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Factors Affecting the Capital Allocation into Fixed Assets of Slovak Enterprises

LENKA KALUSOVÁ¹, and PETER BADURA²

¹ Assistant Professor, Department of Business Finance, University of Economics in Bratislava, Slovakia, e-mail: lenka.kalusova@euba.sk, ORCID: 0000-0002-4968-3266

² Assistant Professor, Department of Business Finance, University of Economics in Bratislava, Slovakia, e-mail: peter.badura@euba.sk, ORCID: 0000-0003-2477-2438

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ABSTRACT

The main idea of our paper and the goals were to analyze and quantify the impact of selected external macro-environment and internal corporate factors on the capital allocation into fixed assets of enterprises and to examine whether there were differences between the factors within the individual sectors in which these companies operate. We set three basic hypotheses: (1) factors of external macro-environment have a significant impact on the allocation of capital into fixed assets; (2) internal corporate factors do considerably affect the corporate decisions about investments into fixed assets; (3) industry in which the company operates does significantly influences decisions on the capital allocation into fixed assets. We have analyzed 250 companies operating in six sectors and been examining the years 2009 - 2018. Due to the pandemic situation, it was not possible to extend the analysis to the following years. The methods of correlation and multiple regression analysis were used as the main research methods. Our research results suggest that the investment activity of companies is influenced both by external factors of the macro-environment (economic cycle, inflation, interest rate and tax rate) and by internal corporate factors (especially by financial structure, non-debt tax shield and risk). We found out that for enterprises operating in different sectors there were not just differences in the significance of selected factors but for some of them we found even a different direction of the effect (as for the investment activity and capital allocation into fixed assets of the company).

INTRODUCTION

One of the basic tasks the financial managers have to deal with is the effective allocation of capital into fixed assets of the company. The result of their decisions on the allocation of capital into individual assets creates the company's asset structure and is reflected in two directions. At the macro level, investment decisions of enterprises do eventually affect the economic cycle and cause most of the volatility of GDP (which is an important indicator characterizing the performance of the whole country's economy). At the micro level, managers' investment decisions affect the future potential growth of companies and do ensure process efficiency and cost reduction (Bialowolski and Weziak-Bialowolska, 2014). As

stated by Shchurina and Prunenکو (2018), the main goal of investing capital into fixed assets should be to increase the market value of the company for its shareholders. All this just underlines the importance of managers' investment decisions.

1. THEORETICAL BACKGROUND

There were several studies carried out to examine the internal corporate factors that influence the investment decisions of enterprises, e. g. by Safiullin et al. (2013) in their paper titled "Research into the Motivates and Factors of Investment Activities of Enterprises (by the Example of Companies in the Volga Federal District)". This study was focused on the impact of selected internal factors on the change in the company's asset structure, as well as the effects of changes in assets' value on selected factors (profitability of the company, financial structure, credit risk, age and size of the enterprise etc.). Research was conducted on a data sample of the 500 largest non-financial organizations operating in the Volga Federal District (years 2001 - 2011) and studied whether there was a correlation between the increase in corporate investment volume and the possibilities of internal financing. The authors assumed that organizations with a higher share of debt financing did also have higher growth opportunities. The research results of Ukhriyawati et al. (2017) suggested that there was a negative correlation between the asset structure and the financial performance of companies. It was necessary to take into account also the fact that the correlation was quite weak. Therefore, the structure of assets was considered not being a statistically significant factor influencing the financial performance of companies. On the other hand, the authors found out that the asset structure was a statistically significant factor influencing the market value of the company. This finding was also confirmed by the research of Setiadharmā and Machali (2017). Albulescu, Drăghici and Tăucean (2018) in the paper "Firms' financial performance and investment: a panel data analysis applied to the wine industry of CEE countries" studied the impact of financial performance on investment activity of enterprises. The authors used capitalization, liquidity and profitability as the indicators of financial performance. Their research involved 106 companies from the countries of Central and Eastern Europe (including Slovakia) operating in the field of wine industry (period 2007 - 2014). The research results showed that the profitability of a company had a positive effect on the dynamics of investments (i.e. higher profitability led to higher investment activity of enterprises). At the same time, companies that achieved higher profits did generate sufficient financial resources to finance their investments, even in times of recession. On the other hand, a negative relationship was observed between the capitalization and investment activity. Liquidity did not have any effect on the corporate investments. In the paper "Investment Decisions and Financial Standing of Portuguese Firms – recent evidence" by Farinha and Prego (2013) the authors did examine the influence of selected factors on corporate investment activity (for the years 2006 - 2011). They concluded that the study of factors influencing investments was particularly important for Portuguese companies – as these enterprises used to be highly indebted and their financial performance was poor. High level of indebtedness and the financial crisis had led to difficulties in obtaining external financial resources, while the decline in their profitability did significantly reduce the volume of own internal funds. Thus, companies did not have sufficient funds to finance their investment activities. According to the study, there was a negative correlation between the cost of capital and corporate indebtedness on one hand and investment activity on the other one. Contrariwise, a strong positive correlation was found between profitability of the companies and their investment activity - with this finding being most visible in the segment of small businesses. The research results did therefore vary and depended on the size category of the companies. According to the authors' conclusions, big enterprises did not show any significant correlation between the cost of capital and their investment decisions. Muhammad and Shehzad (2017) in their study "The Impact of Financial Factors on Corporate Investment" did analyze the impact of financial factors on business investment decisions in Pakistan. The research was conducted on a sample of 209 manufacturing companies – all of them listed on a stock exchange. The authors examined various financial factors including sales, cash flows, level of indebtedness and level of liquid assets. According to the study, all the mentioned factors were important for the investment decisions of companies. The degree of factor's sensitivity did vary depending on the investment opportunities. Companies with less investment opportunities were more sensitive to changes in these financial factors than the ones with more investment opportunities. Andres (2011) published an interesting study in the field of running a family business and making

