of the market value of all goods and services for final consumption goods in all sectors of the economy within a country within a year. It can be calculated at the level of regions or localities."

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† Lucian Buse, Marian Siminica, Daniel Circiumaru, Dalia Simion, Mirela Ganea, Analiza economico-financiara, Ed. Sitech, Craiova, 2010, pag. 43
‡ Siminica Marian, Analiza economico-financiara, Manual Universitar, Ed, Universitaria, Craiova, 2009, pag. 59
§ Stanescu C., Isfanescu A., Baicusi A., Analiza economico-financiara, Ed. Economica, Bucuresti, 1996, pag. 65
** http://ro.wikipedia.org/wiki/Produs_intern_brat
Authors Barbacioru Constantin and Daniela Popescu define GDP as "GDP is an indicator that measures two things: the total income of all participants in economic life and total expenditure on goods and services produced in the economy".

Computing relationship that I left in order to make the research paper is:

\[ GDP = \sum VA \quad (1) \]

Given the method of determining the value added, namely additive method, the relationship can be developed as follows:

\[ GDP = \sum (Cs + Cf + A + IT + Pn) = (Cs_1 + Cf_1 + A_1 + IT_1 + Pn_1) + (Cs_2 + Cf_2 + A_2 + IT_2 + Pn_2) + \ldots + (Cs_n + Cf_n + A_n + IT_n + Pn_n). \quad (2) \]

3. Research methodology

To conduct this work we have taken and processed financial data sheets for the business firms in Bucharest, companies listed on the Bucharest Stock Exchange.

Summary Period resume to 2013, the correlation being made instead following their evolution at branch level.

The method applied in determining gross value added is additive method, the method involves adding elements in the form of expense items that fall in the output, new value creation, value added.

Companies used in the study case are: Avicola Slobozia S.A, Bega Turism Timis, Borcea Calarasi, Bucuresti Turism S.A, Casa de Bucovina mountain club, Gramat S.A, Nord SA Bucuresti, Orizont Turism S.A, Turism Felix and Tusnad S.A.

Correlation analysis was possible using the statistical program SPSS, the index used is Pearson index.

Also on significant results of correlation analysis, we established a regression equation, the equation GDP as a dependent variable and the structural elements of added value as independent variables.

4. Case study

Making the case study represents the culmination of the research paper. In this part of the work we managed to create a foundation to support the theory of the first part of the work.

The first step in the case study was the collection and processing of financial data related to companies analyzed data used to determine the value added at each company.

The results on the added value associated companies analyzed are shown in the following table:

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Barbacioru Contantin, Popescu Daniela, Macroeconomie, Ed. Universitaria, Craiova, 2001, pag. 67
Table 1: GDP calculation

| Company                        | GDP       | Add Value | Cs        | Cf        | A         | IT         | Pn         |
|--------------------------------|-----------|-----------|-----------|-----------|-----------|------------|------------|
| Avicola Slobozia SA (AVSL)     | 20,194,454| 20,194,454| 9,912,294 | 660,573   | 3,334,852 | 3,320,202  | 2,966,533  |
| Bega Turism Timis (SCDE)       | 20,785,795| 20,785,795| 3,953,758 | 5,358,122 | 7,166,874 | 2,088,223  | 2,218,818  |
| Borcea Calarasi (BRCE)         | 648,868   | 648,868   | 771,443   | 2,366     | 136,391   | 270,621    | -531,953   |
| Borcea Calarasi (BRCE)         | 648,868   | 648,868   | 771,443   | 2,366     | 136,391   | 270,621    | -531,953   |
| Casa de Bucovina (BCM)         | 3,357,228 | 3,357,228 | 1,523,996 | 75,966    | 479,295   | 657,508    | 620,463    |
| Gramat SA Mangalia             | 237,127   | 237,127   | 30,460    | 13,955    | 119,574   | 58,047     | 15,091     |
| Nord SA Bucuresti (NORD)       | 156,011   | 156,011   | 183,882   | -1,585,430| 550       | 54,032     | 1,502,977  |
| Orizont Turism (ORTU)          | 3,532,365 | 3,532,365 | 2,393,008 | 1,326,200 | 1,287,960 | 1,193,503  | -2,668,306 |
| Turism Felix (TUFE)            | 25,773,718| 25,773,718| 11,616,420| 925,508   | 5,859,069 | 4,269,210  | 5,707,875  |
| Tusnad SA                      | 9,712,145 | 9,712,145 | 11,582,986| 799,219   | 1,245,288 | 488,941    | 3,985,094  |
| **TOTAL**                      | **142,424,837** | **142,424,837** | **377,000** | **218,000** | **121,000** | **88,000** | **-4,045,000** |

