Abstract. Steady and stable share market is one of the factors that determines the investment climate in the country and encourages redistribution of investment capital in promising sectors of the economy. Thus, it is important to study correlation between share market and economy. The paper analyzed the interaction between the parameters of Ukrainian share market (the volume of registered share issues, the volume of trading shares on the stock market, the volume of trading shares on a formal stock market and the number of issued shares in Ukraine) and economic development (GDP). The results of evaluation models suggest that the volume of registered share issues and the volume of trading shares on the stock market have no impact on Ukrainian GDP. But the variation in GDP determined by the variation of share trading volume on the formal share market and the number of issued shares in Ukraine.

Key words: share market, econometric model, regression, correlation and regression analysis, GDP, Ukrainian economic development.

Introduction

In your introduction, you need to let the readers and markers of your manuscript know why the manuscript is important and what exactly the manuscript is about. It is essential to establish these things because it places the reader/marker in a better position to understand the significance of the material presented in the rest of the manuscript. Although the introduction comes at the beginning of the manuscript, it is not the first section you should write. It is easier to write the introduction after you have dealt with your method and results section because that way you are introducing the section with knowledge about what you did and what the results were. This knowledge allows you to shape your introduction so it leads up to your findings more specifically.

The main function of securities is to mobilize funds for financial support active business and production activities. At the same time in economy all the components may vary, so it is important to determine their subordination, consistency and direction of interaction and mutual influence. Today, the development of the Ukrainian share market depends on several factors such as GDP, inflation, unemployment, the amount of money, the total savings amount of deposits and loans raised and issued by banking institutions, level of investment to the national economy, stock market capitalization, currency fluctuations, political situation etc. Through the share market in today's economy performed reimbursement, distribution and redistribution of resources, capital and income. Effectiveness of this market depends on the micro- and macroeconomic factors.

Given the importance of the stock market for economic growth in Ukraine, it is appropriate to assess the impact of communication and share market for economic growth of Ukraine using econometric modeling. The subject of our analysis is to research the dependence of GDP and parameters of the Ukrainian share market in terms of the financial instrument of domestic enterprises. Summary measure that reflects the state of the economy is state GDP. Therefore, the figure was taken as the basis for the model. The key parameters of the Ukrainian share market, which most clearly reflect its function, defined the following parameters: the volume of registered share issues, the volume of trading shares on the stock market, the volume of trading shares on a formal stock market, the number of issued shares.

Results

Studies of interference of basic parameters of the Ukrainian share market on GDP for the period from 2002 to 2013 was carried out using the software package econometric analysis Eviews 4.0. In our research,
calculations were made according to the stages of building econometric multi-linear regression. Multivariate correlation and regression analysis that was applied, makes it possible to assess the extent of the impact study on the effective rate of each of the factors entered into the model at a fixed position at the secondary level other factors.

It is accepted that to obtain reliable results it is necessary to build econometric models at least 10 observations. Therefore, to construct a model was selected 12 observations. Output data that have been selected to build the model are shown in Table 1.

<table>
<thead>
<tr>
<th>Year</th>
<th>GDP at current prices (nominal GDP), bln. UAH</th>
<th>The volume of registered share issues, bln. UAH</th>
<th>The volume of trading shares on the stock market, bln. UAH</th>
<th>The volume of trading shares on a formal stock market, bln. UAH</th>
<th>Number of issued shares, units</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>225,81</td>
<td>12,80</td>
<td>34,24</td>
<td>0,94</td>
<td>2348</td>
</tr>
<tr>
<td>2003</td>
<td>267,34</td>
<td>18,02</td>
<td>76,99</td>
<td>0,84</td>
<td>2697</td>
</tr>
<tr>
<td>2004</td>
<td>345,11</td>
<td>28,34</td>
<td>138,77</td>
<td>1,84</td>
<td>1705</td>
</tr>
<tr>
<td>2005</td>
<td>441,45</td>
<td>24,81</td>
<td>179,79</td>
<td>4,48</td>
<td>1435</td>
</tr>
<tr>
<td>2006</td>
<td>544,15</td>
<td>43,54</td>
<td>225,65</td>
<td>6,95</td>
<td>1419</td>
</tr>
<tr>
<td>2007</td>
<td>720,73</td>
<td>50,00</td>
<td>283,54</td>
<td>13,61</td>
<td>1297</td>
</tr>
<tr>
<td>2008</td>
<td>948,06</td>
<td>46,14</td>
<td>352,82</td>
<td>11,82</td>
<td>1161</td>
</tr>
<tr>
<td>2009</td>
<td>913,35</td>
<td>101,07</td>
<td>470,73</td>
<td>13,54</td>
<td>741</td>
</tr>
<tr>
<td>2010</td>
<td>1082,57</td>
<td>40,59</td>
<td>556,25</td>
<td>43,75</td>
<td>5052</td>
</tr>
<tr>
<td>2011</td>
<td>1316,60</td>
<td>58,16</td>
<td>636,07</td>
<td>68,59</td>
<td>2513</td>
</tr>
<tr>
<td>2012</td>
<td>1408,89</td>
<td>15,84</td>
<td>591,86</td>
<td>21,54</td>
<td>247</td>
</tr>
<tr>
<td>2013</td>
<td>1454,93</td>
<td>64,23</td>
<td>171,10</td>
<td>44,92</td>
<td>218</td>
</tr>
</tbody>
</table>

