Trends in Cash Flows from Operating Activities, Working Capital Flows and Net Income Flows of Listed Companies in Terms of Regions of Slovakia

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Abstract

This article presents research of trends in cash flow from operating activities, working capital flows, and net income flows of the companies registered on the Stock Exchange in Bratislava in terms of regions of Slovakia. We explored the position of listed companies by selected indicators and by industries and regions of Slovakia. According to the three selected variables: cash flow from operating activities, working capital, and net income, in the sequence of four years and data from the 60 companies were developed contingency tables to clarify the trends of the variables. We have developed series for these three variables and their graphical representation of trends in the self-governing regions of Slovakia. Based on Kendall's coefficient of concordance, we examine whether there is dependency among three variables: cash flow from operating activities, working capital, and net income. For this purpose we have set the hypothesis that there is not dependency among three variables for sixty listed companies.

Key words: Cash flows, working capital, net income

JEL Classification: C10, M41, R51

1 Introduction

In recent years, the significance of cash flow information about entities has been increasingly recognized. On the importance of the statement of cash flows and cash flow indicators for assessing the viability of the company pointed out authors Mills and Yamamura (1998). The statement of cash flows summarizes the cash inflows and cash outflows for a period related to a firm's operating, financing, and investing activities, thus providing information useful in assessing future cash flows. The statement of cash flows complements the income statement by disclosing the amount of cash generated by the company's operating activities (Hakalová, 2010). It also complements the balance sheet by disclosing cash flow transactions that caused changes in assets, liabilities, and stockholders' equity (Chasteen, Flaherty, O'Connor, 1989). In contrast to balance sheet and income statement, the statement of cash flows helps to satisfy the qualitative characteristics of financial reporting. According to Dechow (1994), accounting earnings and cash flows based on accounting accruals are appropriate tools to measure firm performance as reflected, in stock returns. Dechow *et al.* (1998) documented a model of operating cash flows and

the formal accounting process by which those cash flows were converted into accounting earnings. These authors explained why earnings rather than current operating cash flows tend to be used in valuation and in performance measures. Most companies used the working capital concept of funds, and relatively few companies used the cash or the cash equivalents concept (Chasteen, Flaherty, O'Connor, 1989). Working capital as analytical indicator is considered as monetary fund's approach (Sedláček, 2010). If the objective is ratio and analyze the status of financial flows in the financial situation of the company, they are constructed on the basis of cash flow. Advantage of cash flow concept in comparison with the method of the net profit is that cash flow method eliminates the impacts resulting from the accounting principles and practices (accounting accruals, provisions creating), and is less sensitive to inflation development (Sedláček, 2010). Relationships between cash flows from operations, working capital, and income from continuing operations were dealt by Kochanek and Norgaard (1988). Bowen *et al.* (1986) examined the FASB's assertions that earnings are superior to cash flow in predicting future cash flow. These authors made evidence that net income plus depreciation and amortization and working capital from operations appear to be the best predictors of cash flow from operations, for future cash flow forecasting. Other authors came up with similar results (Greenberg, Johnson, Ramesh, 1986). Chu *et al.* (1991) observed whether there was a difference between working capital flow, cash flow, and net income plus depreciation as alternative hospital asset flow measures.

This paper aims to highlight the trends in cash flows from operations, working capital, and net income of listed companies in terms of regions of Slovakia. Another objective of the article is to examine whether exists the statistical dependency among variables cash flow from operations, working capital, and net income.

2 Research and Results

2.1 Meaning and peculiarity of the Income Statement for Analysis

The basic function of the income statement (newly "a statement of profit or loss and other comprehensive income" according Mackenzie *et al.,* (2012) is to determine the profit or loss for the period. Profit or loss means residual amount between incomes less expenses. Statement enables to determine profit of entity or loss and is also the basis for assessing the profitability of the company. Income statement allows tracking the evolution of profitability of the company, its profitability and returning on invested capital. Earning formation is not identical with cash flow formation. Paradox may be that profitable business can suffer from a lack of cash flow. Each increasing of expense represents a reduction of equity and each increasing of revenue means increase of equity.

