CORRELATIONS BETWEEN THE ECONOMIC VALUE ADDED AND THE PRICE OF SHARES

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ABSTRACT
This paper is intended to study the connection between the Economic Value Added (EVA) and the price of shares listed with the New York Stock Exchange (NYSE). The study covers 635 listed companies, the period studied for the EVA is June 2012, and the quotation of the shares is for August 2012.

KEY-WORDS: Economic Value Added (EVA); Net income; EVA/Equity; Return on Equity (ROE); Stock Price.
Classification symbols JEL: M21; M41; M49.

Introduction
The Economic Value Added is a registered mark of Stern Stewart & Co and a measure of the economic profit. “It is calculated as the difference of the net operational profit after taxation and the cost of opportunity of the invested capital. This cost of opportunity is determined by the weighted mean cost of the owned equity and the global capital ("WACC"), and also by the value of the employed capital.
EVA = (Return on Capital - Cost of Capital) (Capital Invested in Project)\(^1\)

As for the ROE, for the purpose of the study based on the balance sheets, published on 03.30.2012 or 06.30.2012 for the 635 companies listed with the New York Stock Exchange (NYSE) the % values thereof vary from -2.328,1% in the case of DISH NETWORK CORP (a company acting in the Media field), followed by LIMITED BRANDS INC (a company in the field of Specialty Retail), the ROE of which is reported as -618,3%, and the maximum value of ROE is reported by companies DOW CHEMICAL, (a company acting in

\(^1\) www.sternstewart.com
After analyzing ROE for the 635 companies, we differentiate 3 cases:

- 66 companies report negative ROE. The cumulated values reported by the companies with negative ROE totalize -6,266,94%.
- 3 companies report ROE 0%.
- 566 companies report positive ROE. The cumulated values reported by the companies with positive ROE totalize 16,939,7%.

As for the reported profit or loss reported by the 635 studied companies, we differentiate as follows:

- 57 companies report losses. The cumulated values of the reported losses totalize -9,244 million $.
- 2 companies report 0 profit.
- 576 companies report profit. The cumulated values of the reported profits totalize +611,888 million $.

The highest loss is reported by COMPUTER SCIENCES CORP (in the field of IT Services) amounting to -4,242 million $, followed by SEARS HOLDING CORP with a loss of -2,781 million $; the lowest loss is reported by ARTHROCARE CORP (in the field of Health Care Equipment & Supplies), amounting to – 1 million $;

- ARKANSAS BEST CORP (in the field of Freight Transportation) and STEC INC (in the field of Computers & Peripherals) report a profit of 0 million $;
- The highest profit is reported by company APPLE INC (in the field of Computers & Peripherals) amounting to 38,617 million $, followed by MICROSOFT CORP (in the field of Software) amounting to 23,344 million $; a number of 10 companies report net profits from 10,106 million $ (the case of company JOHNSON & JOHNSON in the field of Pharmaceuticals) and 38,617 million $ (the 10 companies report a cumulated profit of 183,009 million $);
- The lowest profit (1 million $) is reported by company EMULEX CORP (in the field of Communications Equipment).

After reprocessing the financial statements of the 635 studied companies, we find that a number of 177 companies have destroyed economic value. The company showing the highest value destruction is JDS UNIPHASE CORP (in the field of Communications Equipment) and it has a negative EVA amounting to -6,731 million $. This company reported a loss of 24 million $ over the analyzed period; in fact, by considering the cost of the owned equity, the correct loss is 6,707 million $ higher than the reported one.

