NATIONAL ECOMONIC PRACTICIES: INFLUENCE OF TAX POLICIES ON THE ECONOMIC PROCESSES OF THE OLD AND THE NEW EU DEMOCRACIES

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Abstract

The European Union operates within the framework of monetary and fiscal policy in accordance with uniform rules, but there is also a region where this rule is not applied. Direct tax policy as part of fiscal policy belongs exclusively to the competence of the individual national economies. Thus, the tax policy of direct taxes (specifically corporate tax) is the result of political decision-making processes at the national levels. The research focuses on 8 EU countries of two groups (old and new democracies). The aim of the article is to identify the potential impact of corporate taxes on the stock market, emphasizing the differences between the old and the new EU democracies. Therefore, the hypothesis verified here is that the tax policy, represented by the corporate tax rate, has a significant effect on the stock market. Thus, the article clearly focuses on the interconnection of political and economic decision-making processes and their impact on the business environment in chosen countries. The main finding is that, in old democracies, the impact of corporate tax rates on stock markets is generally higher than in new democracies.

Keywords: *Economic integration, Stock market, Tax policy, Corporation tax, Democracy, Nation economy, EU.*

INTRODUCTION

The impact of economic decisions on a country is conditioned by the interaction of politics and the economy since government responses usually produce changes in the conditions for the distribution of wealth. i.e. for economic actions also in a corporate sphere. This statement also applies to tax policy, which is an important and inseparable part of government's economic policy. However, it should be stressed that this mainly applies to

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the part of tax policy relating to direct taxes, namely corporate tax. The area of indirect taxes is currently highly harmonized at the EU level and, therefore, in the case of indirect taxes, the national legislatures are fully responsible for changes and decisions made at the Union level. In the matter of indirect taxes, comparing the situation and effects of the country is interesting and difficult from the interdisciplinary point of view and in the context of "new vs old" EU democracies. This study is relevant because, because of the gradual increase in economic integration within the EU, the interaction between the tax systems of the "old" and the "new" Member States is becoming increasingly important. In addition, emphasis is placed on the stimulating role of corporate tax in supporting innovation and new technologies, which will also positively influence the development of stock market.

The article focuses on the interconnection of corporate tax and the development of stock markets with an impact on the business environment in the countries. The article focuses on the intersection of corporate taxation and the development of stock markets affecting the corporate environment of the countries - both of "old" and "new" democracies joined in the EU. The aim of this article is to identify the potential differences between "old" and "new" democracies in a specific segment of the national economy, that is, the role of corporate tax in supporting the stock market with the aspect of democracy as eventual significant variable for analysing relationship between the change in corporate tax rate and the development of stock markets in these 2 groups of EU states. Therefore, this hypothesis is linked to a research question, namely whether the tax policy represented by a corporate tax rate in the countries studied has a significant impact on the stock market or not, respectively, whether there are differences in the relationship mentioned between the new Member States and the old Member States. The stock market is influenced by several macroeconomic variables (for example, GDP development, changes in tax policy, and political influence). Many of these changes, including the tax policy represented by corporate tax rates in this study, effect the stock market returns. Therefore, the developments in stock markets may have a number of political and economic impacts. A problematic stock market can indicate bad economic policy conditions in the national state economy, or political instability in general.

Given the main purpose and the research question, regression models are used as the main method of research. It is important to point out that no research so far has provided such analysis of tax policy on the basis of the political (democratic) stability of selected economies.

To achieve the research objectives, the article is divided into 2 main sections and concludes with the main findings. The first section, with its interdisciplinary character, provides a review of the theoretical foundations strongly necessary, clarifying the authors' positions from the perspective of economic and political science. With regard to interdisciplinary features, the first part's objective is also to clarify macroeconomic indicators that affect the stock market most, as well as the most important theoretical foundations of research, from Slovakia and abroad. This part closely relates to the consequent part that is therefore devoted to the methodology with the hypotheses and specific methods used for the analysis presented in the most critical part of the text. The following chapter focuses on the issue of the relationship between corporate tax and the stock market in the conditions of the countries of the old and new democracies followed by introducing the key results and findings.