investment decisions. The author conducted his research on a sample of 264 non-financial German corporations for the period 1997 - 2004. The results showed that family businesses were much less sensitive to internal cash flows than other businesses and were able to take advantage of investment opportunities regardless of the availability of cash flows. In addition, Gveroski and Risteska Jankuloska (2017) in the study "Determinants of Investment Decisions in SME" pointed to some other interesting findings in the segment of small and medium-sized enterprises. The authors stated that the process of making investment decisions in small and medium-sized enterprises was significantly more complicated compared to much bigger organizations. The process was also less certain and might lead to problems in the future growth and development of SMEs. Bialowolski and Weziak-Bialowolska (2014) published a paper titled "External factors affecting investment decisions of companies". They analyzed a sample of Polish enterprises, with special focus on the influence of the industry and size of companies. The authors concluded that investment decisions were influenced most by macroeconomic factors and legal factors. The research results showed that the change in GDP significantly affected the investments in a positive way (the correlation coefficient in 2007 was at 0.83). Interest rates were an important factor as well (in this case a negative correlation was found between the interest rates and investments). The influence of selected factors on the investment activity of companies was studied by Peric and Đurkin (2015). In the paper entitled "Determinants of investment decisions in a crisis: perspective of Croatian small firms", they focused on the segment of small companies solely. The research was carried out in the form of a questionnaire. The authors found out that most of the investments done by small businesses were related to the replacement of already depreciated assets (so-called renewal investments) and were just necessary for the survival of the companies. As the research was conducted in Croatia in the year 2012, the authors also provided their conclusions about relationship between the crisis and the investment activity of companies. They concluded that the crisis, as the main source of uncertainty, had prevented more enterprises from investing. Access to external sources of financing (bank loans) had clearly deteriorated during the crisis. Companies that invested mostly had sufficient amount of internal funds, i.e. better equity ratio. Authors Nie, Ruan and Shen (2018) in their study "Firm-Level Economic Uncertainty, Firms' Investment and Financial Asset" did analyze the relationship between the uncertainty of economic environment and the investment activities of companies. The authors concluded that companies operating in an uncertain economic environment did limit the investment activities to maintaining their financial assets. The importance of external macro-environment factors on investment decisions was also confirmed by the research of Shchurina and Prunencko (2018). In their study, authors highlighted especially the importance of GDP and expected development of interest rates. Tax policy has also been cited as a factor influencing the investment decisions of companies, while this factor was especially important for small and medium-sized enterprises. From internal corporate factors, the authors emphasized the importance of liquidity.

According to Ingram's study (2011), interest rates were an important tool that affected the money flow in the economy. In the case of high interest rates, individuals and businesses were not interested in borrowing expensive money, thus investment activities were declining and the whole economy was slowing down. On the contrary, low interest rates resulted in more bank loans and higher investment activity, which led to better performance of the economy.

Based on the study of the above-mentioned literature and authors, we set ourselves two basic research goals:

- To analyze and quantify the impact of selected external macro-environment and internal corporate factors on the capital allocation into fixed assets of enterprises.
- To examine whether there are differences between the factors and their effect (not only in their significance but also in direction of their effect) within the individual sectors in which these companies operate. The aim is to confirm the influence of the industry as an important determinant on companies' investment activity.

2. RESEARCH OBJECTIVES, METHODOLOGY AND DATA

As the aim of our paper is to analyze the influence of external macro-environment factors and internal corporate factors on the capital allocation into fixed assets of a company, the basic prerequisite for conducting such research is to provide an appropriate sample of enterprises. Data needed for conducting the research were obtained from the company “Index podnikateľa” which provides 10-years financial statements of various enterprises. The basic criterion of our selection was that the companies must have been running the business currently (i.e. only active companies). The other criteria the companies had to fulfil for being selected in the research sample are listed in the following Table 1.

