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What influences the corporate profitability of retail and wholesale companies in selected European countries?

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Abstract.

With the emergence of the neoclassical economy, a today well-known basic economic rule emerged, namely that when companies decide on their production, its quantity, price, etc., they always try to maximize their profits. Each business unit plans to generate a profit, and therefore profitability indicators are also among the key performance indicators of each business. Like everything in life, the formation of profitability is influenced by a number of (un)predictable factors. This research deals with the factors that affect the company and its profitability from the outside, and therefore they are often unexpected. Business profitability is examined in eight European economies, namely the Visegrád Group, Austria, Bulgaria, Romania and Slovenia. The subject of the research is companies that fall into the retail and wholesale industry. This industry is analysed at the level of subindustries according to the NACE classification, of which there are a total of twenty-one. The aim of the research is to find out whether selected factors influence the company's profitability or not. The factors are as follows – GDP growth rate, inflation rate, reference interest rate, unemployment rate, gross fixed capital formation and exchange rate against the Euro. The analysed period is from 2010 to 2018. In total, over 130,000 companies are examined. Given the size of the data set examined, it is impossible to summarize the results for each economy. However, the main finding is that corporate profitability is mainly affected by the reference interest rate of a given economy.

Keywords: corporate profitability, GDP, inflation, interest rate, unemployment, gross fixed capital formation.

1. Introduction

Generating profit is one of the basic characteristics of each business. The importance of profit can be found in both economics – for example, one of the three basic assumptions of neoclassical economics is, according to E. Roy Weintraub[1], profit maximization as well as in

[1] Library of Economics and Liberty – Neoclassical Economics by E. Roy Weintraub. [online]. [13.1.2021]. Available from https://www.econlib.org/library/Enc1/NeoclassicalEconomics.html

the theory of corporate finance, where each of us certainly knows the (magic) investment triangle that combines profit, liquidity and risk. The reason why to found and run most companies certainly the creation of profit, which gives companies the opportunity to invest in them and expand or innovate their business processes is.

Given that companies do not exist in a vacuum, it is clear that each of their activities will be affected by a number of factors that can come either from within the company itself (internal factors) or from the external environment of the company (external factors). This research focuses on the second group of factors – external factors, which play a larger role because they cannot be accurately predicted. The aim of the research is to find out whether selected factors influence the company's profitability or not. The factors are as follows: GDP growth rate, inflation rate, reference interest rate, unemployment rate, gross fixed capital formation and exchange rate against the Euro. Companies falling into the retail and wholesale industry are the subject of the research. The analysis will be provided at the level of the subindustries, of which there are twenty-one according to the NACE classification. The companies chosen to be analyzed come from eight European economies, which are the Visegrád Group, Austria, Bulgaria, Romania and Slovenia.

The expansion of existing knowledge in this area should become the main benefit of this research because, as the literature overview shows, there are not as many studies dealing with this issue and most of them focus on banking and tourism. Above that, studies containing all selected factors do not exist, so knowledge regarding the impacts of selected factors in the selected economies should be spread. The examined sample is quite large containing over 130,000 companies. The sectors will be examined by 21subindustries, therefore, 21 panels within each economy will be analysed thus in total 168 panels which should show us at least in part which of the selected factors has the greatest impact on profitability in individual subsectors and economies.

This paper consists of four sections. First section outlines earlier studies on the determinants on the corporate profitability. Second section presents the research methodology, variables and provides a description of the industry. Third section describes the results of the analysis of variable dependencies. Fourth section presents the conclusions.

2. Literature overview

There are many studies addressing the determinants of business profitability. Most of them deal with the banking industry or tourism. Figure 1 contains some of them.

Athanasoglou, Brissimis and Delis (2008) found that the development of the business cycle had the greatest impact on the profitability of Greek banks during 1985–2001. Furthermore, it was found that if the output of the economy is above trend, then the size of the resulting coefficient is doubled. Conversely, when the output of the economy is below trend, the coefficient is even statistically insignificant. This finding shows that Greek banks are able to separate their performance when the economy is not prospering.

Dietrich and Wanzenried (2011) found, with regard to the results in the table, that banks' profits are pro-cyclical, which is evident because when the economy is booming, demand for credit usually increases, and similarly when the economy goes through crisis or recession. So, loans are hard to come by.

Ćurak, Poposki and Pepur (2012) revealed the positive impact of economic development on bank prosperity, i.e. when the economy is doing well, households will be saving and businesses will be demanding for more credit.