2.2 Working capital approach

Working capital should be evaluated in light of the company's circumstances, including management plans, as well as industry and general economic conditions (Chasteen *et al.,* 1989). Working capital measures the firm's net position in liquid assets (Fazzari, Petersen, 1993). Working capital is the excess of current assets over current liabilities. Positive excess indicates the ability of a company to pay its current liabilities from current assets. Although the higher excess is positive and comfortable for creditors, it may also reflect idle, or excessive liquid asset

which were not optimally invested by management. Excessive current assets might be better used to pay dividends, to retire long-term debt, or as investment capital.

2.3 Cash flow approach

Cash inflows and cash outflows represent the most fundamental and prevalent economic events engaged in by companies. According Brownlee *et al.* (2001), "cash is also paramount for external users of financial statements. Cash flow information is very important to enable these users to assess a company's ability (1) to generate future positive cash flow from operations, (2) to meet maturing obligations, and (3) to pay dividends." Cash flow information also provides important insights regarding a company's continuing investment in productive assets and the quality of its earnings. The statement of cash flows must clearly classify cash receipts and disbursements as operating, investing, or financing activities. Operating cash flows include cash flows from sale of goods or services and payments of trade payables and accrued expenses. The cash flow from operations metric is important to the users of financial statements because it clearly details, more than any other single piece of information, the quality of the earnings of a company. It informs the user whether the company is a net provider or a net user of cash in its internal operations. If the operations of a business are a net user of cash, cash must be provided by other means, such as liquidation of investments, financing activities, or the carrying of decreased reserves of cash and cash equivalents. If the operating activities provide cash, then cash is available to invest in business, repay prior financing, or increase the cash reserves of the company.

2.4 Data collection for analysis

Accounting data from sixty listed companies were gathered for analytical purposes of this paper. Companies are listed on Bratislava Stock Exchange. The Bratislava Stock Exchange in Slovakia was founded in 1992 in connection with the privatization of national property which started in 1991. Financial companies as banks and insurance companies were excluded from the list due to their different entrepreneurial activities. Listed business companies have obligation to disclose their financial statements to public. Their financial statements are compulsory audited by independent auditor. Compulsory part of financial statements of listed companies is statement of cash flows. This obligatory disclosure of statement of cash flows was reason for choosing these companies. Another reason was that their data are available for several accounting periods. The following table and graph presents industries and number of analyzed listed companies in self-governing regions.

Tab. 1 Number of listed companies in self-governing regions (by industries)

Industries	Self-governing regions							
	BSK	TtSK	TnSK	NSK	ŽSK	BbSK	KSK	PSK
A. Agriculture, forestry and fishing		1		1		1		
B. Mining and quarrying	1		1		1			
C. Manufacturing	3	3	2	4	2	2	3	4
F. Construction				2		1	1	2
G. Wholesale and retail trade	1		1					
I. Accommodation and food service activities				1		1		1
L. Real estate activities	3			2	1	1		1
M. Professional, scientific and technical activities	5			1			1	
Q. Human health and social work activities			2	1				2
Total:	**15**	**4**	**7**	**11**	**5**	**5**	**6**	**9**