Table 1. Selection criteria for the sample of companies

<i>Size of the company</i>	<i>minimum number of employees: 5</i>
SK NACE	C – manufacturing
Date of registration	until December 31 st , 2008
Legal form	JSC and LLC
Status	actively operating

Source: own research

After entering the above criteria, 250 companies were left in the sample. Following Table 2 shows the number of companies in each sub-group. The sample contains enterprises of all size categories.

Table 2. The structure of our research sample

SK NACE	Sub-group	Number of enterprises	% ratio
172	Manufacture of articles of paper and paperboard	63	25.2 %
222	Manufacture of plastics products	46	18.4 %
265	Manufacture of instruments and appliances for measuring, testing and navigation; watches and clocks	34	13.6 %
281	Manufacture of general-purpose machinery	32	12.8 %
292	Manufacture of bodies (coachwork) for motor vehicles; manufacture of trailers and semi-trailers	20	8.00 %
293	Manufacture of parts and accessories for motor vehicles	55	22.00 %
Total		250	100.00 %

Source: own research

As for the period, we examined the years 2009-2018. It was not possible to include 2019 in the analysis, as due to the covid-19 pandemic, businesses in Slovakia had the opportunity to file tax returns at a later date, so companies' financial statements for 2019 were not available at the time our paper was being written. In order to analyze the data and quantify the impact of selected factors on the financial structure of enterprises we used the method of multiple regression analysis. The model, which includes the examined factors, looks like follows:

$$ICit = \beta_0 + \beta_1.GDP_t + \beta_2.HICP_t + \beta_3.ir_t + \beta_4.tax_t + \beta_5.ROA_{it} + \beta_6.size_{it} + \beta_7.liq_{it} + \beta_8.FinStr_{it} + \beta_9.risk_{it} + \beta_{10}.NDS_{it} + \beta_{11}.age_{it} + \varepsilon_{it}$$

where:

IC – investment coefficient of the studied sample of enterprises,

- i – number of enterprises in the sample,
- t – specifically analyzed period,
- β_0 – the intercept parameter,
- $\beta_1 - \beta_{11}$ – regression coefficients,
- independent variables: GDP – GDP growth, HICP – harmonized inflation rate, ir – interest rate, tax – tax rate, ROA – gross return on assets, size – logarithm of revenues reflecting the size of the enterprise, liq – liquidity, FinStr – financial structure, risk – risk level of the company, NDTs – non-debt tax shield, age – the number of years since the company's establishment to the observation date,
- ε_{it} – random errors.

Due to the use of panel data in regression analysis, a combined regression model (pooled OLS), model with fixed effects (Fixed Effects Model - FEM), respectively Random Effects Model (REM) can be used for examining the influence of selected factors on the financial structure of enterprises. We used Hausman test when choosing the most appropriate one (e.g. to find out whether a model with fixed effects would be more suitable than the one with random effects). Statistical testing was performed in GRETL program. The direction of effect of selected factors is determined by the regression coefficients. If the sign of the regression coefficient is positive, then there is a positive correlation between the independent variable and the investment activity of companies. Contrariwise, a negative sign would mean a negative correlation. The intensity and statistical significance of the examined factors is being measured by the p-value and assessed in accordance with the standards used in analogous foreign researches (e.g. Korajczyk and Levy, 2001; Bhaird and Lucey, 2009).

Dependent variable

The level of investment activity and the asset structure of examined companies is the dependent variable for the multiple regression analysis model. Investment activity is expressed by the investment coefficient. Given the different size categories of companies in the sample, we do not consider it appropriate to use just the absolute value of investments. Therefore, we used a relative indicator, which expressed the ratio of investments to company's fixed assets and investments to company's total assets. We also used the ratio of tangible long-term assets to total assets as part of monitoring the selected factors and their impact on the asset structure.

Independent variables

Factors for which we assume that they are affecting the investment activity of companies are the independent variables in the model of multiple regression analysis. These factors are divided into two basic categories: external macro-environment factors and internal corporate factors.

Table 3. Analyzed factors and the way of their interpretation.

<i>Independent variables</i>	<i>Indicator</i>
Economic cycle	GDP growth
Inflation	HICP
Interest rate	Average interest rates on loans for enterprises
Tax rate	Corporate tax rate
Profitability	Profit before taxes / Total assets
Size of a company	Natural logarithm of turnover
Liquidity	Current assets / Short term liabilities
Financial structure	Borrowed capital / Total assets
Business risk	Taffler model
Non-debt tax shield	Depreciation / Total assets
Age of the company	The number of years since the company's establishment to the observation date

Source: own research

3. RESULTS AND DISCUSSION

We used correlation analysis to eliminate possible collinearity between factors. Excluding the ones that are strongly correlated with each other allows us to eliminate bias in the results of regression analysis (Sogorb and Mira, 2005). It applies that if $|r_{xij}| \geq 0.6$ we would consider it to be a strong correlation. Given the scope of the paper, we present only the results of the correlation analysis for companies operating in the Manufacture of articles of paper and paperboard sector (Table 4).