Figure 1: Studies

	HDP	IR	INF	
Bourke (1989)	+	+	+	90 banks from Europe, the US, Australia, 1972-1981
Molyneux and Thornton (1992)	+	+	+	18 European countries, 1986-1989
Claessens, Demirgüç-Kunt and Huizinga (1998)	+	+	+	80 countries, 1988-1995
Demirgüç-Kunt and Huizinga (1998)	+	+	+	29 countries, 1975-1983
Bikker and Hu (2002)	+			26 OECD countries, 1979-1999
Bashir (2003)	+			21 Islamic countries, 1994-2001
Sufian and Chong (2008)			-	Philippines banks, 1990-2005
Albertazii and Gambacorta (2009)	+	+	+	countries from euro area and Anglo-Saxon countries
Flamini, McDonald and Schumacher (2009)	+	+		216 commercial banks from 42 countries in Sub-Saharan Africa, 1999-2006
Aliaga-Diaz and Olivero (2010)	+			the US, 1979-2005
Pervan, Pervan and Guadagnino (2010)	+			Croatian commercial banks, 2002-2009
Dietrich and Wanzenried (2011)	+	+		372 Swiss commerical banks, 1999-2009
	+	+		372 Swiss commerical banks, 1999-2006
	-	+		372 Swiss commerical banks, 2007-2009
Ćurak, Poposki and Pepur (2012)	+			16 Macedonian banks, 2005-2010
Tan and Floros (2012)	-			101 Chinese banks, 2003-2009
Akotey, Sackey and Amoah (2013)	+			17 life insurance companies, Ghana, 2000-2010
Gaganis, Hasan and Pasiouras (2013)	+			399 listed insurance firms, 52 countries, 2002-2008
Košak and Čok (2013)	+			Croatian, Bulgarian, Romanian, Serbian, Macedonian and Albanian banks, 1995-2004
Mirzaei, Moore and Liu (2013)	+		-	308 banks from emerging economies, 1999-2008
	+		-	1,621 banks from advanced economies, 1999-2008
Dietrich and Wanzenried (2014)	-		+	10,165 commercial banks from 118 countries, 1998-2012 - low-income economies
	+		+	10,165 commercial banks from 118 countries, 1998-2012 - middle-income economies
	+		-	10,165 commercial banks from 118 countries, 1998-2012 - high-income economies
Almeida and Divino (2015)	+			64 Brazilian banks, 2001-2012
Djalilov and Piesse (2016)	+		-	275 commercial bank, 2000-2013 - early transition countries (CZ, SK, PL, HU, SI)
	+		+	275 commercial bank, 2000-2013 - late transition countries (e.g. Armenia, Moldova)
Saona (2016)	-			7 Latin American countries, 1995-2012
Zuidberg (2017)				125 airports from Europe, the US, Canada, Australia, New Zealand, 2010-2016
	-			European low-cost airports
	-			Rynair/easyJet
	+			US low-cost airports, Southwest
	+			airports with less than 10 mil. passengers
	-			airports with more than 10 mil. passengers
	+			hub airports
	+			non-hub airports
Chouikh and Blagui (2017)	-		+	10 Tunisian listed banks, 1997-2015
Martins, Serra and Stevenson (2019)	+	+	+	108 real estate banks from the US, the UK, Germany, 2000-2014
	+	+	+	108 real estate banks from the US, the UK, Germany, 2000-2006
	-	-	+	108 real estate banks from the US, the UK, Germany, 2007-2010
Vera-Gilves et al. (2020)	+	+	-	23 Ecuadorian private banks, 2002-2017
Le and Ngo (2020)	-	-		23 countries, 2002-2016
Killins (2020)	+			38 federally regulated domestic life insurers, 1996-2018

Source: author's calculations based on data from Orbis database

In addition, Martins, Serra and Stevenson (2019) further divided the sample according to the individual economies. Despite this division, the results remained the same.

Many authors argue that the impact of inflation depends on whether the inflation expectations are expected or not or only partially. If the inflation is expected to rise, banks can adjust interest rates (increase) and thus increase their yields. It is also necessary to consider whether banks' costs are rising faster than inflation.

3. Data and methodology

This research focuses on companies operating in the economies of the extended Visegrád Group: the Czech Republic (CZ), Slovakia (SK), Poland (PL), Hungary (HU), Austria (AT), Slovenia (SI), Romania (RO), Bulgaria (BG). The last four mentioned economies are very often linked to the original Visegrád Group, as representatives of these economies often attend the group's meetings.

The analyzed companies belong to branch section G – Wholesale and retail trade; repair of motor vehicles and motorcycles according to the NACE classification. This section includes wholesale and retail – purchase and sale without further processing of any kind of goods and the provision of services related to the sale of goods. Wholesale and retail are the latest ones in the chain of goods distribution. This section also includes maintenance and repair of motor vehicles and motorcycles. Sales without further processing include trade-related activities, such as sorting, classifying and assembling goods, mixing goods, such as sand, bottling (with or without pre-washing), packaging, unpacking and repackaging for subdivision, storage (including freezing or refrigeration).

Division 45 includes all activities related to the trade and repair of motor vehicles and motorcycles. Divisions 46 and 47 include all other business activities. The predominant type of customers is decisive for distinction of these divisions, where division 46 deals with customers, who are mostly business entities, while division 47 includes end consumers.

This sector is analyzed by the groups. According to the NACE classification, there are 21 of these groups– 451 Sale of motor vehicles, 452 Maintenance and repair of motor vehicles, 453 Sale of motor vehicle parts and accessories, 454 Sale, maintenance and repair of motorcycles and related parts and accessories, 461 Wholesale on a fee or contract basis, 462 Wholesale of agricultural raw materials and live animals, 463 Wholesale of food, beverages and tobacco, 464 Wholesale of household goods, 465 Wholesale of information and communication equipment, 466 Wholesale of other machinery, equipment and supplies, 467 Other specialised wholesale, 469 Non-specialised wholesale trade, 471 Retail sale in non-specialised stores, 472 Retail sale of food, beverages and tobacco in specialised stores, 473 Retail sale of automotive fuel in specialised stores, 474 Retail sale of information and communication equipment in specialised stores, 475 Retail sale of other household equipment in specialised stores, 476 Retail sale of cultural and recreation goods in specialised stores, 477 Retail sale of other goods in specialised stores, 478 Retail sale via stalls and markets, 479 Retail trade not in stores, stalls and markets.

All companies come from the Orbis database, which includes medium, large and very large companies. A total of 130,446 companies have been tested. The individual time series come

from the Orbis database (financial statements of companies), the World Bank database (GDP, inflation, unemployment, gross fixed capital formation), the database of central banks of selected economies (interest rate) and the Investing.com database (exchange rate). The research involves the period of 2010-2018.