<table>
<thead>
<tr>
<th>Company</th>
<th>TIC</th>
<th>Industry</th>
<th>Net income*</th>
<th>EVA Current*</th>
<th>EVA 2012-Net income 2012*</th>
</tr>
</thead>
<tbody>
<tr>
<td>JDS UNIPHASE CORP - KPI</td>
<td>JDSU</td>
<td>Communications Equipment</td>
<td>24</td>
<td>-$6,731</td>
<td>-$6,707</td>
</tr>
<tr>
<td>TIME WARNER INC - KPI</td>
<td>TWX</td>
<td>Media</td>
<td>2816</td>
<td>-$3,914</td>
<td>-$6,730</td>
</tr>
<tr>
<td>CBS CORP - KPI</td>
<td>CBS</td>
<td>Media</td>
<td>1466</td>
<td>-$2,083</td>
<td>-$3,549</td>
</tr>
<tr>
<td>SEARS HOLDINGS CORP - KPI</td>
<td>SHLD</td>
<td>Specialty Retail</td>
<td>2781</td>
<td>-$1,933</td>
<td>$848</td>
</tr>
<tr>
<td>DISNEY (WALT) CO - KPI</td>
<td>DIS</td>
<td>Media</td>
<td>5170</td>
<td>-$1,816</td>
<td>-$6,986</td>
</tr>
<tr>
<td>VERIZON COMMUNICATIONS INC - KPI</td>
<td>VZ</td>
<td>Diversified Telecommunication Services</td>
<td>2651</td>
<td>-$1,705</td>
<td>-$4,356</td>
</tr>
<tr>
<td>VERISIGN INC - KPI</td>
<td>VRSN</td>
<td>Internet Software &amp; Services</td>
<td>170</td>
<td>-$1,586</td>
<td>-$1,756</td>
</tr>
<tr>
<td>MICRON TECHNOLOGY INC - KPI</td>
<td>MU</td>
<td>Semiconductors &amp; Semiconductor Equipment</td>
<td>529</td>
<td>-$1,511</td>
<td>-$982</td>
</tr>
<tr>
<td>XEROX CORP - KPI</td>
<td>XRX</td>
<td>Electronics and Office Equipment</td>
<td>1283</td>
<td>-$1,272</td>
<td>-$2,555</td>
</tr>
</tbody>
</table>

The data refer to quarters 1 and 2 of year 2012 and values are in million $
Of the 10 companies having the highest negative EVA, the highest difference between the reported result and EVA is that of company DISNEY (WALT) (in the media field) which reports a net profit amounting to 5.170 million $, however, the actual result that of value destruction, amounting to -1.816 million $. The above is followed by company TIME WARNER INC which reports a net profit amounting to 2.816 million $, however, the result of EVA (which is equivalent to value destruction) is -3.914 million $.

<table>
<thead>
<tr>
<th>Company</th>
<th>Net income</th>
<th>EVA Current</th>
<th>EVA - Net income</th>
</tr>
</thead>
<tbody>
<tr>
<td>APPLE INC - KPI</td>
<td>38617</td>
<td>$27,524</td>
<td>$11,093</td>
</tr>
<tr>
<td>MICROSOFT CORP - KPI</td>
<td>23344</td>
<td>$17,470</td>
<td>$5,874</td>
</tr>
<tr>
<td>WAL-MART STORES INC - KPI</td>
<td>15699</td>
<td>$9,980</td>
<td>$5,719</td>
</tr>
<tr>
<td>GOOGLE INC - KPI</td>
<td>10828</td>
<td>$7,750</td>
<td>$3,078</td>
</tr>
<tr>
<td>INTEL CORP - KPI</td>
<td>12520</td>
<td>$7,497</td>
<td>$5,023</td>
</tr>
<tr>
<td>JOHNSON &amp; JOHNSON - KPI</td>
<td>10106</td>
<td>$7,429</td>
<td>$2,677</td>
</tr>
<tr>
<td>INTL BUSINESS MACHINES CORP - KPI</td>
<td>16059</td>
<td>$6,841</td>
<td>$9,218</td>
</tr>
<tr>
<td>ORACLE CORP - KPI</td>
<td>9739</td>
<td>$6,696</td>
<td>$3,043</td>
</tr>
<tr>
<td>GENERAL ELECTRIC CO - KPI</td>
<td>13752</td>
<td>$6,561</td>
<td>$7,191</td>
</tr>
<tr>
<td>COCA-COLA CO - KPI</td>
<td>8726</td>
<td>$5,747</td>
<td>$2,979</td>
</tr>
</tbody>
</table>

Table 1
Study of case. Correlations between the EVA and the price of listed shares.