Table 4. Correlation table for enterprises active in the Manufacture of articles of paper and paperboard sector

	<i>GDP</i>	<i>HICP</i>	<i>i</i>	<i>tax</i>	<i>ROA</i>	<i>size</i>	<i>liq</i>	<i>finStr</i>	<i>risk</i>	<i>NDTS</i>	<i>age</i>
<i>GDP</i>	1.0000										
<i>HICP</i>	-0.0706	1.0000									
<i>i</i>	-0.1201	-0.0197	1.0000								
<i>tax</i>	0.2841	-0.5832	-0.0399	1.0000							
<i>ROA</i>	-0.0091	-0.0590	-0.0149	-0.0296	1.0000						
<i>size</i>	0.0408	-0.0695	0.0913	0.0406	0.0577	1.0000					
<i>liq</i>	0.0264	0.0088	-0.0006	-0.0198	0.0692	-0.0774	1.0000				
<i>finStr</i>	-0.0391	0.0487	-0.0336	-0.0167	-0.4099	-0.1056	-0.4273	1.0000			
<i>risk</i>	-0.0356	-0.0484	-0.0189	0.0032	0.5165	-0.0123	0.5237	-0.4825	1.0000		
<i>NDTS</i>	-0.0398	0.0833	0.0253	-0.0839	-0.1661	-0.0050	-0.1145	0.2163	-0.2103	1.0000	
<i>age</i>	0.2157	-0.0795	0.0370	0.2174	-0.1365	0.3433	0.0481	-0.1960	-0.1082	-0.0905	1.0000

Source: own research

By examining the factors' collinearity, we can generally conclude that the correlations between selected variables are not strong, and therefore all the above variables can be clearly included in the model of multiple regression analysis. These results above do also apply to companies operating in the other five sectors that we analyze. We present all the results of regression analysis by individual sectors and in separate tables. The value of the “ β - coefficient” provides us with an insight into the direction of effect of a given factor (i.e. whether there is a direct or inverse correlation between the factor and the asset structure). We use the “p-value” to examine the intensity of chosen factors' effect. In assessing its strength, we follow generally valid rules. The statistical significance of the model is evaluated by means of an “F-test”. If the F-test value is less than 0.05, the model is statistically significant. Should the F-test value be even less than 0.01, then the model would be statistically highly significant. We use p-value to examine the impact of chosen factors on the investment activity of enterprises. A factor whose p-value is less than 0.1 we consider being statistically significant. If the p-value is even lower than 0.01, we can speak of a statistically highly significant factor.

Following Table 5 contains the results of regression analysis (OLS model, FEM model and REM model) of the selected factors' influence on the investment activity of companies (the activity is measured by the ratio of investments to total assets).

Table 5. Summary of the variables' direction and intensity on the investment activity of companies

<i>Independent variable</i>	<i>172 - Manufacture of articles of paper and paperboard</i>						<i>222 - Manufacture of plastics products</i>					
	<i>Pooled OLS</i>		<i>FEM</i>		<i>REM</i>		<i>Pooled OLS</i>		<i>FEM</i>		<i>REM</i>	
	<i>Coeff.</i>	<i>***</i>	<i>Coeff.</i>	<i>***</i>	<i>Coeff.</i>	<i>***</i>	<i>Coeff.</i>	<i>***</i>	<i>Coeff.</i>	<i>***</i>	<i>Coeff.</i>	<i>***</i>
Constant	2.0899	***	2.0562	***	2.0899	***	2,2763	***	2.1828	***	2,2772	***
Economic cycle	-2.2109	***	-2.1554	***	-2.2109	***	-3.8713	***	-4.0670	***	-3.8969	***
Inflation	-4.0635	***		***	-4.0635	***	-5.1861	***	-5.0060	***	-5.1670	***