The aim of the research is to find out whether selected factors influence the company's profitability or not. The factors are as follows: GDP growth rate, inflation rate, reference interest rate, unemployment rate, gross fixed capital formation and exchange rate against the Euro. Based on our own assumptions and on the basis of a literature overview, the following expectations were created:

- The GDP growth rate and gross fixed capital formation should have a positive effect on profitability, because as the economy grows, companies whose products grow in demand usually also prosper, increasing companies' profits.
- The inflation rate could also have a positive impact on profitability, because in this case, the higher real interest rate, which should fall as the inflation rate rises, the more companies could go into debt financing thus their development and this way, it should ultimately lead to profit growth.
- The reference interest rate should have a negative impact on the level of profitability, as the lower the cost of debt financing is, there is more room for companies to use debt financing.
- The unemployment rate should also negatively affect the level of profitability. Rising unemployment may result in lower household disposable income thus demand for the company's products would decrease so such situation will consequently reduce profits.
- The impact of the exchange rate will depend on its development. i.e. whether it weakened or strengthened during the period under review. The weakening of the exchange rate against the Euro should bring an advantage to importers, among which retail and wholesale companies mostly are as they do not produce or sell anything themselves to other economies.

At the end of this part, it would be appropriate to analyze the development in individual economies, as the period 2010-2018 is marked by a number of important economic events. The year 2010 is the year when the financial crisis of 2008/2009 was still coming to its end causing a faster pace of the European debt crisis. Once the crisis subsided, Europe and thus the whole world were hit by the economic slowdown in 2012 and 2013. At the end of the period under review, the whole world was again affected by a decline in global demand. In addition to these main events, the economies analyzed had their own economic problems, which could affect companies and their profitability in all possible ways. However, this research is not focused on the development of economies, but on the impact of e.g. economic development on the level of profitability, and therefore this paragraph summarizes only brief

events of the period and specific events and possible impacts in individual economies will be discussed only if necessary within statistically significant coefficients.

1.1 Methodology

Panel regressions in the form of Generalized Method of Moments (GMM) are used to find the dependencies between individual determinants and profitability indicators. This method is the most suitable method for this research with regard to a number of economies and variables. At the same time, the GMM method eliminates a number of shortcomings of other methods (e.g. the need for stationary data for the least squares method) and is very often used in the financial field. (Jagannathan et al., 2002)

The model was first introduced by Arellano and Bond (1991), who then worked with other authors and specified the method – e.g. Arellano and Bover (1995), Blundell and Bond (1998). The main features of this method are described by Roodman (2009), who states that the method is suitable for shorter time series; there is a linear functional relationship and fixed individual effects are present; the dependent variable on the left side of the equation is dynamic and depends on its lagged value; conversely, independent variables may not be strictly independent, suggesting that variables may be correlated with past and present errors; autocorrelation and heteroskedasticity should not occur through observation. The method thus solves the endogeneity problem (correlation between the independent variable and the error term), which could occur, for example, in the least squares method. Ullah et al. (2018) adds that this method uses internal tools that remove unobserved heterogeneity, simultaneity, and dynamic endogeneity. These three phenomena are the sources of endogeneity.

Ullah et al. (2018) further add that since the GMM method cannot test the autocorrelation and heteroskedasticity of variables, some tool is needed to test the credibility of the model. We could choose out of several tools; we chose the Sargan test to be used in this research. If its value exceeds 0.05, the model is correctly constructed, and even if we slightly change the parameters, we should get the same results.

The equation of the model:

$$ROA_{it} = \alpha_0 + \beta_1 * ROA_{it-1} + \beta_2 * GDP_{it} + \beta_3 * IR_{it} + \beta_4 * INF_{it} + \beta_5 * UN_{it} + \beta_6 * GFCF_{it} + \beta_7 * EX_{it} + \varepsilon_0; \quad (1)$$

where PROF means the use of individual profitability indicator ROA. This variable indicates the profitability for the i-th number of companies in a given economy in a particular subindustry during the period t (2010–2018). The right side of the equation consists of individual determinants (GDP, IR, INF, UN, GFCF, EX). At the same time, there is a constant α on this side and a random component ε, which contains other determinants of profitability, which are not dealt with in this research, but affect its amount. The last variable on this side mentions the lagged value of the dependent variable several times. This is an annual lag.

1.2 Variables

Within the panel regression, we can divide the variables into dependent and independent. A dependent variable can take several forms. Literature overview has shown that indicators such as ROA, ROAA, ROAE, ROE, net interest margin can be used. Due to the fact that the literature overview contains rather studies that deal with banking industry, it is not possible to use all these indicators for the remaining industries. The return on assets was chosen for this research. The ratio of profit before tax and interest / total assets is used as the indicator. This indicator was chosen because in the studies mentioned in the Literature overview it was the most often examined.

Independent variables are represented by selected determinants that should have an impact on profitability. As mentioned in earlier sections, this research focuses on the determinants of the company's external environment. Independent variables are specifically in the form of GDP growth rate at market prices, reference interest rate (IR), inflation rate (INF), unemployment rate (UN), gross fixed capital formation (GFCF) and exchange rate to Euro (EX). The exchange rate is worked with in all models except for the model for Austria, Slovenia and Slovakia as these economies have the Euro as their currency. For the remaining economies, this currency was chosen because the economies are members of the European Union and the other members are the main trading partners, and transactions are often provided in the Euro.

4. Results and discussion

In Figure 2 we can see the results of the GMM method for chosen profitability indicator and for individual subindustries. Given that the research focused on eight selected economies, we see that, with a few exceptions, most subindustries do not include results for all economies. The reason is that the models for the given economies did not meet the assumptions of the Sargan test (its values were lower than 0.05) so the results are therefore not reliable.

