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28 November 2014

Online at <https://mpra.ub.uni-muenchen.de/60264/>

MPRA Paper No. 60264, posted 30 Nov 2014 19:03 UTC

Analysis of the links between statistical variables on financial performance and its level

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Abstract : Paradoxically, while the economic crisis has had an impact on many economic sectors worldwide automotive industry has become the most important sector of the economy emerging Europe.

For Romania, the automotive industry has become a major contributor to achieving the export sector, and major automakers find a place suitable for the manufacture of auto parts cheap, near markets and assembly firms.

Analyzing correlations results - total revenue and profitability results - consumed resources profitability note that the values of a variable are in direct sense, increasing the values of the other variable, which means that the two variables are correlated with each other and in one case and in the other, and the probability chance of obtaining a test value "t" is insignificant.

Keywords: revenues, expenditures, economic profitability, resource consumption, economic performance

JEL classification: C14, C15, L25, M410

Literature, plus statistics, points out that Romania is a "track" strategy important automotive manufacturers.

The emergence of a series of foreign investors in automotive industry, together with local producers implies the existence of local assemblies integrators and together contribute to the development of horizontal automotive industry.

To verify the hypothesis that medium-term prospects remain favorable automotive sector, we intend to achieve a statistical study on descriptive statistical analysis based on extracts from balance sheets filed on 31 December 2013 and worked for 41 component manufacturers car, as shown in Table 1.

Nr. Crt.	Company	Turnover	Income	Expanditure	Result	Number of staff	Return Result/ income	Return Result/ Expanditure turnover
1.	Achaeffler România SRL	1.635.625.696	1.658.086.970	1.663.353.723	-5.266.753	3611	-0.003176	-0.003166
2.	ASAM SA Iași	51.930.989	55.848.197	55.585.087	262.110	222	0.004693	0.004715
3.	Autoliv România SRL	2.119.419.540	2.201.499.987	2.118.798.854	82.701.133	5333	0.037566	0.039032
4.	AUTONOVA SA Satu Mare	26.075.419	26.293.756	25.622.586	671.170	166	0.025526	0.026194
5.	Componente Auto Topoloveni	71.375.900	73.142.697	71.934.405	1.208.292	348	0.016520	0.016797
6.	Continental Automotive Products SRL	2.534.707.128	2.570.128.322	1.951.982.745	618.145.577	2036	0.240512	0.316676
7.	Continental Automotive România SRL	1.666.947.284	1.757.593.045	1.815.622.590	-58.029.545	4088	-0.033016	-0.031961
8.	Continental Automotive Systems SRL	2.228.473.646	2.295.528.493	2.311.666.257	-16.137.764	2369	-0.007030	-0.006981
9.	Contitech România SRL	712.617.790	7747.835.719	608.342.128	139.493.591	1560	0.018004	0.229301
10.	Delphi Diesel Systems România SRL	1.494.377.805	1.588.107.083	1.452.893.784	135.213.299	1914	0.085141	0.093065
11.	Delphi Packard România SRL	1.573.251.876	1.596.993.255	1.599.104.514	-2.111.259	8518	-0.001322	-0.001320
12.	Eckerle Automotive SRL	144.714.805	147.357.441	144.706.621	2.650.820	745	0.017989	0.018319
13.	Eduard Hartmann România SRL	176.532.304	180.370.722	166.314.811	14.055.911	389	0.077928	0.084514
14.	Euroricambi SRL Braşov - Zărneşti	10.651.229	10.908.324	10.767.360	140.964	98	0.012923	0.013092
15.	Ford SA Craiova	4.843.240.327	5.197.629.457	5.128.769.771	68.859.686	3448	0.013248	0.013426
16.	Global E-Business Operations Centre SRL	336.675.269	343.574.455	313.108.624	30.465.831	2869	0.088673	0.097301
17.	Hella România SRL	816.997.462	825.854.096	791.703.912	34.150.184	1787	0.041351	0.043135
18.	Hirschmann România SRL	175.665.912	184.867.407	171.439.099	13.438.308	510	0.072692	0.078385
19.	Inergy Automotive Systems România SRL	148.811.679	155.910.410	142.860.429	13.049.981	91	0.083702	0.091348
20.	Johnson Controls România SRL	1.627.526.538	1.721.290.432	1.774.592.360	-53.301.928	3969	-0.030966	-0.030036