Source: own elaboration based on NBS data
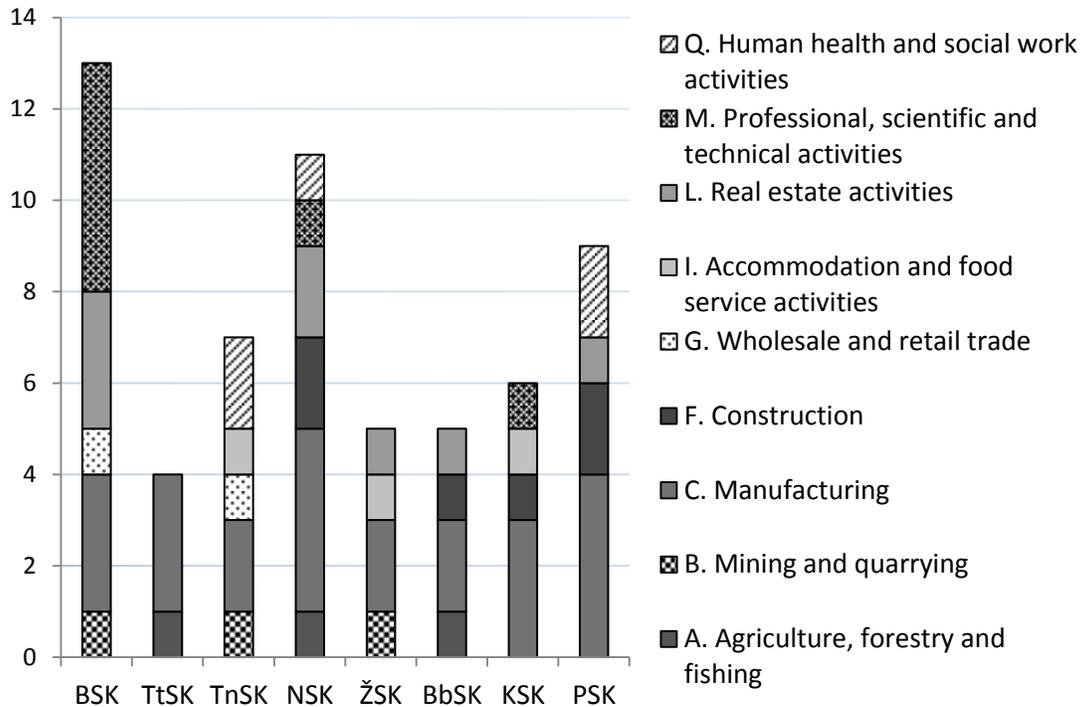
Graph 2: Number of listed companies in self-governing regions (by industries)
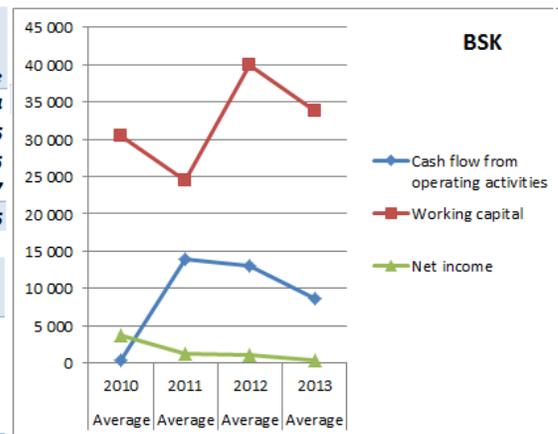Source: own elaboration based on NBS data

The following tables document the trends in cash flow from operating activities, working capital, and net income by sectors in the self-governing regions of Slovakia in four years.

Tab. 2 Bratislava Self-Governing Region (BSK)

BSK - Cash flow from operating activities	Sector					
Year	B	C	G	L	M	Average
2010	-122	246	-378	979	494	434
2011	181150	-236	-600	-114	283	13916
2012	166465	63	-119	806	152	13055
2013	127105	-3957	0	-1152	153	8657
Average	118650	-971	-274	130	271	9016

BSK - Working capital	Sector					
Year	B	C	G	L	M	Average
2010	176675	2292	1453	62515	4615	30433
2011	134442	-107	1469	51833	5242	24408
2012	364200	-208	1489	42552	5431	39991
2013	225542	-83	0	65027	3651	33741
Average	225215	474	1103	55482	4735	32143

BSK – Net income	Sector					
Year	B	C	G	L	M	Average
2010	39992	-1085	4	1587	1359	3715
2011	1443	1059	15	2728	475	1169
2012	86942	-9956	22	-14718	195	1070
2013	8173	-2203	0	891	164	389
Average	34138	-3046	10	-2378	548	1586

Source: own elaboration based on NBS data

Tab. 3 Trnava Self-Governing Region (TtSK)

TtSK - Cash flow from operating activities	Sector ▾		
Year ▾	A	C	*Average*
2010	989	-635,3	*-229*
2011	1215	598	*753*
2012	387	645,3	*581*
2013	416	16	*116*
Average	**751,75**	**156**	**305**

TtSK - Working capital	Sector ▾		
Year ▾	A	C	*Average*
2010	2331	1621	*1799*
2011	2337	52	*624*
2012	1979	313	*730*
2013	2331	306	*812*
Average	**2244,5**	**573**	**991**