Looking at the figure, it is also clear that the first column contains a variable that does not belong to the determinant chosen by us. It is an automatic part of the GMM method – the lagged value of a dependent variable. The resulting coefficients for profitability indicator have several common characteristics. In the coefficients, the positive effects dominate, which means that if companies achieved a certain level of profitability in the past, they would continue in this trend in the future. On the contrary, the negative impact means that if the company was profitable in the past, its profitability would decrease in the following period. Unfortunately, the coefficients are very low, reaching tenths, hundredths or thousands. As a result, it is not possible to speak about significant impact of this variable on the level of profitability, rather the coefficients indicate the possible direction of development of the variable in the future on the basis of past values.

Another variable for which the results for all subindustries can be summarized gross fixed capital formation is. As with the lagged value of profitability, the resulting coefficients are

really very low for this variable, and therefore we cannot talk here about the influence, but rather about the direction that these variables show us. Positive impacts predominate for our profitability indicator. Gross fixed capital formation is related to the business cycle and the investment cycle. In terms of the positive impact, if companies created value in the previous period, they should continue to do so in the following period. In the case of a negative link, this does not apply, in which case they would create value in the following period, but its amount would decrease.

The remaining results will be analyzed for each subindustry and individual economies within these subindustries. Due to the number of results, it is not possible to analyze all of them in this article; therefore, the comments will focus mainly on the variables with the greatest influence in the given subindustry.

The Czech Republic was the first economy being analyzed. If we look at the individual results, we see that the five subindustries are most affected by the reference interest rate in accordance with our assumptions; the negative impact slightly outweighs it. For subindustries 453 and 472, a positive effect of the interest rate on the profitability level can be observed, while for subindustries 451, 463 and 476, we can see a negative effect of this variable. In some sectors, profits fluctuated, which could affect the resulting influence. The Czech economy was one of the economies with very low interest rates during the period under review, when only in the last year (2018) did the reference interest rate rise from 0.05 to 1.75 %, however, one year of observation out of nine years could not significantly affect the results. The negative impact is explained by the fact that in the case companies have lower debt financing costs, they can use such resources more thus they can e.g. expand their production and increase profits. Given the level of the reference interest rate in the Czech Republic, this explanation could also be used for a positive impact as 6 years of the period under review, interest rates were at technical zeros, which could affect the resulting effects. Subindustries 462, 465 and 474 were mostly positively affected by the unemployment rate. The unemployment rate in the Czech Republic decreased throughout the period under review, which may have led to an increase in household disposable income thus demand for more goods of the subindustries increased and companies could increase their profits. Subindustries 452, 454, 471, 473 and 475 were the most affected by the inflation rate, which had both a negative and a positive effect. The positive impact on subindustries 471 and 473 can be explained by the fact that the inflation rate averaged around 1.5 %, which could in the end reduce already low interest rates, which in real terms could be really very low, giving companies a room for debt financing, which increased profitability. The negative impact of inflation could mean that, despite a certain level of inflation, the advantage of cheaper debt did not arise here, for example due to anti-inflation measures by banks.

The seven Slovak subindustries are also mostly affected by the reference interest rate. The profitability of subindustries 452, 454 and 465 is negatively affected by the interest rate, while subindustries 453, 462, 463 and 466 are affected positively. The average reference interest rate was 0.3 %, which is a low value and the explanation is thus the same as for Czech companies. The profitability of subindustry 478 was mostly affected by the development of

the economy, which grew by an average of 3.1 % year on year. As a result of this value, it can be said that the economy prospered, and thus prospered both households that could grow their disposable income and companies that grew in demand for their products and, as a result, profits. Subindustry 476 was mostly affected by the inflation rate, which had a negative effect. In Slovakia, the inflation rate was in average around 1.4 %. This value could in the end reduced the already low interest rates, which in real terms could be very low, giving companies room for debt financing and thus increase their profitability. But resulting negative impact of inflation could mean that, despite a certain level of inflation, the advantage of cheaper debt did not arise here, for example due to anti-inflation measures by banks.