Graph 1. Graph representation of the connection between the EVA and the price of shares for the whole analyzed sample.

<table>
<thead>
<tr>
<th>Descriptive statistics</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>EVA</td>
<td>635</td>
<td>-6730.5000</td>
<td>27524.0200</td>
<td>401.446583</td>
<td>1703.6149457</td>
</tr>
<tr>
<td>Stock Price</td>
<td>635</td>
<td>4.7900</td>
<td>850.0000</td>
<td>44.880693</td>
<td>66.4957072</td>
</tr>
</tbody>
</table>

Table 2. Descriptive analysis of the variables in the model

The analyzed sample consists of 635 companies listed with the New York Stock Exchange (NYSE) in the following fields: Aerospace & Defense 13 companies, Airlines 3 companies, Auto & Suppliers 13 companies, Biotechnology 4 companies, Chemicals 31 companies, Commercial Services & Supplies 23 companies, Communications Equipment 12 companies, Computers & Peripherals 12 companies, Conglomerates & Machinery 39 companies, Construction 14 companies, Diversified Consumer Services 8 companies, Diversified Telecommunication Services 6 companies, Electric Utilities 16 companies, Electrical Equipment 8 companies, Electronics & Office Equipment 24 companies, Energy Equipment & Services 27 companies, Food & Beverage 22 companies, Food & Staples Retailing 9 companies, Freight Transportation 11 companies, Gas Utilities 5 companies, Health Care Equipment & Supplies 13 companies, Health Care Providers & Services 15 companies, Homebuilders 6 companies, Hotels Resorts & Cruise Lines 11 companies, Household & Personal Products 10 companies, Household Durables 7 companies, Internet & Catalog Retail 8 companies, Internet Software & Services 10 companies, It Services 17 companies, Leisure Equipment & Products 6 companies, Life Sciences Tools & Services 6 companies, Media 25 companies, Metals & Mining 21 companies, Paper & Packaging 8 companies, Pharmaceuticals 13 companies, Professional Services 7 companies, Restaurants 7 companies, Semiconductors & Semiconductor Equipment 37 companies, Software 22 companies, Specialty Retail 38 companies, Textiles Apparel & Luxury Goods 17 companies, Tobacco 4 companies, Trading Companies & Distributors 7 companies, Utilities – Other 17 companies, Wireless Telecommunication Services 3 companies.

The minimum value for the price/share variable is 4.79 $, reported for company SUNPOWER CORP – KPI, and the maximum price is 850 $, reported for company NVR INC – KPI. The mean price at the level of the analyzed company group is about 45 $, with the mean square deviation of 66.5 $, which shows that the mean is an indicator relevant for the aggregate of companies subject to the study. From the standpoint of the distribution of the price/share variable, it has a leptokurtosis character, as it shows positive asymmetry as the transaction prices of shares are mathematically positive. It would be interesting to track the difference between the issue price of shares and the transaction price of the same share.

From the standpoint of the Economic Value Added (EVA) variable, the variation ranges from -6.730.5 million $ to 27.524 $ million $ - values reported for JDS UNIPHASE CORP, a company acting in the field of Communications Equipment and for APPLE INC, a company acting in the field of Computers & Peripherals,
respectively. For the analyzed group of companies, the mean value of the variable is about 401 million $, with the mean square deviation of 1.704 million $, which shows that, from the standpoint of the EVA variable, the analyzed sample is heterogeneous, such variety being also explained by the various fields of activity of the analyzed companies. Thus, the companies in the field of top technologies but also those in the pharmaceutical field can be considered “the best”, unlike the other companies, heavily affected by the economic conditions specific to the global background where they operate. However, the Economic Value Added (EVA) variable shows a positive asymmetry, and the analyzed distribution has a leptokurtosis character (has the shape of a very sharp arrow).