		-4.4052										
Interest rates	0.0002	0.0003	*	0.0002		-0.0021	-0.0034	-0.0024				
Tax rate	-7.4907	***	-7.8847	***	-7.4907	***	-8.8211	***	-8.4850	***	-8.8156	***
Profitability	0.0364		-0.1130		0.0364		-0.1056		-0.1500		-0.1118	
Size	-0.0321		-0.0440	*	-0.0321		-0.0041		0.0434	*	-0.0009	
Liquidity	-0.0020		-0.0023		-0.0020		-0.0044	**	-0.0025		-0.0042	**
Financial structure	0.1539	**	0.0817		0.1539	**	0.1776	**	0.03355		0.1662	**
Risk level	0.0216		-0.0535		0.0216		0.0736	*	0.0346		0.0698	*
Non-debt tax shield	0.2993		-0.9180	**	0.2993		0.6162		0.359		0.5919	
Age	-0.0038		-0.0084	*	-0.0038		-0.0116	***	-0.0230	***	-0.0125	***
Adj. R square	0.1140		0.2339				0.2023		0.2474			
P-value(F)	1.93x10 ⁻¹¹		8.41x10 ⁻⁰⁷				2.66x10 ⁻¹⁷		2.43x10 ⁻¹²			
Hausman test χ^2 (11)					32.3928***						20.4024**	
Independent variable	265 - Manufacture of instruments and appliances for measuring, testing and navigation; watches and clocks					281 - Manufacture of general-purpose machinery						
	Pooled OLS Coeff.		FEM Coeff.		REM Coeff.		Pooled OLS Coeff.		FEM Coeff.		REM Coeff.	
Constant	5.56	***	6.32	***	5.56	***	0.7147	***	0.9031	***	0.7147	***
Economic cycle	-2.7072		-2.7717		-2.7072		-0.8814	**	-1.0804	**	-0.8814	**
Inflation	-9.3431		-8.9544		-9.3431		-2.1062	**	-2.5939	***	-2.1062	**
Interest rates	0.0266		0.0290		0.0266		-0.0289		-0.1059		-0.0289	
Tax rate	-16.9168	**	-16.4747	**	-16.9168	**	-3.4144	***	-4.1711	***	-3.4144	***
Profitability	0.6850	**	0.8027	*	0.6850	**	0.0414		0.0312		0.0414	
Size	-0.2554	***	-0.5355	***	-0.2554	***	0.0096		0.0026		0.0096	
Liquidity	-0.0172		-0.0339	**	-0.0172		-0.0018		0.0003		-0.0018	
Financial structure	0.7080	**	0.8072	*	0.7080	**	0.0987	**	0.1350	**	0.0987	**
Risk level	-0.0690		0.0416		-0.0690		-0.0138		-0.0132		-0.0138	
Non-debt tax shield	1.08		1.93		1.08		0.6777	**	0.2817		0.6777	***
Age	-0.0122		-0.0074		-0.0122		0.0005		0.0028		0.0005	
Adj. R square	0.2214		0.2158				0.1387		0.2833			
P-value(F)	7.19x10 ⁻¹³		9.85x10 ⁻⁰⁸				2.03x10 ⁻⁰⁶		0.000062			
Hausman test χ^2 (11)					16.7952						21.7716**	
Independent variable	292 - Manufacture of bodies (coachwork) for motor vehicles; manufacture of trailers and semi-trailers					293 - Manufacture of parts and accessories for motor vehicles						
	Pooled OLS Coeff.		FEM Coeff.		REM Coeff.		Pooled OLS Coeff.		FEM Coeff.		REM Coeff.	
Constant	2.0352	***	1.80	**	2.0352	***	0.4534	***	0.5948	***	0.4534	***
Economic cycle	-1.0968		-1.0859		-1.0968		-0.6202	***	-0.7659	***	-0.6202	***
Inflation	-1.2383		-1.8311		-1.2383		-1.76x10 ⁻⁵		-2.02x10 ⁻⁵		-1.76x10 ⁻⁵	
Interest rates	-2.74x10 ⁻⁵		-0.0001		-2.74x10 ⁻⁵		-1.0422	**	-1.1454	**	-1.0422	**
Tax rate	-6.7804	***	-5.3996	**	-6.7804	***	-1.9357	***	-2.4139	***	-1.9357	***
Profitability	0.1356		-0.1628		0.1356		0.0868		0.0459		0.0868	
Size	0.0141		0.1351	**	0.0141		0.0042		0.0040		0.0042	

Liquidity	-0.0316 ***	-0.0459 ***	-0.0316 ***	0.0059	0.0019	0.0059
Financial structure	-0.0531	-0.1822 **	-0.0531	0.1048 ***	0.1089 **	0.1047 ***
Risk level	0.0317	0.0834	0.0317	-0.0508 **	-0.0493 **	-0.0506 **
Non-debt tax shield	-1.2419 *	-1.8677 **	-1.2419 *	0.3568 **	-0.3508 *	0.3569 **
Age	-0.0141 **	-0.0296 ***	-0.0141 **	-0.0005	0.0006	-0.0005
Adj. R square	0.1104	0.2606		0.1144	0.2503	
P-value(F)	0.0011	7.29x10 ⁻⁰⁸		2.08x10 ⁻⁰⁹	4.07x10 ⁻⁰⁸	
Hausman test $\chi^2(11)$			68.6164***			48.1671***

Source: compiled by authors.