Figure 2: GMM model for indicator ROA

	ROA(-1)	GDP	IR	INF	UN	GFCF	EX
451							
CZ	-0.0658[a]	-0.4849[b]	-3.8136[b]		1.0429[b]	3.68E-13[a]	
PL	0.2030[a]	0.0342[b]		0.0846[a]			
SI	0.0180[a]		-1.6723[a]	-0.0474[a]	-0.6407[b]		X
RO		-2.7674[a]	-2.0568[b]		-5.0129[c]	1.55E-12[b]	
452							
CZ	0.0144[a]			-1.2704[a]	-0.7740[a]	-1.07E-13[c]	-0.0125[a]
SK	0.0379[a]	0.0809[a]	-9.3503[a]			-9.52E-12[c]	X
PL	0.1522[a]		-1.5709[c]	1.0148[b]			0.0669[b]
HU	0.0530[a]	1.0037[b]	6.8477[b]		-3.1200[a]		
AT		0.0130[a]		4.0872[a]			X
SI	0.1232[a]	-0.2526[b]		-0.5249[b]			X
BG	0.1739[a]		-30.1809[b]		2.0509[b]	1.07E-11[c]	
RO	0.0263[b]		3.1860[a]		3.7433[a]		-0.2899[c]
453							
CZ	0.2556[a]	0.1129[a]	0.9624[c]		0.4276[a]		
SK	0.2448[a]		1.9606[a]	0.3844[c]	0.4747[b]		X
HU	0.1346[a]		2.6075[b]	-1.8197[b]		1.92E-14[c]	
AT	0.4134[a]	0.4346[a]	-1.2445[b]		1.2414[b]		X
SI		0.2499[c]			1.0012[a]	2.47E-11[b]	X
BG			-10.0829[a]	0.5577[c]			-0.8459[a]
RO	0.2319[a]	1.4519[a]		-0.6264[b]		1.31E-12[a]	-0.4768[a]
454							
CZ	-0.0820[a]	-0.4103[b]		-5.5790[a]	-2.6014[a]		-0.0447[a]
SK	-0.1502[b]		56.7839[b]	-12.6284[b]		cor UN	X
PL	0.1161[a]	-1.6170[a]			1.1748[a]	9.17E-13[a]	0.1984[a]
HU			-27.4293[a]	17.2794[a]	11.4595[a]		
AT	0.4544[a]	0.2105[b]		-0.9523[c]		-3.68E-13[b]	X
SI	0.1308[a]	-0.9439[c]	-7.5930[a]		-0.9925[a]	cor UN	X
RO	0.5847[a]		-1.3255[b]	-0.1045[a]		cor GDP. IR. UN. EX	
461							
SI	-0.0494[a]		0.2440[a]	-0.3908[a]	-0.1930[b]		X
462							
CZ	0.2160[a]	0.2479[a]		0.3252[b]	0.3624[a]		
SK			13.0771[a]	-2.0317[a]	-0.8241[c]		X
SI	-0.1900[a]		-1.3948[a]			-2.62E-11[a]	X
RO	0.0778[a]	1.0929[b]		-0.3518[a]			-0.0859[b]
463							
CZ	0.1573[a]		-2.0169[a]	0.2807[a]		2.59E-13[a]	
AT	0.0170[a]	0.4385[b]			-0.1199[a]	-2.01E-13[b]	X
SI	0.0378[a]		-1.0658[c]		0.1478[b]	1.09E-11[b]	X
BG	0.1859[a]	1.9610[a]	-22.8681[a]				-2.9517[a]
RO		7.3711[b]		-4.3361[a]	10.1381[a]		-0.2497[a]
464							
AT	0.1435[a]	0.2109[a]	-0.7679[a]	0.1504[b]	-0.2943[c]		X
SI	0.1676[a]		0.4216[b]		-0.6576[a]	-5.61E-12[a]	X
465							
CZ	-0.0589[a]	0.2267[a]		-0.3367[a]	0.4407[a]		
SK	0.0310[a]		-2.3138[a]	0.5177[b]		1.09E-11[c]	X
PL	0.1335[a]	0.7034[b]				2.94E-13[a]	-0.0817[a]
HU		0.1790[a]	-6.2666[a]		2.2728[a]		
AT	0.1742[a]			-1.1957[b]	-2.7620[b]		X
SI			-3.0607[b]	-1.8126[a]		5.43E-11[b]	X
BG	0.0668[a]		-4.7616[a]		0.1299[a]	1.29E-12[a]	-3.9786[b]
466							
SK	0.0074[a]		3.7336[a]		-0.3083[a]	2.62E-12[a]	X
AT	0.0621[b]		-1.0126[c]	0.1405[a]		1.72E-13[b]	X
BG	0.0748[a]	4.1622[a]	-38.2198[a]		2.8845[b]		-1.7741[a]
RO	0.0858[c]	-2.8541[b]		1.5543[b]		9.4E-13[a]	-0.1889[c]

	ROA(-1)	GDP	IR	INF	UN	GFCF	EX
467							
AT	0.0245[b]	0.6668[a]				-0.7516[b]	-6.2E-13[b]	X
BG	0.1074[a]	0.4600[a]	1.5668[a]	0.3619[c]				-0.8909[a]
469							
PL	0.0331[a]	0.5031[b]		0.1509[a]	0.5694[a]	6.45E-14[a]	
SI			2.9261[c]	0.3289[a]	3.9779[c]		X
BG	0.2550[a]	1.3233[a]	-16.3465[a]			2.93E-12[a]	-2.9484[b]
471							
CZ	0.0382[a]	0.3417[a]		1.1681[c]		-8.02E-14[b]	
PL	0.1617[a]		-0.6291[b]	0.4120[a]	0.2643[a]		0.0194[b]
SI	0.0377[b]		-0.2728[a]		0.3133[a]	6.77E-13[a]	X
472							
CZ		0.4569[b]	3.9840[c]	2.1294[b]		6.41E-14[b]	
PL	0.0258[a]		-4.7298[a]		1.9408[a]	1.91E-12[c]	0.2877[a]
SI	0.0350[a]		-3.1156[a]	-1.8846[c]	-2.3873[a]		X
BG	0.0246[a]	-1.4372[a]		-5.2185[a]		-3.97E-12[a]	-1.1285[b]
RO	0.1875[a]	8.7522[a]	22.0274[a]		14.9883[a]		-0.2379[a]
473							
CZ	0.1798[a]	-1.1759b		1.7847[b]	1.4897[a]		0.0180[a]
SI			-3.5392[a]		-2.5813[a]	-5.95E-11[b]	X
RO	0.1285[a]	5.2937[c]		-2.3070[a]			0.1182[a]
474							
CZ	0.3685[a]	0.3334[b]	-0.6910[a]		1.3996[a]		
PL	0.0264[a]	7.6071[a]			24.3159[b]	1.06E-13[a]	
SI	0.1712[a]		-13.0800[b]	-21.6003[b]		-9.73E-12[a]	X
BG	0.4040[a]			1.9165[c]	1.1994[a]		-2.5866[a]
RO		-1.6500[c]	-2.1359[a]			-8.15E-13[a]	0.1803[b]
475							
CZ	0.1872[a]		0.6008[a]	-1.0151[a]		-1.77E-13[a]	
AT	0.1582[b]	0.2463[b]	-24.0478[b]		cor IR	1.97E-13[a]	X
SI		-6.0078[a]		-0.1552[b]	-0.5655[a]		X
BG	0.0519[a]	2.5237[a]		1.4275[a]	1.4669[a]		-1.3081[b]
476							
CZ	0.3353[b]	-0.6163[b]	-2.2586[a]		0.5956[a]		-0.0219[b]
SK	-0.9299[a]	-18.5449[a]		-27.3811[a]		-1.87E-11[a]	X
PL	0.1659[a]		0.7716[a]			4.42E-13[a]	
SI		-1.6018[c]		-0.7746[c]	-3.9392[b]	-8.19E-12[a]	X
RO	0.1715[a]		1.8467[b]	-1.3253[a]			0.2122[a]
477							
AT	0.4096[a]			0.2176[a]	0.5567[b]	5.83E-13[a]	X
SI	0.3143[a]	0.2718[a]	-1.3394[b]			-9.69E-12[a]	X
BG	0.2629[a]		-10.7183[a]	0.7955[c]	-0.1324[a]		-3.4738[c]
478							
SK	-0.2567[b]	29.7380[a]		13.1130[a]		-1.02E-09[a]	X
HU	0.1502[a]		17.2500[c]		-75.6620[b]	1.05E-10[a]	-1.3892[a]
RO		165.1350[a]		44.3439[c]	24.7690[a]		-7.0541[c]
479							
PL	0.2037[a]			-0.1951[a]	0.5189[a]		
HU	-0.0417[a]	1.9330[a]	39.0703[b]			2.17E-13[b]	
AT		7.3754[b]		-28.9485[a]	-49.6592[a]		X
SI	0.5273[b]		5.2168[c]	-3.5806[c]		5.88E-10[b]	X
BG	0.2393[a]	-3.6276[a]	22.7558[a]			-3.38E-11[a]	2.1592[b]