To construct the model identify variables in the Table 2. Based on knowledge of econometrics and finance theory was elected a form of analytical dependence (specification) for the construction of multi-linear econometric model:

\[ Y = a_0 + a_1X_1 + a_2X_2 + a_3X_3 + a_4X_4, \]

\( a_0, a_1, a_2, a_3, a_4 \) – model parameters;
\( X_1, X_2, X_3, X_4 \) – factors of the model.

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Title</th>
<th>Role in the model</th>
</tr>
</thead>
<tbody>
<tr>
<td>x1</td>
<td>The volume of registered share issues, bln. UAH</td>
<td>Factor</td>
</tr>
<tr>
<td>x2</td>
<td>The volume of trading shares on the stock market, bln. UAH</td>
<td>Factor</td>
</tr>
<tr>
<td>x3</td>
<td>The volume of trading shares on a formal stock market, bln. UAH</td>
<td>Factor</td>
</tr>
<tr>
<td>x4</td>
<td>Number of issued shares, units</td>
<td>Factor</td>
</tr>
<tr>
<td>y</td>
<td>GDP at current prices (nominal GDP), bln. UAH</td>
<td>Dependent variable</td>
</tr>
</tbody>
</table>

By using regression analysis method was defined relationship equation between GDP at current prices \((y)\) and the volume of registered share issues \((x1)\), the volume of trading shares on the stock market \((x2)\), the volume of trading shares on a formal stock market \((x3)\) and the number of issued shares \((x4)\) in Ukraine for the period from 2002 to 2013:

\[ y = 579.84-1.09x1+1+0.82x2+13.79x3-0.14x4 \]

The coefficients of factor indexes are constructed model as positive and negative values. This indicates that the selected factors affecting the Ukrainian share market on GDP both positively and negatively. The estimation results of the model shown in Figure 1. Based on estimates of the constructed model we can draw the following conclusions. Prob. \((x1) = 0.6939\), which is higher than 0.05 (significance level), then we can
conclude insignificant variable x1 at a significance level of 0.05. Therefore x1 factor should be excluded from the model.

Prob. (x2) = 0.0642, which is higher than 0.05 (significance level), then we can conclude insignificant variable x2 at a significance level of 0.05 and it should also be excluded from the model. Prob. (x3) = 0.0075, which is less than 0.05 (significance level), then it can be concluded about the importance of variable x3 at a significance level of 0.05. Prob. (x4) = 0.0188, which is less than 0.05 (significance level), then it can be concluded about the importance of variable x3 at a significance level of 0.05.

After excluding factors x1 and x2 from the model it should re-build the regression equation with the parameters x3 and x4. This is a logical extension of the modeling process. The equation of the relationship between GDP at current prices (y) with share trading volume on the formal share market (x3) and the number of issued shares in Ukraine (x4) for the period from 2002 to 2013 is as follows:

\[ y = 689.07 + 18.53x_3 + 20.14x_4 \]

The estimation results of the model shown in Figure 2. Based on estimates of the constructed model can draw the following conclusions. Prob. (x3) = 0.0002, which is less than 0.05 (significance level), then it can be concluded about the importance of variable x3 at a significance level of 0.05. Prob. (x4) = 0.0213, which is less than 0.05 (significance level), then it can be concluded about the importance of variable x3 at a significance level of 0.05.

As Prob (F-statistic) = 0.000541, which is less than 0.05 and 0.01 (significance level), it can be concluded about the importance of regression at any level of significance. To determine the density of communication between variables in multivariate models using just figure Adjusted \( R^2 \) (estimated coefficient of determination). The relationship between the variables y, x3 and x4 is dense (solid), because the coefficient of determination of the constructed model Adjusted \( R^2 = 0.7703 \) (Fig. 2), which is quite good value for both real and simulated data for given besides long time period observations (12 years). This suggests that the variation in GDP 77.03% determined by the variation of trade shares on the formal stock market and the number of issued shares in the country. In general model can be considered successful, because the closer the coefficient of determination to 1, the better the independent variables explain the dependent variable.