Note: *** indicates significance at the 1 % level, ** indicates significance at the 5 % level and * indicates significance at 10 % level.

Based on the F-test results, we can state that the models we have constructed are statistically highly significant. The results of the combined regression model show that the variables we have chosen can explain approximately 11 % of the variability of investment activity (for companies operating in the sectors of Manufacture of articles of paper and paperboard, Manufacture of bodies for motor vehicles and Manufacture of parts and accessories for motor vehicles). At the same time, it applies that our model managed to explain more than 20 % of the variability of investment activity for companies operating in the Manufacture of plastic products, Manufacture of tools and equipment for measuring, testing and navigation.

The remaining percentages of variability represent the influence of factors that were not included in our model, as well as other unspecified influences. Regarding the statistical significance of individual factors, we found out that there were certain differences. The differences were found not only in terms of statistical significance of factors or in terms of the intensity of their influence, but in some cases even in the direction of their effect. The results of the combined model showed that in most of the sectors we monitored, the economic cycle was a statistically significant factor influencing the investment activity of enterprises (with the exception of the Manufacture of bodies for motor vehicle and the Manufacture of instruments and appliances for measuring, testing and navigation).

A negative correlation was found between investment activity and the economic cycle. According to the results of our research, in the period of economic boom (at the time of GDP growth) there was a decrease in the share of investments on total assets. Conversely, at a time of declining economic performance, there was an increase in the volume of investments. This was an interesting finding, which was contrary to our assumption about the increase in corporates' investment activity in times of economic boom. In our opinion, it can be explained by several reasons. We believe that the decline in the share of corporates' investments to total assets was due to consumers' behavior at the time of expansion. At the time of expansion, there is an increase in demand for products so companies have to produce more (which leads to higher volume of stocks). At the same time, as a result of higher sales, there is also an increase in the volume of receivables and funds in financial accounts, which leads to an increase in the volume of current assets (and thus in the total assets). If the growth rate of current assets is higher than the growth rate of fixed assets, then the share of investments to total assets is decreasing. At the same time, it is necessary to keep in mind a certain time lag. After a period of recession, companies usually do not have enough accumulated financial resources that they could use immediately to finance new investment projects. At the time of expansion, they need to accumulate the resources first, before they can start considering new investment projects at all. This is especially true for companies of smaller size categories. There is a high presumption that large and capital strong companies would be able to obtain money from a bank or investors to finance activities (if they have a good investment plan). Since the preparation of investment projects is quite demanding and complex, the actual implementation is often delayed and the projects might be completed even at the beginning of the new recession. *It needs also be borne in mind that, in the event of a complete loss of functionality of tangible fixed assets,*

the enterprise must replace those assets with new ones - irrespective of the current stage of economic cycle. We can therefore assume that, despite the fact that the economy is in recession, some companies are constantly innovating and investing regardless of the current situation. Research conducted by Mānasoo and Maripuu (2015) confirmed that long-term investments have had a significant positive impact on business performance – especially just after the crisis.

A negative correlation was found between inflation and investment activity in the sectors Manufacture of articles of paper and paperboard, Manufacture of plastic products and Manufacture of general-purpose machinery. In the case of rising inflation, the share of investment to the company's total assets is decreasing, so there is a negative correlation. This finding can be explained by the way, in which assets are presented in the balance sheet. Fixed assets are valued at historical prices (prices at which company acquired the assets), so in the event of rising inflation, assets in the balance sheet become undervalued. Inflation influences investment decisions in more ways. Among other things, it is an important part in evaluating the effectiveness of investment projects. As several authors point out (Garoufalis, 2017; Tham and Velez-Pareja, 2002), inflation needs to be included in decisions about investment projects and its inclusion will allow companies to reduce risk by excluding unsuccessful projects.

The impact of interest rates was statistically significant only for companies operating in the Manufacture of parts and accessories for motor vehicles. Interest rates have even been statistically highly significant factor influencing the investment activity of companies operating in this sector (with a negative correlation). In the case of high interest rates, individuals and businesses are not interested in borrowing expensive money there is a decline in investment activity, and thus a slowdown in the economy. On the contrary, in the case of low interest rates, there is a growing interest in bank loans, which results in higher investment activity, and thus better performance of the economy. The level of interest rates does also affect the number of projects that will be implemented by enterprises. If the interest rates are rising, companies carefully evaluate their investment plans and from the total number of intended projects they do choose and implement only those with the highest profitability. The negative correlation found is consistent with the results of studies by several authors (Apere and Akarara, 2020; Davis and Emerenini, 2015; Majed and Ahmad, 2010; Ayaydin and Durmus, 2016).