Source: author's calculations based on data from Orbis database
Symbols: [a], [b] and [c] indicate significance at 1 %, 5 %, and 10 %.

The profitability of Polish companies was also mostly affected by the reference interest rate – subindustries 452, 471 and 472 negatively; subindustry 476 positively. The negative impact is justified as interest rates fell sharply during the period under review. Reference interest rate fell from 4.5 to 1.5 %. Polish companies of subindustries 454 and 465 were mostly affected by the development of the economy, which had both a positive and a negative effect. The Polish economy did not decline once during the period under review, making it one of the few such economies in the world. It grew at an average rate of 3.5 % per year. Subindustry 451 was mostly affected by the inflation rate, which had a positive effect. The positive impact can be explained by the fact that the inflation rate averaged around 1.5 %, which may have in the end reduced interest rates, which in real terms may have been lower, giving companies a room for debt financing thus to increase their profitability. The unemployment rate was mostly affected by the profitability of subindustries 469, 474 and 479. This rate decreased from 10.3 to 3.9 % during the period considered. This decrease could have led to an increase in households' disposable income thus their demand for more goods of the subindustries so those could increase their profits.

Hungarian retail and wholesale companies are dominantly affected by the interest rate, which has a negative impact on subindustries 454 and 465 and a positive impact on subindustries 452, 453 and 479. The negative impact is associated with a decrease in the reference interest rate during the period under review from 7.0 to 0.9 %. Conversely, a positive link may be associated with a higher interest rate during the first four years of the period under review. Subindustry 478 was mostly affected by the unemployment rate, which fell significantly from 11.2 to 3.7 % during the period under review. This decrease could have led to an increase in households' disposable income thus their demand for more goods of the subindustries so those could increase their profits.

Austrian companies are mostly affected by the rate of inflation, which had both a negative (prevailing) and a positive impact. This variable had the greatest impact in the subindustries 452, 454, 467, 477 and 479. The inflation rate averaged around 1.9 % during the period under review, which may have reduced the real expression of interest rates, which may have become lower giving companies a room for debt financing and thus to increase their profitability. The profitability of subindustries was mostly affected by the reference interest rate, which in all cases has a negative impact. The subindustries 453, 464, 466 and 475 are considered. The average reference interest rate was 0.3 %, which is a low value; the same explanation can be used as it is for Czech and Slovak companies. Subindustry 463 was mainly affected by economic developments. The Austrian economy has not been hit hard by the financial crisis, but the Austrian government was forced to resort to deposit guarantees, while unemployment, the state deficit and debt rose in the country. However, the GDP growth rate was 1.6 % on average. Subindustry 465 was significantly affected by the unemployment rate, which fluctuated around 5.3 % during the period under review, so it is not possible to say exactly why the resulting links are as they are.

The profitability of Slovenian companies was mostly affected by the interest rate, which had, with one exception, a negative effect. The explanation is the same as it is for Austrian and Slovak companies as all three economies have the same rates given that they belong to the Euro area. The subindustries 451, 454, 462, 463, 465, 472, 473, 477 and 479 were affected by the interest rate the most. The subindustries 452, 461 and 474 were affected by the inflation rate, which averaged around 1.2 %, which is the lowest value of the economies analyzed so far. The negative impact of inflation could indicate that, despite a certain level of inflation, the advantage of cheaper indebtedness did not arise here, for example due to banks' anti-inflation measures such as various risk premiums. The profitability of subindustries 453, 464, 469, 471 and 476 was mostly affected by the unemployment rate, which rose up to 10.1 % by 2013 and then fell to 5.1 % by 2018. The initial increase and the subsequent decrease could have a positive and a negative impact on the level of profitability. It depends on which of the movements was more significant in the model. Last but not least, there was also the impact of economic development in subindustry 475. The development of the Slovenian economy was rich in events when Slovenia was hit hard by the financial crisis of 2008/2009. The cause of the collapse was the same as it was in the United States; Slovenian real estate market was also bubbled, by which, when it collapsed, the economy went into a banking crisis that escalated in 2013. For the rest of the period, development stabilized. Given this development, the impact of the growth rate could be both positive and negative.