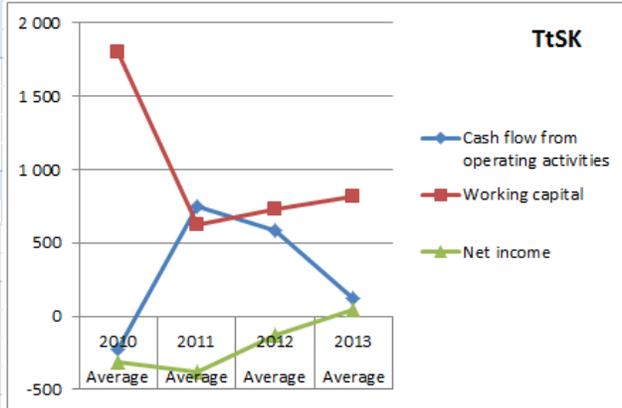| TtSK - Net income	Sector ▾		
Year ▾	A	C	*Average*
2010	-359	-300	*-315*
2011	36	-524	*-384*
2012	-1074	183	*-131*
2013	-157	105	*40*
Average	**-388,5**	**-134**	**-198**

Source: own elaboration based on NBS data

Tab. 4 Trenčín Self-Governing Region (TnSK)

TnSK - Cash flow from operating activities	Sector ▾					
Year ▾	B	C	G	I	Q	*Average*
2010	19113	3855	0	169	2741	*4639*
2011	15314	1344	0	113	237	*2655*
2012	14115	1030	0	52	775	*2540*
2013	13615	2470	0	153	-158	*2627*
Average	**15539**	**2175**	**0**	**121,8**	**899**	**3115**

TnSK - Working capital	Sector ▾					
Year ▾	B	C	G	I	Q	*Average*
2010	-4211	5544	0	114	1914	*1545*
2011	131	5929	7	25	3313	*2664*
2012	6202	5121	13	-63	4171	*3533*
2013	14103	5653	203	-140	2969	*4487*
Average	**4056**	**5562**	**56**	**-16**	**3091**	**3057**

TnSK - Net income	Sector ▾					
Year ▾	B	C	G	I	Q	*Average*
2010	2809	1340	3	65	774	*1015*
2011	2844	936	3	68	513	*830*
2012	2573	270	3	-26	582	*608*
2013	2450	1021	0	7	513	*789*
Average	**2669**	**892**	**2**	**29**	**595**	**811**
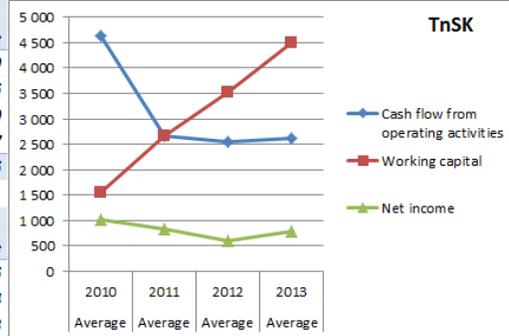
Source: own elaboration based on NBS data

Tab. 5 Nitra Self-Governing Region (NSK)

NSK - Cash flow from operating activi Sector ▾							
Year ▾	A	C	F	L	M	Q	*Average*
2010	66	-2934	56	354	0	907	*-904*
2011	403	-10557	68	385,5	-12	997	*-3630*
2012	-1397	-2651	-115	-62,5	675	651	*-1003*
2013	5786	-2086	-562	-545	548	1322	*-264*
Average	**1215**	**-4557**	**-138**	**33**	**303**	**969**	*-1450*

NSK - Working capital	Sector ▾						
Year ▾	A	C	F	L	M	Q	*Average*
2010	1306	-3241	894	-498,5	139	1072	*-878*
2011	502	-13523	734	-813	101	17063	*-3326*
2012	5985	-14778	387	-907,5	-906	17483	*-3417*
2013	144	-1726	-178	-352,5	-573	-2295	*-972*
Average	**1984**	**-8317**	**459**	**-643**	**-310**	**8331**	*-2148*

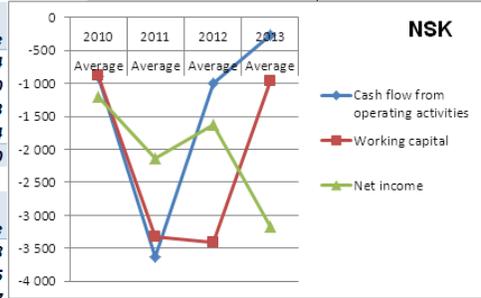| NSK - Net income	Sector ▾						
Year ▾	A	C	F	L	M	Q	*Average*
2010	1	-3448	2	-102	-31	824	*-1200*
2011	9	-5891	-207	-69	25	542	*-2140*
2012	1419	-4783	-241	34	-15	246	*-1627*
2013	154	-8736	-595	169	45	625	*-3179*
Average	**396**	**-5715**	**-260**	**8**	**6**	**559**	*-2037*