In the case of all six examined sectors, the impact of tax rates on investment activity is also a statistically highly significant factor. There is a negative correlation between tax rates and the investment activity of companies – and higher tax rates limit the investment activity of enterprises. We assume that higher tax rates cause faster depletion of financial resources, and thus reduce the amount of corporate funds for investment activities. Dackehag and Hansson (2012) in their study demonstrated a reduction in the volume of corporate investment activity due to higher taxation. According to Hartman (1984), a high level of taxation leads to a decrease in profit (and thus retained earnings), which is an important source for financing investments.

In the case of internal corporate factors and their influence on the investment activity, we managed to verify the influence of several of them. The impact of profitability on the corporate investment activity was one of the most interesting findings. We assumed that profitability would be a statistically significant factor, as profit is one of the most important internal sources of financing - and thus the financing of investment activity. However, as we found out, profitability was a statistically significant factor only in the industry of Manufacture of instruments and appliances for measuring, testing and navigation. In this sector, a higher rate of profitability also meant a higher rate of investment activity.

The model also confirmed the influence of a company size on its investment activity. According to the results, with the rising size category, the share of investments to total assets was declining. We believe that, the smaller companies in their expansion phase are forced to invest more than large companies in the stability phase, in order to grow.

As the basic precondition for the implementation of investment projects is to have sufficient financial resources to finance them, liquidity was also one of the factors whose impact on investment activity we examined. We found a negative correlation between liquidity and investment activity for enterprises operating in the Manufacture of plastic products and the Manufacture of bodies for motor vehicles. It is obvious that with higher investment activity, financial resources are drawn on a larger scale. According to research conducted by several authors (Anderson and Kegels, 1997; Liu and Pang, 2009), companies in

their investment decisions were limited by liquidity, thus liquidity was one of the determining factors in investments.

As for the financial structure, we assumed that companies with a higher share of equity to total capital were also more financially stable. A higher share of equity may be the result of several factors - these can be the enterprises that are profitable in long run accumulate the profit and use it to finance investments. The higher volume of equity may also be the result of initial or additional deposits of investors. It is obvious that investors would not invest their financial resources in companies if they would not see the prospect of growth in the market value. In a long run increasing market value can only be ensured by appropriate investment activity (Djaja, 2017). Therefore, we expected that a higher share of equity would also lead to an increase in investment activity. A positive correlation was found between the financial structure and the investment activity of enterprises in almost all monitored sectors (with the exception of enterprises operating in the sector of Manufacture of bodies for motor vehicles). It is clear that better access to external sources of financing (especially bank loans) does also increase the investment activity of companies.

A positive correlation was found between the risk and investment activity of companies operating in the sector Manufacture of plastic products. On the contrary, a negative correlation was observed for companies active in the Manufacture of parts and accessories for motor vehicles. A higher level of risk leads to a decrease in the investment activity of enterprises. It is clear that companies with a higher level of risk have difficulties in obtaining financial resources to cover their investments (it is difficult to obtain new funds from the capital market by issuing either shares or bonds and the same applies to obtaining a bank loan). Even if they would manage to obtain a bank loan, the costs associated with it would be very high, which could subsequently cause further solvency problems and re-aggravation of risk.

The impact of the non-debt tax shield on the corporates' investment activity was confirmed for the sectors of Manufacture of general-purpose machinery, Manufacture of bodies for motor vehicles and Manufacture of parts and accessories for motor vehicles. However, their direction of effect was different. A negative correlation was found in the sector Manufacture of bodies for motor vehicles while a positive correlation was observed in the remaining sectors. The use of a non-debt tax shield can reduce company's tax liability, as depreciation is a tax deductible expense and reduces the tax base. As a result, there are savings on taxes and reduction in the effective marginal corporate tax rate (DeAngelo and Masulis, 1980). A higher non-debt tax shield also means that enterprises can increase their competitiveness by actively investing into assets with higher added value and longer service life (Teja, 2019). The possibility of using non-debt tax shield is given by a sufficiently high profit that the company will generate (Jairo, 2005). To this, we can add that the non-debt tax shield has been used frequently by enterprises especially in the past. In anticipation of a high profit at the end of the accounting period, they often tried to reduce it by investing and subsequent accounting for the whole year's depreciation. However, this approach is no longer possible. The law currently allows depreciation accounting only from the month in which the asset was put into use, which means that the way of decreasing the profit through a non-debt tax shield has been significantly limited.

A negative correlation was found between the existence period of companies and their investment activity in the sectors of Manufacture of plastic products and Manufacture of bodies for motor vehicles. This means that the longer companies in these sectors do run their business, the lower their investment activity is. This can be explained by the fact that start-ups that have been on the market only for a short time do need more initial investments to be able to produce products and meet customer needs. On the contrary, companies that have already been operating for some time may use fixed assets even after they have been fully depreciated, and thus their investment activity may become lower.