The profitability of Bulgarian companies was clearly affected by the reference interest rate, which had a negative impact on the profitability of subindustries 452, 453, 463, 465, 466, 469 and 477 and a positive impact on the profitability of subindustries 467 and 479. The reference interest rate of the Bulgarian economy averaged around 0.05 % during the period under review, which was a very low value, which brought the great advantage of cheap debt financing and the possibility of increasing sales volumes, which should have lead to profit growth. Another expected effect is the positive impact of economic development on the level of profitability of subindustry 475, as the Bulgarian economy, like the Polish economy, did not suffer from major economic problems during the period under review. Subindustries 472 and 474 were positively and negatively affected by the inflation rate, which averaged 1.5 %, which could ultimately reduce already low interest rates, which in real terms could be very low giving companies a room for debt financing that increased their profitability.

The last companies analyzed are Romanian companies. The Romanian economy, together with Poland and Hungary, belongs to the economies with higher interest rates during the period under review. As a result of the financial crisis, the reference interest rate rose sharply and fell from 6.3 to 1.8 % over the period under review. This decline could lead to lower debt financing costs. If we consider the inflation rate, which was on average 2.7 %, the debt and thus the prospect of higher profits seem realistic. The interest rate mainly affected the subindustries 454, 472, 474 and 476. The subindustries 453, 462, 466, 473 and 478 were affected by the economy development, which had both a negative and a positive impact. The positive impact is justified by the good GDP growth rate, which grew by an average of 3 % per year. The negative impact is unexpected, as the profits for the sectors concerned (466)

grew and were not negative. The subindustries 451, 452 and 463 were affected by the unemployment rate, mostly positively. The unemployment rate fell from 7.2 to 4.2 % during the period under review, which explains the negative impact on the subsector 451, as households´ disposable income and demand for companies' products increased so did companies´ profit.

At the end of the chapter, it is useful to summarize the results. In six out of eight economies, the reference interest rate is the most important determinant for corporate profitability, which in most cases has a negative impact. For Romanian companies, the positive impact of economic development dominates and for Austrian companies, the negative impact of the inflation rate prevails.

5. Conclusion

This research looked at the profitability of companies in the retail and wholesale industry. This industry was divided into 21subindustries, for which the impact of selected determinants on the level of profitability was determined. The companies came from 8 economies that belong to the expanded Visegrád Group. Specifically, these were the Czech Republic, Slovakia, Poland, Hungary, Austria, Bulgaria, Slovenia, and Romania. The aim of the research was to find out whether selected factors influence the company's profitability or not. The factors considered were: GDP growth rate, inflation rate, reference interest rate, unemployment rate, gross fixed capital formation and exchange rate against the Euro. The influence of these determinants was tested on a total of 130,446 companies in the period 2010–2018.

Given the six selected determinants, eight selected economies and twenty-one subindustries, it is clear that there are many results. In the previous chapter, the results of the determinants that had the greatest impact on the profitability level in individual subindustries were analyzed in detail. It is not possible to analyze all the results, as the capacity of the article does not allow it. Although the results are numerous, the results of all economies show one common conclusion, namely that the profitability level of retail and wholesale companies is in most cases affected by the level of the economy´s reference interest rate. This effect is largely negative, which means that profitability should increase as interest rates fall; companies could benefit from cheaper debt financing and thus generate additional profit. The resulting impact is not surprising, as in the Czech Republic, Slovakia, Austria, Slovenia and Bulgaria the values of key interest rates were very low, often reaching zero. Although interest rates were higher in Poland, Romania and Hungary at the beginning of the period under review, they fell sharply during the same period making foreign sources of financing more attractive.

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References

[1] Akotey, J. O., Sackey, F. G. and Amoah, L. (2013). The financial performance of life insurance companies in Ghana. *Journal of Risk Finance*, 14(3), pp. 286-302.

[2] Albertazzi, U. and Gambacorta, L. (2009). Bank profitability and the business cycle. *Journal of Finance Stability*, 5(4), pp. 393-409.

[3] Aliaga-Diaz, R. and Olivero, M. P. (2010). The Cyclicality of Price-Cost Margins in Banking: An Empirical Analysis of its Determinants. *Economic Inquiry*, 49(1), pp. 26-46.

[4] Almeida, F. and Divino, J. A. (2015). Determinants of the banking spread in the Brazilian economy: The role of micro and macroeconomic factors. *International Review of Economics & Finance*, 40, pp. 29-39.

[5] Arellano, M. and Bond, S. (1991). Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations. *Review of Economic Studies*, 58(2), pp. 277-297.

[6] Arellano, M. and Bover, O. (1995). Another look at the instrumental variable estimation of error-components models. *Journal of Econometrics*, 68, pp. 29-51.

[7] Athanasoglou, P. P., Brissimis, S. N. and Delis, M. D. (2008). Bank-specific, industry-specific and macroeconomic determinants of bank profitability. *Journal of International Financial Markets, Institutions and Money*, 18(2), pp. 121-136.