The correlation between GDP and the structural elements of added value, correlation determined and analyzed using SPSS statistical program, specifically with Pearson index is highlighted below:

Table 2: Correlations analysis

| Correlations | GDP    | Cs     | Cf     | A      | IT     | Pn     |
|--------------|--------|--------|--------|--------|--------|--------|
| Pearson      | 1,000  | ,141   | ,916   | ,982   | ,875   | ,708   |
| Correlation  |        |        |        |        |        |        |
| Cs           | ,141   | 1,000  | ,205   | ,047   | ,395   | ,049   |
| Cf           | ,916   | ,205   | 1,000  | ,918   | ,643   | ,561   |
| A            | ,982   | ,047   | ,918   | 1,000  | ,842   | ,712   |
| IT           | ,875   | ,395   | ,643   | ,842   | 1,000  | ,756   |
| Pn           | ,708   | ,049   | ,561   | ,712   | ,756   | 1,000  |
| Sig. (1-tailed) |        |        |        |        |        |        |
| PIB          | .      | ,349   | ,000   | ,000   | ,000   | ,011   |
| Cs           | ,349   | .      | ,285   | ,449   | ,129   | ,446   |
| Cf           | ,000   | ,285   | .      | ,000   | ,022   | ,046   |
| A            | ,000   | ,449   | ,000   | .      | ,001   | ,011   |
| IT           | ,000   | ,129   | ,022   | ,001   | .      | ,006   |
| Pn           | ,011   | ,446   | ,046   | ,011   | ,006   | .      |
| N            | PIB    | 10     | 10     | 10     | 10     | 10     |
|              | Cs     | 10     | 10     | 10     | 10     | 10     |
|              | Cf     | 10     | 10     | 10     | 10     | 10     |
|              | A      | 10     | 10     | 10     | 10     | 10     |
|              | IT     | 10     | 10     | 10     | 10     | 10     |
|              | Pn     | 10     | 10     | 10     | 10     | 10     |

After analyzing the Pearson correlation index set we can say that we have a strong correlation directly between the four elements of value added and GDP, namely: direct and strong correlation between the depreciation and GDP; another equally strong correlation was established between the company's financing policy and GDP; also have established strong correlations between direct and reflected fiscal policy through taxes, the investors gain and GDP.

Next we tested the results using SPSS considering a regression model. From ANOVA test results show that the elements R and R² have the significance of the values, this offers significant regression model performed.
Based on the 5 elements which enter into the structure of value added regression equation was established as:

\[ Y = 0.6095*Cs + 1.5119*Cf + 3.9678*A + 11.5569*IT + 4.8564*Pn + e \]  
(3)

Where: e – error results

So we can say that between the GDP and the structural elements of the value added there is a strong correlation, the results SPSS Pearson's made with index reflecting the essential aspect of the work.

Acknowledgements

This paper is supported by the Sectorial Operational Programme Human Resources Development (SOP HRD), financed from the European Social Fund and by the Romanian Government under the contract number SOP HRD/159/1.5/S/136077.

5. Final conclusions

Paper titled Analysis of the correlation of GDP with the structural elements of gross value added by removing some conclusions end the essential, namely:
- In the hotel sector was found that between GDP and value added components of strong links and direct;
- Between the company's depreciation and GDP strongest correlation was established, so the higher the level of depreciation is higher with both GDP is even higher;
- Also between finance and fiscal policy in the economic sectors of a company that has strong and direct influence on GDP;
- Is important in an industry and the level of remuneration of investors, although the correlation did not result in intensity as in the case of financial expenses and taxes and fees, though the correlation is one strong direct.

So starting from the idea that a country's GDP can be determined by adding the gross added value, we analyzed not link existing between the structural elements of add value and GDP, with the reference values of items found in the hotel sector firms, firms listed on the BVB.

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