Nr. Crt.	Company	Turnover	Income	Expanditure	Result	Number of staff	Return Result/ income	Return Result/ Expanditure turnover
21.	Kromberg &Schubert România SRL	530.238.422	535.311.521	526.918.538	8.392.983	2288	0.015679	0.015928
22.	Leoni Wiring Systems Pitești SRL	406.024.627	422.857.466	398.212.385	24.645.081	1878	0.058282	0.061889
23.	Leoni Wiring Systems RO SRL	875.702.900	902.864.486	876.910.563	25.953.923	3797	0.028746	0.029597
24.	Lisa Draxlmaier Autopart România SRL	295.816.233	307.730.236	293.109.248	14.620.988	3286	0.047512	0.049882
25.	Marquardt Schaltsysteme SCS	638.490.944	677.823.552	671.869.754	5.953.798	1299	0.008784	0.008862
26.	MEFIN SA Sinaia	20.093.966	20.819.858	22.717.092	-2.193.702	13	-0.105360	-0.096566
27.	MGI Coutier ROM SRL	124.104.138	125.169.640	106.930.794	18.238.846	324	0.145713	0.170567
28.	Michelin România SA	2.123.412.336	2.201.025.216	2.108.079.630	92.945.586	2625	0.042228	0.044090
29.	Pireli Tyres România SRL	1.580.813.090	1.727.468.046	1.691.812.330.	35.655.716	2157	0.020640	0.021075
30.	Preh România SRL	361.822.277	385.170.269	367.764.403	17.405.866	561	0.045190	0.047329
31.	ROMCAB SA Tg.Mureș	466.484.095	536.983.680	512.152.940	21.465.437	349	0.039974	0.041912
32.	SPIT Bucovina SA	1.168.489	1.587.027	1.616.807	-29.780	30	-0.018765	-0.018419
33.	Subanasamble SA Craiova	198.411	1.578.819	931.141	647.678	5	0.410229	0.695575
34.	Subansamble SA Pitești	54.091.319	57.486.210	55.031.079	2.455.131	242	0.042708	0.044614
35.	Subansamble SA Sfântu Gheorghe	2.333.747	5.122.394	4.637.282	485.112	22	0.094704	0.104611
36.	Takata România SRL	1.683.160.358	2.172.769.481	2.086.914.308	85.855.174	3782	0.039514	0.041140
37.	Thyssenkrupp Bilestein Compa SA	130.029.569	131.362.392	139.913.008	8.550.616	430	0.065092	0.061114
38.	TRW Automotive Safety Systems SRL	1.004.761.766	1.042.731.218	1.055.446.289	-12.715.071	2434	-0.012194	-0.012047
39.	UAMT SA Oradea	126.282.208	128.760.182	117.494.065	11.266.117	504	0.087497	0.095887
40.	Yazaki Component Technology SRL	665.778.913	689.176.580	675.340.078	13.836.502	932	0.020077	0.020488
41.	Yazaki România SRL	830.173.303	847.482.120	802.417.030	45.065.090	3804	0.053175	0.056162

Source: Ministry of Finance - Economic agents and public institutions - identification data, tax information, balances, 2013/ <http://www.mfinante.ro/agentcod.html?pagina=domenii>

Table 1. State the factors for determining financial performance for a sample of firms in the production of automotive components

Of the many forms of expression relative size I chose profitability analysis we propose using SPSS 18.0, total revenue performance and resource consumption rate of return.

To make a reasonable conclusion, we chose to perform a test (t) for the selected sample order to test the difference in average return to a reference constant and 100%.

In our researches we have taken as variables in the first case: income, total income and

profitability result, and in the second case: turnover, result and profitability of resources consumed.

The procedure used for the test t the difference between the average value of the related profitability and return the sample to be analyzed is 100% reference constant-Analyze Compare Means One-Sample T Test ... by which we obtained :

a) if the correlation results - return on total revenues

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
Rentab.venituri	41	46.106,9024	79.464,01564	12.410,19426

Table 2. Descriptive picture of the variable return on total revenues

One-Sample Test						
	Test Value = 100					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Rentab.venituri	3,707	40	,001	46.006,90244	20.924,9642	71.088,8406

Table 3. The test result variable t on profitability total revenues

The first table is descriptive variable under review and are common elements on:

- N = number of cases analyzed (41);
- Mean = average;
- Std.deviation = standard deviation;
- Std.Error Mean = standard error of the mean

The second table shows the actual results of the test, the following notations:

- The variable name = return on total income;
- t = 3707 t test calculated value indicating that the value itself be construed in any way;
- DF = degrees of freedom calculated as N-1 to be reported when the sample size is not mentioned;
- Sig. (2-tailed) = probability associated with the calculated value of t, which is usually denoted by "p". In our case p = 0.001 which means that the theoretical distribution of 0,001 t there is a probability of obtaining by chance a value of t equal to or greater than 3.707. Comparing the calculated value of p with the materiality threshold of 0.05 the null hypothesis is accepted, ie, between the two areas there is a significant difference;
- Mean difference = 46006.90244 media is the difference between the sample and the reference value;
- 95% confidence interval of the difference = show the limits of the confidence interval for the difference between the sample mean and the reference value. Basically, we can say that in 95% of cases there is a chance that the true difference between the value obtained on the sample and the reference value (100%) to be in the range [20924.9642; 71,088,8406]

Proceeding further to analyze the correlation between total revenue and profitability results in order to understand the degree of involvement of these variables on firm performance and how they influence each other, we get the following:

		Rezultate	Rentab.venituri
Rezultate	Pearson Correlation	1	,409**
	Sig. (2-tailed)		,008
	N	41	41
Rentab.venituri	Pearson Correlation	,409**	1
	Sig. (2-tailed)	,008	
	N	41	41

** . Correlation is significant at the 0.01 level (2-tailed).

Table 4. Panel reabilitatea correlation between total revenues and results

We consider as very suggestive graphical representation using histogram in Figure No.1.

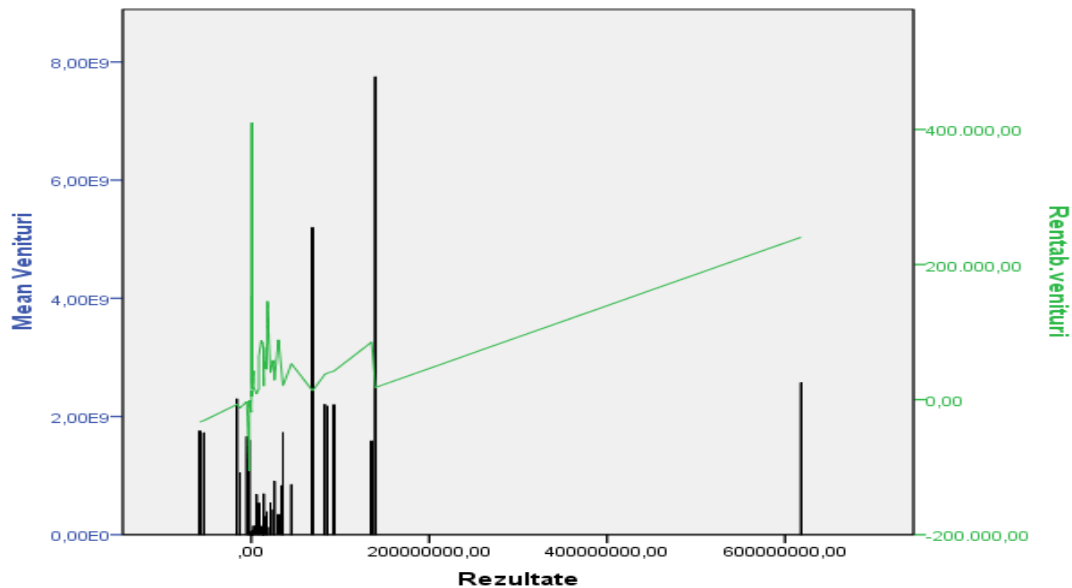


Figure 1. Correlation between average income, total income and profitability results

The graph shows a very strong direct correlation between the three elements taken into account, namely revenues, results and return on total revenue.

b) If the correlation turnover - return on resources consumed

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
Rentab.res.cons	41	62.817,7073	123.049,57401	19.217,11487

Table 5. Descriptive picture of the profitability variable resources consumed

One-Sample Test						
	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Rentab.res.cons	3,269	40	,002	62.817,70732	23.978,4694	101.656,9453

Table 6. The test result variable *t* on profitability resources consumed

Comparing with the previous results, we note that they are close and show the same trend indicating that the probability of obtaining by chance a value of *t* equal to or greater than 3.269 is slightly increased in this case (0.002), and the chance that the true difference between the value obtained on the sample and the reference value (100%) is in the range [23978.4694; 101656.9453] given the vulnerability expenses.

Correlation we watched it refers to the intensity and direction of concomitant variation between the two variables, one to the other. As can be seen, the values of a variable are in direct sense, breeder, ceilelalte variable values, which means that the two variables are correlated with each other and in one case and another.