Source: own elaboration based on NBS data

Tab. 6 Žilina Self-Governing Region (ŽSK)

ŽSK - Cash flow from operating activities	Sector ▾				
Year ▾	B	C	I	L	*Average*
2010	529	70	-45635	0	*-8993*
2011	411	223	11941	-63	*2547*
2012	751	91	3260	-763	*686*
2013	124	392	8122	-22	*1802*
Average	**454**	**194**	**-5578**	**-212**	*-990*

ŽSK - Working capital	Sector ▾				
Year ▾	B	C	I	L	*Average*
2010	169	1594	148371	139	*30373*
2011	308	1281	68783	119	*14354*
2012	4963	1331	24971	94	*6538*
2013	5216	595	-156551	-3	*-30030*
Average	**2664**	**1200**	**21393,5**	**87**	*5309*

ŽSK - Net income	Sector ▾				
Year ▾	B	C	I	L	*Average*
2010	307	22	9454	-330	*1895*
2011	246	-66	8590	-339	*1673*
2012	508	33	6371	-34	*1382*
2013	142	-121	5712	-133	*1096*
Average	**301**	**-33**	**7532**	**-209**	*1511*
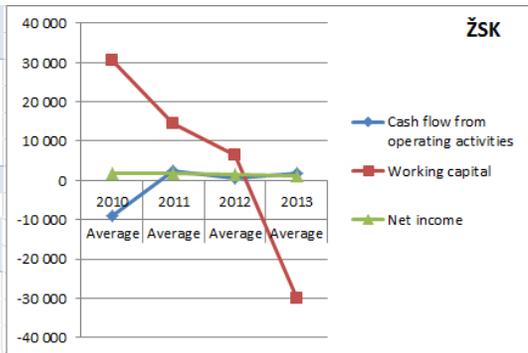
Source: own elaboration based on NBS data

Tab. 7 Banská Bystrica Self-Governing Region (BbSK)

BbSK - Cash flow from operating activities Sector					
Year	A	C	F	L	Average
2010	1184	3160	54	13	1514
2011	613	3422	-273	-19	1433
2012	828	6147	27	60	2642
2013	298	2340	21	54	1010
Average	731	3767	-43	27	1650

BbSK - Working capital Sector					
Year	A	C	F	L	Average
2010	-7101	1872	379	-316	-659
2011	-5127	4330	258	-311	696
2012	2582	5813	141	-306	2808
2013	-4778	12094	64	-354	3824
Average	-3606	6027	210,5	-322	1667

BbSK - Net income Sector					
Year	A	C	F	L	Average
2010	552	2510	-1	-93	1096
2011	649	2360	-139	-81	1030
2012	-1598	1909	-128	-29	412
2013	-546	1599	-58	-50	509
Average	-236	2094	-82	-63	762

Source: own elaboration based on NBS data

Tab. 8 Košice Self-Governing Region (KSK)

KSK - Cash flow from operating activities Sector					
Year	C	F	I	M	Average
2010	896	-189	-5	-34	410
2011	624	595	-1	-40	405
2012	444	37	0	-38	222
2013	616	66	0	12	321
Average	645	127	-1,5	-25	339

KSK - Working capital Sector					
Year	C	F	I	M	Average
2010	-182	78	1522	93	191
2011	-24	3044	1553	59	764
2012	180	2921	1543	25	838
2013	239	-148	1533	33	356
Average	53	1474	1538	53	537

KSK - Net income Sector					
Year	C	F	I	M	Average
2010	117	145	-1	-28	78
2011	-14	60	16	-40	-1
2012	-11	75	-74	-34	-11
2013	5	-616	-207	3	-134
Average	24	-84	-67	-25	-17

Source: own elaboration based on NBS data

Tab. 9 Prešov Self-Governing Region (PSK)

PSK - Cash flow from operating activities	Sector				
Year		C	F	L	Q	Average
2010		1150	216	50	-494	455
2011		777	52	-18	1761	746
2012		308	-4	26	-19	135
2013		642	26	-26	71	304
Average		719	72	8	330	410