1 LITERATURE REVIEW

The chapter contains an overview of literature relating to both economic and political sciences. The impact of corporate tax burdens on private companies as one of the parameters affecting stock market development is a rarely discussed topic in economic literature and scientific articles. Most economists (Chatziantoniou, Duffy, Filis, 2013; Clemens, Miran, 2012; Greenhalgh, 2016) focus on the impact of fiscal policy on the stock market, but not from the perspective of tax policy, but rather from the perspective of the impact of government spending. The impact of monetary policy through monetary aggregates and interest rates, as well as the impact of GDP growth on the development of stock markets are also examined as a priority.

From economic point of view, the chosen indicator – rate of the corporate tax and its impact on the development of the stock market, became a part of fundamental analysis of this article - in new and old democracies. There are globally recognized authors who have worked on these subjects in the past and have written monographies with high information aspect today. The monographies written by Graham and Dodd (2009), Pike and Gregory (2013) and other authors, deserve a specific attention. They examine the relationship of individual macroeconomic indicators with the stock market in detail.

The stock market is affected by many macroeconomic variables, which can be sorted and defined as a function SM = f (G, M, IR, I, T, E, P, N). Within that SM represents Stock market, G represents GDP growth, M represents

Money aggregate M2, M3, IR represents Interest rate, I represents Inflation, T represents Tax, E represents Government expenditure, P represents Political influence (elections, corruption, military conflicts) and N represents Natural disasters (earthquakes, hurricanes, pandemics). Many of these variables are discussed in the work of Siegel (2014) who also measured the impact of taxes on stock and bond returns.

However, a comprehensive analysis of the impact of all variables requires a wider range of research. In addition to the influence of individual variables on the stock market, it is also necessary to examine the application dependency and the relationship between individual variables. The development of the stock market is closely related mainly to the business activities of companies, as well as to their tax burden. For this reason, the authors of this article have chosen a partial analysis of the impact of tax policy for their further research with a special focus on corporate taxation policy (both from the point of view of corporate tax rates and dividend policy), on the development of stock markets in certain economies with relatively strong effects, particularly in the case of European markets.

Within the defined sample of countries (identified as 'old democracies' and 'new democracies'), The article focuses on the impact of corporate taxation having a strong impact on the current stock market situation.

Fiscal policy, which includes tax policy and public expenditure policy, plays an important role in the stock market (Darrat, 1988). Continuously deepening deficit and the government debt growth may create imbalances in the economy with the negative impact on the stock market. However, it is necessary to concentrate more on the separate components from the point of view of the state budget's revenue and expenditure component Since long-term research has shown that management of these components in both groups of EU states (here identified as "old democracies" and "new democracies") has an indisputable significant impact on stock rates, too.

Within the above context, and to illustrate the importance of corporate taxes in the above-mentioned national tax system, the Figure 1 shows the indicator of the growth of corporate tax revenues as a percentage of GDP.

Figure 1: *Share of Corporate Tax on GDP in the Selected EU Countries - the Old and New Democracies*
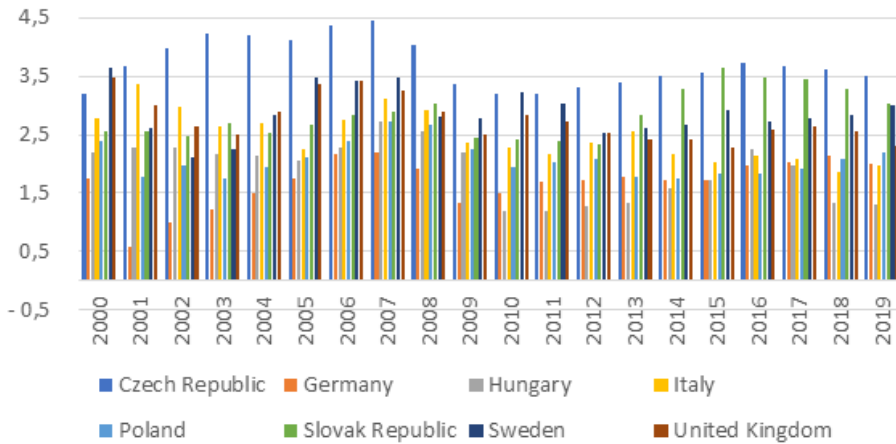
Note: time series related to corporate tax revenues are reported with a considerable delay, due to different tax periods of companies