<table>
<thead>
<tr>
<th></th>
<th>Asymmetry coefficient</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>EVA</td>
<td>8.948</td>
<td>120.529</td>
</tr>
<tr>
<td>StPrice</td>
<td>7.307</td>
<td>66.391</td>
</tr>
</tbody>
</table>

Table 3. Characterization of variables from the standpoint of asymmetry.

The considered regression equation: the study of the connection between the price of a share issued by a specific company and EVA, thus resulting an econometrics model of the following nature:

\[ STPRICE = \alpha + \beta \cdot \text{EVA} + \varepsilon \]

However, taking into account the fact that the price of a share also comprises the speculating tendency existing at a given moment, it is expectable that the regression model formed accordingly has a diminished explanatory force. To estimate parameters \( \alpha, \beta \) I have used the appropriate scientific approach corresponding to the method of the smallest squares, implemented within the econometry software E-Views.

The estimation of the above the regression equation leads to the following form:

\[ STPRICE = 39.53 + 0.013 \cdot \text{EVA} \]

\( (2.55) \quad (0.001) \)

The result is that the change by one percent of the EVA index determines the change by 0.013 percents of the price of a share of a company listed on the stock market, the EVA variable explaining 11% of the variation in the price of a share (adjusted r-squared).

This can also be explained by the fact that, on the stock exchange investors are less interested in the past performance of companies and the fluctuating prices of shares have more speculating characters (they refer to future expectations and less to past performance).

Verification of the significance of the free term:

H0: the free term of the model is statistically null;
H1: the free term of the model is statistically significant.

Based on the t-statistics test, the null hypothesis according to which the free term of the model is null is rejected, thus the fact that it is significantly different from zero is accepted, as the calculated value of the t-statistics test is 15.50, with 0.000 probability of making an error by rejecting the null hypothesis (free term is 39.53).

Verification of the significance of the EVA coefficient.

H0: the slope of the regression straight line is statistically null;
H1: the slope of the regression straight line is statistically significant.

The value of the t-statistics test calculated at the level of the analyzed sample is 9.13 with 0.0000 probability of making an error, which indicates validity -from econometrics standpoint- of the value achieved for the coefficient of the EVA variable.

The analysis of the significance of the two estimators of the considered linear regression model indicates the existence of a valid econometrics connection between the two economic variables interpreted as indexes for measuring the company’s performance.

Also, the considered econometrics model is statistically correct, a fact emphasized by the value of the F statistics (Fisher), the value of which is 83.43 - as calculated at the level of the 635 analyzed companies, with a probability of making an error by accepting the hypothesis stating that the model is not correct, less than the significance threshold of 5%. The values of the residual variable are not correlated to the Durbin-Watson statistics, as their value is 1.94, placed within the range of accepting the non-correlation hypothesis.

Conclusions:

The considered market has a speculative role, the share price being influenced by EVA to a lower extent. Differentiation by sectors of activity constitutes another work hypothesis in the future. The novelty of the
EVA index, the fact that it is a difficult concept from the philosophic and economic standpoint determines brokers to disregard it.

The model is valid, it explains about 11% of the price variation, a weight which I believe is high enough as compared to others.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>39.53348</td>
<td>2.550451</td>
<td>15.50058</td>
<td>0.0000</td>
</tr>
<tr>
<td>EVA</td>
<td>0.013320</td>
<td>0.001458</td>
<td>9.134086</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

- **R-squared**: 0.116454
- **Adjusted R-squared**: 0.115058
- **S.E. of regression**: 62.55340
- **Sum squared resid**: 2476883.

The model's performance metrics include:**
- Mean dependent var: 44.88069
- S.D. dependent var: 66.49571
- Akaike info criterion: 11.11306
- Schwarz criterion: 11.12709
Table 4. Results of estimation of the regression model in the paper

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>Hannan-Quinn criter.</th>
<th>Durbin-Watson stat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log likelihood</td>
<td>-3526.397</td>
<td>11.11851</td>
<td></td>
</tr>
<tr>
<td>F-statistic</td>
<td>83.43152</td>
<td>1.948016</td>
<td></td>
</tr>
<tr>
<td>Prob(F-statistic)</td>
<td>0.000000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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