PSK - Working capital	Sector				
Year		C	F	L	Q	Average
2010		2302	-177	75	981	1210
2011		1463	261	9	35	717
2012		1069	-19	-16	59	482
2013		729	-37	-17	126	342
Average		1391	7	13	300	688

PSK - Net income	Sector				
Year		C	F	L	Q	Average
2010		253	303,5	-64	954	385
2011		-352	-13	-32	736	1
2012		-121	-209,5	-36	-43	-114
2013		-13	17	-46	9	-5
Average		-58	25	-45	414	67

Source: own elaboration based on NBS data

We wondered whether there is a dependency among variables Cash flow from operating activities, Working capital and Net income. Given that there is a little data available (only for the last four years), we used to determine the dependence using nonparametric methods - a Kendall's coefficient of concordance. To denote variables, we used the following abbreviations:

- CF – Cash Flow from operating activities
- WC – Working Capital
- NI – Net Income

We have done analysis for all businesses together and separately for firms by sectors. Values entering into analyzes were averaged values of the variables in a particular year:

a) when analyzing dependencies among variables for all firms:
- Total_CF – Cash Flow from operating activities for all 60 enterprises
- Total_WC - Working Capital for all 60 enterprises
- Total_NI - Net Income for all 60 enterprises
b) when analyzing dependencies among variables for firms from a particular sector (eg. sector L):
- L_CF - Cash Flow from operating activities for all enterprises from sector L
- L_WC - Working Capital for all enterprises from sector L
- L_NI - Net Income for all enterprises from sector L.

Kendall's *W* (also known as **Kendall's coefficient of concordance**) is a non-parametric statistics. So, it does not use specific values of the variables but it works only with their order. Kendall's W can be used for assessing agreement among ´raters´. In our case ´raters´ mean years. It ranges from 0 (no agreement) to 1 (complete agreement). While tests using the standard Pearson correlation coefficient assume normally distributed values and compare two sequences of

outcomes at a time, Kendall's *W* makes no assumptions regarding the nature of the probability distribution and can handle any number of distinct outcomes. *W* is linearly related to the mean value of the Spearman´s rank correlation coefficients between all pairs of the rankings over which it is calculated.

Kendall's *W* is defined as follows:

Suppose that object *i* is given the rank $r_{i,j}$ by judge number *j*, where there are in total *n* objects and *m* judges. Then the total rank given to object *i* is: $R_i = \sum_{j=1}^{m} r_{i,j}$.

The mean value of these total ranks is: $\bar{R} = \frac{1}{2} m(n + 1)$.

The sum of squared deviations, *S*, is defined as: $S = \sum_{i=1}^{n} (R_i - \bar{R})^2$.

Then Kendall's *W* is defined as: $W = \frac{12S}{m^2 (n^3 - n)}$.

The values of the *k* variables are ranked from *1* to *k* for each case, and the mean rank is calculated for each variable over all cases. Kendall's *W* and a corresponding chi-square statistic are calculated.

The following illustration shows the time series of the variables for all businesses together.

Illustration 1 Time series for CF, WC, and NI for all 60 listed enterprises from SR

	Total_CF	Total_WC	Total_NI
2010	-60	9410	997
2011	3194	6469	157
2012	3300	9434	127
2013	2454	5613	-284
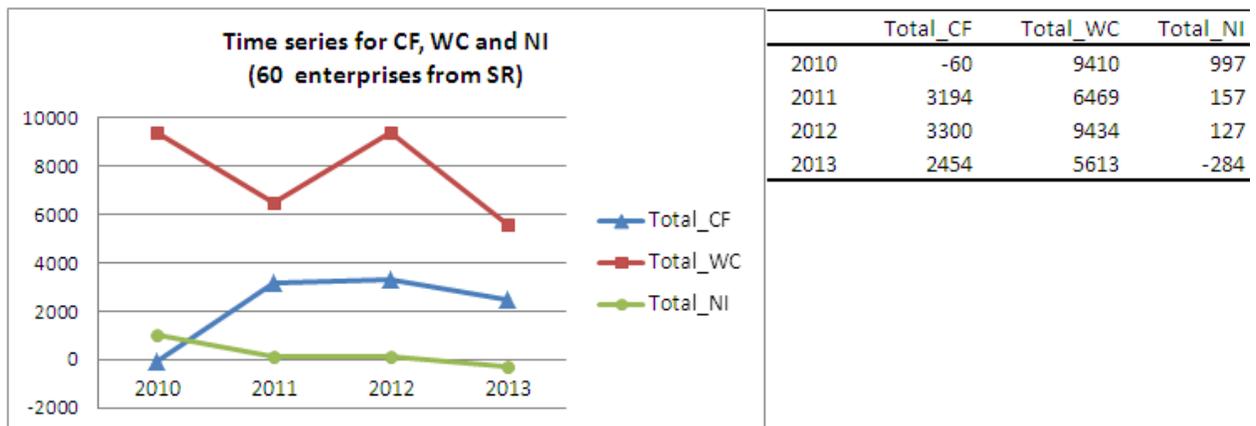
Source: own elaboration