If we take into account the influence of heterogeneity of cross-sectional units in absolute terms (where individual influences are correlated with independent variables - FEM model) and we introduce artificial variables into the model, then there is more than twofold increase in the explained variability of investment activity of the companies. For example, in the sector of Manufacture of general purpose machinery, the rate of explained variability would increase from 13.87 % to 28.33 %. The results of F - test (which identifies the differences between cross-sectional units) indicate that there are differences in these units. Thus, we find the presence of effects that are specific to individual companies and so FEM

analysis proved its justification. As we found out, there were also some changes in the statistical significance of the factors and their effect.

Using the model with random effects (REM model) to find out selected factors' influence on the investment activity of Slovak companies leads to very similar results (in terms of both the direction of effect of selected factors as well as the intensity of their influence) as when using the model with fixed effects (FEM model). In deciding which of these models (FEM or REM) is more appropriate to use, the Hausman test provides us the answer. The result has confirmed that since the resulting value $H > \chi^2_c$, we reject the null hypothesis about the consistency of both estimators and FEM model is more appropriate.

The research results confirm that in addition to the influence of internal factors, we did also manage to verify the influence of selected external factors of environment in which the companies operate. We also found out that there were certain differences in selected factors' effects between individual sectors. These differences were found mainly in the intensity of these factors. We could also see the difference in the factors themselves and in their impact on the investment activity of enterprises. In some cases (e.g. risk, non-debt tax shield), a different direction of effect was even found.

CONCLUSION

In this paper, we focused on the examination of factors influencing the capital allocation into the fixed assets of enterprises.

Given one of the aims of our paper - to analyze the external factors of the macro-environment, it would be appropriate to examine also a longer period (at least 20-30 years). During such a long period, it would be possible to capture several trends in the economic macro-environment and several phases of the economic cycle - thus capture the behavior of companies during different economic conditions and draw conclusions from it. However, none of the databases available to us does allow examining such a long period. Nevertheless, this problem was partially eliminated by the fact that in the period we examined (2009 - 2018), both the phase of crisis and the phase of economic boom alternated, which partially alleviates the lack of a longer time series. Despite this shortcoming, we were able to confirm the impact of several macroeconomic factors on the capital allocation into fixed assets in the shorter period of 10 years. However, due to the limitation, we do not generalize the research results for the entire business sector. The results are valid only for the companies within sectors included in the research sample and for a given period.

In addition to the above factors of macro-environment, the investment decisions of companies are also influenced by several institutional factors. The influence of these factors is considerable, but their inclusion in the analysis and their measurement is quite difficult. The influence of institutional factors was confirmed e.g. by An (2013), who found out that e.g. the protection of private property was also an important factor influencing investment decisions of companies. The author found out that there were certain differences in the share of intangible fixed assets to total assets - between developed and developing countries. Enterprises in developing countries usually had a lower share of intangible fixed assets, which might be related to insufficient protection of private property rights. The importance of not only macro-economic but also legal factors (or we may talk about legal obstacles) for the investment activity of companies was confirmed by Bialowolski and Weziak-Bialowolska (2013).

The investment activity of enterprises in coming periods should be under a strong influence of Industry 4.0. As Balog and Hercko (2020) state, Industry 4.0 "represents a diametrically new dimension of implementation of complex technological solutions and their horizontal and vertical integration within companies and their networks. Factories are exposed to the requirements of the transformation to the so-called factories of the future." As a result of Industry 4.0 "smart businesses" should arise, which will require significant investments, especially into new technologies and production capacity. Therefore, an increase in tangible fixed assets of enterprises is to be expected. So far, only big companies operating in the automotive industry are adapting to the conditions of Industry 4.0 in Slovakia. In the case of medium-sized and small enterprises, making this transition is more difficult. However, if they want to remain competitive, it will be necessary to adapt to Industry 4.0 requirements in the near future.

We would also like to emphasize that although Industry 4.0 is a relatively new concept, there is even Industry 5.0 concept being mentioned more and more often. According to the conference conclusions of the Commission of the European Economic and Social Committee, Industry 5.0 should be about close cooperation and interaction between humans and machines. There will be a division of labor between two main groups - robots and humans. Robots should perform robotic tasks, while humans should be focused especially on work for humans. There are several questions about industry 5.0 arising - in particular with regard to the social area and ethical risks. However, with proper governance it could be a good opportunity to increase productivity and competitiveness (EESC, 2019). The transition to Industry 5.0 will clearly require intensive investments into technology. Yet, given the problems that companies have with adaptation to the conditions of industry 4.0 and due to the current recession, we assume that Industry 5.0 is only in its infancy phase and thus a matter of a very distant future.

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