Verify the adequacy of the model built using Fisher's F-test. We must compare the value found almost F-statistics from the theoretical (tabular) value. The adequacy of the model means that rejected the hypothesis that all coefficients of the model simultaneously equal to 0. The actual value of F-test compare with the theoretical value at significance level and degrees of freedom \( k_1 = m = 2 \), \( k_2 = n - m - 1 = 12 - 2 - 1 = 9 \), where \( m \) - number of factors; \( n \) - number of observations. In the analyzed model \( n = 12 \) (number of years), \( k = 2 \) (the number of factors in the multivariate indicator model).
The theoretical value can be found in Table F-distribution and 2 with 9 degrees of freedom. For this model theoretical (in brief) statistical significance Fisher's F-test $F_{\text{theor.}}(m;n-m-1;\alpha) = F_{\text{theor.}}(2;12-2-1;0.05) = 4.26$. The actual value of the Fisher's F-test calculated as follows:

$$F_{\text{actual}} = \frac{n-k-1}{\text{R}^2} \cdot \frac{R^2}{1-R^2} = \frac{12-2-1}{2} \cdot \frac{0.8121}{1-0.8121} = 19.44$$

In this case, $n = 12$ (number of years), $k = 2$ (the number of factors). Consequently, the actual F-test calculated manually coincided with the value calculated in the program Eviews (Fig. 2). Further, the actual value of F-test compare with the tabulated value at significance level and degrees of freedom $k1=m=2$, $k2=n-m-1=12-2-1=9$.

As $F_{\text{actual}} > F_{\text{theor.}}(m;n-m-1;\alpha)$, the coefficients of the model are significant to the level of significance, and the model is adequate and regression considered statistically significant.

To have a general statement about the quality of the constructed model of relative deviations for each observation we must calculate its average error of approximation (it means relative linear deviation of the estimated $Y$ and $Y$ actual in percentage) using the formula:

$$A = \frac{100}{\bar{Y}} \sqrt{\frac{\sum (y - \hat{y}_i)^2}{n}} - \text{residual sum of squares;}$$

$$n - \text{number of observations; } \bar{Y} - \text{the average size of GDP.}$$

$$A = \frac{100}{578.625} \sqrt{\frac{413717.6}{12}} = 32.09\%$$

So,

The lower of theoretical line regression calculated by the equation deviates from the actual (empirical) line, the lower the average approximation error. In the research model it is equal to 32.09%. Given that the economic calculations assumed error in 10 - 20%, we can conclude that this equation describes well enough communication relationship, which has been studied.

The coefficient of elasticity of GDP and the volume of trading shares on a formal stock market will look like:

$$E_{Y/X} = \frac{\partial \hat{Y}}{\partial X_3} : \frac{\bar{Y}}{X_3} = 18.5348: (578.63/19.41) = 0.62.$$
The coefficient of elasticity of GDP and number of issued shares will look like:

\[ E_{X_4} = \frac{\partial \hat{Y}}{\partial X_4} \cdot \frac{\bar{Y}}{\bar{X}_4} = -0.1399(578.63/1736) = -0.42 \]

That is, as the number of issued shares in Ukraine by 1% and all other factors held constant, GDP decreased by 0.42%.

The total elasticity of Y factors x1 and x2 is 0.20%. In other words, GDP increased by 0.2% when both increase by 1% the volume of trading shares on a formal stock market and the number of issued shares.

**Discussion**

Thus, constructing and analyzing econometric model depends GDP of basic parameters of the Ukrainian share market, the following conclusions:

1. The results of evaluation models suggest that the volume of registered share issues and the volume of trading shares on the stock market have no impact on Ukrainian GDP because they are insignificant in terms Probability. Therefore, a new model was built except insignificant factors.

2. The model dependence of the volume of trading shares on a formal stock market, number of issued shares and GDP showed that the model is adequate, as selected factors as independent variables to 77.03% due to the tendency of the dependent variable.

3. Relationship between GDP and the volume of trading shares on a formal stock market and number of issued shares is tight.

Built econometric model can be used by public authorities to evaluate the effectiveness of the state policy in the sphere of joint relations. Calculations and test models for compliance with key criteria multivariable model (Fisher's F-test) should confirm the correctness of the chosen strategy of the state of the share market. If the new parameters correspond to the statistical significance of the value and reliability, it will indicate the effectiveness of government measures in this area. If the model will be inadequate, it would mean error of the course of government reform.

Econometric studies of the role of financial sector in the economic growth for the group of countries that are on the same stage of development as the Ukraine (in countries where public sector occupies an important place) show that today the impact of capital market development in the real economy is not found in any way. The development of the financial sector compared to the real forces in the last decade to draw attention to the so-called hypothesis of "separation of financial sector of the real economy." The basis of the hypothesis of separation from the real financial sector based on two conditions. It is believed that the rate of growth of financial markets higher as compared to those in the real economy. Also, assume that financial markets characteristic deviations from the normal performance of their functions.

**References**