To determine whether there is some relationship among variables we used Kendall's *W*. We can see output from this procedure produced by SPSS for Windows (illustration 2).

Illustration 2 Mean ranks calculated for all 60 enterprises for all three variables (CF, WC, NI) on the left table and Kendall's *W*, Chi-square statistic and the associated p-value (right table)

Kendall's W Test

Ranks

	Mean Rank
Total_CF	1,75
Total_WC	3,00
Total_NI	1,25

Test Statistics

N	4
Kendall's W[a]	,813
Chi-square	6,500
df	2
Asymp. Sig.	,039

a. Kendall's Coefficient of Concordance

Source: own elaboration, output from SPSS for Windows

Kendall's *W* 0,813 means strong dependence among variables CF, WC and NI. In addition, we tested statistical significance of this coefficient (at significance level 0,05). Hypothesis we used were:

H_0: There is no dependence among variables.
H_1: There is a significant dependence among variables.

As we can see (illustration 2), p-value (Asymp. Sig.) is 0,039 what is less than significance level 0,05, so we rejected null hypothesis. **There is statistically significant dependence** among variables.
The following table shows the values of Kendall's coefficient for all groups of companies, p-values, and the result of the test.

Tab. 10 Kendall's coefficient of concordance

Enterprises	Kendall's W	p-value	
Total (all together)	**0,813**	**0,039**	statistically significant dependence
Sector A	*0,438*	*0,174*	
Sector B	*0,563*	*0,105*	
Sector C	*0,520*	*0,368*	
Sector F	**0,813**	**0,039**	statistically significant dependence
Sector G	**0,950**	**0,022**	statistically significant dependence
Sector I	*0,188*	*0,472*	
Sector L	**0,813**	**0,039**	statistically significant dependence
Sector M	**0,750**	**0,050**	statistically significant dependence
Sector Q	**0,813**	**0,039**	statistically significant dependence

Source: own elaboration, output from SPSS for Windows

3 Conclusions

We explored trends in cash flow from operating activities, working capital, and net income by sectors in the self-governing regions of Slovakia. Conducted research has produced interesting results:

- Average value of working capital indicator was positive in all regions in analyzed years (except one company in last year in Žilina region). Average value of cash flow from operations was mostly positive in all regions (except Nitra region). Average value of net income recorded lower level than other indicators.
- Positive average values of three indicators achieved companies in Bratislava and Trenčín regions. Results were influenced by big company processing the crude oil in Bratislava region and by mining company in Trenčín region.
- Negative average values in Nitra region are affected by prevailing negative values of indicators of big energy engineering company.
- Indicators in Banská Bystrica region are positively influenced by manufacturer of medicinal products. Average values in Žilina region were materially affected by considerable company in accommodation activities sector.

We examined the statistical dependency among variables CF, WC, and NI for all listed companies. Kendall's *W* 0,813 confirmed strong statistically significant dependence among variables CF, WC, and NI. P-value was 0,039 (less than significance level 0,05); so we rejected null hypothesis, that there is no dependence among variables. Further, we explored dependencies among variables by sectors of economy. Kendall's coefficient of concordance was close to value of 1 and confirmed statistically significant dependence among variables in these five sectors (with p-value under the level of significance):

1. Construction,
2. Wholesale and retail trade,
3. Real estate activities,
4. Professional, scientific and technical activities,
5. Human health and social work activities.

Dependency was not statistically significant in these sectors: *Agriculture, forestry and fishing*, *Mining and quarrying*, *Manufacturing* and *Accommodation and food service activities*. The causes of this last result can be subject to further research in this area.

Acknowledgements

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