[8] Bashir, A. H. (2003). Determinants of profitability in Islamic banks: Some evidence from the Middle East. *Islamic Economic Studies*, 11(1), pp. 31-57.

[9] Bikker, J. and HU, H. (2002). Cyclical patterns in profits, provisioning and lending of banks and procyclicality of the new Basel capital requirements. *Banca Nazionale del Lavoro Quarterly Review*, 55(221), pp. 143-175.

[10] Blundell, R. and Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, 87(1), pp. 115-143.

[11] Bourke, P. (1989). Concentration and other determinants of bank profitability in Europe, North America and Australia. *Journal of Banking and Finance*, 13, pp. 65-79.

[12] Chouikh, A. and Blagui, Y. (2017). The Determinants of Bank Performance: The Case of Tunisian Listed Banks. *Journal of Finance and Accounting*, 5(2), pp. 53-60.

[13] Claessens, S., Demirgüç-Kunt, A. and Huizinga, H. (1998). *How Does Foreign Entry Affect the Domestic Banking Market?* Policy Research Working Paper No. 1918.

[14] Ćurak, M., Poposki, K. and Pepur, S. (2012). Profitability Determinants of the Macedonian Banking Sector in Changing Environment. *Procedia - Social and Behavioral Sciences*, 44, pp. 406-416.

[15] Demirgüç-Kunt, A. and Huizinga, H. (1998). Determinants of Commercial Bank Interest Margins and Profitability: Some International Evidence. *The World Bank Economic Review*, 13(2), pp. 379-408.

[16] Dietrich, A. and Wanzenried, G. (2011). Determinants of bank profitability before and during the crisis: Evidence from Switzerland. *Journal of International Financial Markets, Institutions and Money*, 21, pp. 307-327.

[17] Dietrich, A. and Wanzenried, G. (2014). The determinants of commercial banking profitability in low-, middle-, and high-income countries. *The Quarterly Review of Economics and Finance*, 54, pp. 337-354.

[18] Djalilov, K. and Piesse, J. (2016). Determinants of bank profitability in transition countries: What matters most? *Research in International Business and Finance*, 38, pp. 69-82.

[19] Flamini, V., McDonald, C. and Sschumacher, L. (2009). *The Determinants of Commercial Bank Profitability in Sub-Saharan Africa.* IMF Working paper No. 15.

[20] Gaganis, CH., Hasan, I. and Pasiouras, F. (2013). Efficiency and Stock Returns: Evidence From the Insurance Industry. *Journal of Productivity Analysis*, 40, pp. 429-442.

[21] Goddard, J., Molyneux, P. and Wilson, J. O. S. (2004). The profitability of European banks: a cross- sectional and dynamic panel analysis. *The Manchester School*, 72(3), pp. 363-381.

[22] Jagannathan, R., Skoulakis, G. and Wang, Z. (2002). Generalized Method of Moments: Applications in Finance, *Journal of Business and Economic Statistics*, 20(4), pp. 470-481.

[23] Killins, R. N. (2020). Firm-specific, industry-specific and macroeconomic factors of life insurers' profitability: Evidence from Canada. *North American Journal of Economics and Finance*, 51.

[24] Košak, M. and ČOK, M. (2013). Ownership Structure and Profitability of the Banking Sector: The Evidence from the SEE-6 Region. *Proceedings of Rijeka Faculty of Economics, Journal of Economics and Business*, 26(1), pp. 93-112.

[25] Le, T. D. and Ngo, T. (2020). The determinants of bank profitability: A cross-country analysis. *Central Bank Review*, 20, pp. 65-73.

[26] Martins, A. M., Serra, A. P. and Stevenson, S. (2019). Determinants of real estate bank profitability. *Research in International Business and Finance*, 49, pp. 282-300.

[27] Mirzaei, A., Tomoe, M. and Liu, G. (2013). Does market structure matter on banks' profitability and stability? Emerging vs. advanced economies. *Journal of Banking & Finance*, 37, pp. 2920-2937.

[28] Molyneux, P. and Thornton, J. (1992). Determinants of European bank profitability: A note. *Journal of Banking & Finance*, 16(6), pp. 1173-1178.

[29] Pervan, M., Pervan, I. and Guadagnino, A. (2010). Market Structure and Profitability of Croatian Commercial Banks. *The Business Review*, 20(1), pp. 209-216.

[30] Roodman, D. (2009). How to do xtabond2: An introduction to difference and system GMM in Stata, *The Stata Journal*, 9(1), pp. 86-136.

[31] Saona, P. (2016). Intra- and Extra-bank Determinants of Latin American Banks' Profitability. *International Review of Economics & Finance*, 45, pp. 197-214.

[32] Sufian, F. and Chong, R. R. (2008). Determinants of Bank Profitability in a Developing Economy: Empirical Evidence from the Philippines. *Asian Academy of Management Journal of Accounting and* Finance, 4(2), pp. 91-112.

[33] Tan, Y. A. and Floros, Ch. (2012). Bank profitability and inflation: The case of China. *Journal of Economic Studies*, 39(6), pp. 675-696.

[34] Ullah, S. et al. (2018). Dealing with Endogeneity Bias: The Generalized Methods of Moments (GMM) for panel data, *Industrial Marketing Management*, 71, pp. 69-78.

[35] Vera-Gilces, P. et al. (2020). A look inside banking profitability: Evidence from a dollarized emerging country. *The Quarterly Review of Economics and Finance*, 75, pp. 147-166.

[36] Zuidberg, J. (2017). Exploring the determinants for airport profitability: Traffic characteristics, low-cost carriers, seasonality and cost efficiency. *Transportation Research Part A*, 101, pp. 61-72.