Furthermore, analyzing the correlation between turnover and profitability consumption, we get:

Correlations			
		CA	Rentab.res.cons
CA	Pearson Correlation	1	-,105
	Sig. (2-tailed)		,514
	N	41	41
Rentab.res.cons	Pearson Correlation	-,105	1
	Sig. (2-tailed)	,514	
	N	41	41

Table 7. Panel correlation between turnover and profitability consumed resources profitability

As noted, content following tables 4 and 7, we see that in both cases the correlation is redundant because the picture shows the same correlations twice (above and below the table diagonal) correlations with themselves being perfect and positive ($r = 1$). If the second case is very little direct correlation ($r = -0.105$), it is significant ($p = 0.539$), in the first case the correlation coefficient = 0.409 Person but the significance is lower ($p = 0.008$).

Suggestively, as in the previous case, we present in Figure 2 histogram correlation between average turnover, results and profitability of resources consumed.

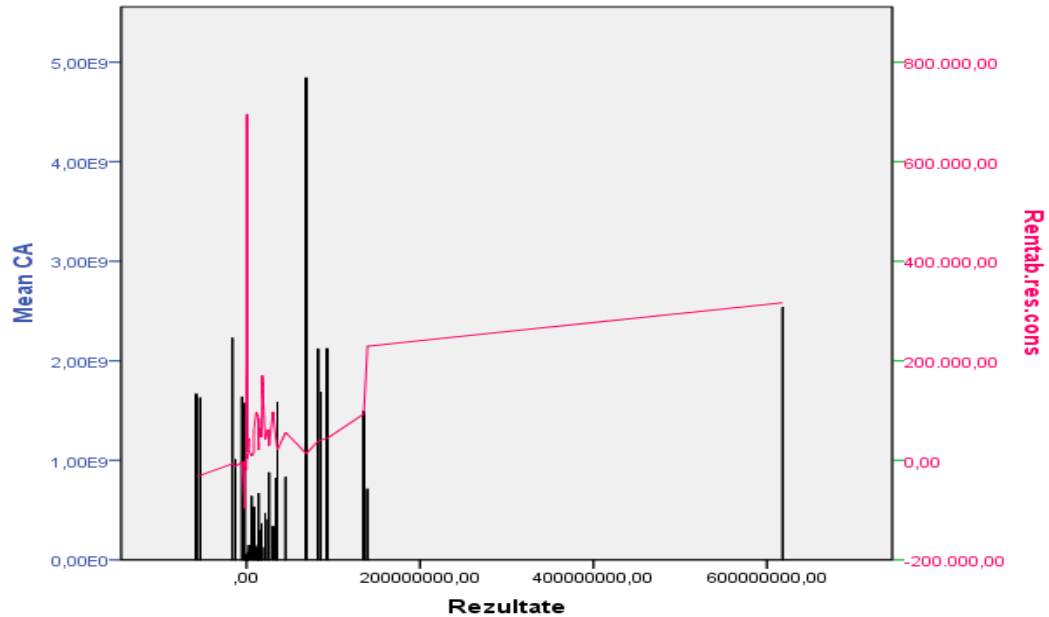


Figure 2. Correlation between average turnover, results and profitability of resources consumed

Graph submitted to suggest that the profitability of resources consumed shows a very strong correlation with turnover and, all along that automotive sector is the largest generator of expenditure which justifies the direction towards which our research.

CONCLUSION

The analysis carried out confirms the assumption that medium-term prospects remain favorable automotive sector

References:

Anthony R., Govindarajan V., (2007) *Management Control Systems*, Chicago, Mc-Graw-Hill IRWIN

Charlot, X., (2006) *Analyse Fonctionnelle* – La Londe les Maures, <http://www.in2p3.fr/actions/formation/ConduiteProjet06/doc-Charlot.pdf>

FIELD, A., (2005) *Discovering Statistics Using SPSS*, Thousand Oaks: Sage Publications

Hilton, R.H., Maher, M.W., Selto, F.S. (2003) *Cost Management-Strategies for Business Decision*, McGraw Hill Irwin

Iacob, C. (2007) *Present and Perspectives in Management Accounting*, International Conference Series (II) The Future of Accounting and Accounting profession, Istanbul Commerce University

Jacoby, W.G. (1997) *Statistical Graphics for Univariate and Bivariate Data*, Thousand Oaks: Sage Publications

Ministerul Finanțelor Publice, <http://www.mfinante.ro/agentcod.html?pagina=domenii>,