The value of the indicator (in OECD statistics) includes all components of the corporate tax, such as income tax, profit tax and tax on capital gains of companies into a comprehensive indicator. However, for the purpose of international comparison, it is irrelevant to compare the corporate tax revenue in absolute terms. It is more appropriate to work with the amount of corporate tax revenue in proportion to GDP, accepting different sizes of economies. The analysis of corporate tax in European countries is also complicated by the fact that in several of the countries examined (e.g., Germany) companies pay several types of corporate tax, or corporate taxes are levied at various levels of government (De Mooij, Nicodeme, 2008).

Figure 1 shows that companies in old democracies were hit by the global economic crisis earlier than companies in new democracies (V4 countries). The share of corporate tax in "old democracies" is lower than in V4 countries.

In absolute terms, corporate income tax accounts for 6.8% of tax revenues in the EU. It is the fourth largest tax revenue in EU countries. It can also be stated that since 1996, the average corporate tax rates in the EU decreased from 35% to 20.7% in 2021.

There are two basic entities acting within the interaction of tax policy and the stock market, i.e., state versus investor. However, these are in conflict very often. It is generally known that the government decides to support the

income of the state budget in the form of tax increase; then it has a negative impact on the business environment as well as on the reduction of the stock investment effectiveness. In other words, the increase of tax burden causes the decrease of disponible profit, which can be used by enterprisers for their own further development. For the investor it means the decrease of income in the form of dividends. On the contrary, reducing the tax burden increases the investor's interest in the investment. The enterprisers have then more resources for their further development.

Given the significant heterogeneity of tax regulations in countries with a more developed stock market, this study attempts to highlight the impact of changes in tax policies in the selected Union countries on their stock market.

The value of stock markets in each economy reflects the development of shares of the leading companies listed on the stock exchange of a given economy, but these are not always companies making their business exclusively in that country. The different name of the indices in the studied economies considers the historical development and formation of the stock exchange as an individual entity operating in the given country. The name of the index itself is an important indicator of the condition of the economic environment in the country. In general, if stock prices increase, the country's economic growth rate is high. Table 1 provides a summary of stock market indices.

Table 1: *Stock Market Indices in Selected Countries of the EU*

Old democracies	Stock Index	New democracies	Stock Index
Germany	DAX30	Slovak Republic	SAX
Italy	FTSE MIB	Czech Republic	PX
Sweden	OMX30	Hungary	BUX
UK	FTSE100	Poland	WIG

Source: Authors

Clemens and Miran (2012) investigated the relationship between fiscal policy and government spending. Authors took in their consideration a different approach to fiscal policy and budget constraint according to the phase of business cycle. Today´s development pretty supports the relevancy of this article as it identifies the pro-cyclicality of obligatory and mandatory expenditures based on the size of the domestic economy. The authors emphasized substantial differences between subnational and national fiscal policy.

An article by Chatziantoniou, Duffy, and Filis (2013) is also very interesting. Based on structural VAR models it explores the effects of fiscal policy chock on the stock market in selected countries. The authors emphasized the need to jointly assess the two main macroeconomic policies. The article studied the common influence of fiscal policy and monetary policy on stock market performance. According to the authors, investors and analysts must understand that the relationship between the monetary, fiscal, and stock markets should be considered simultaneously and not separately.

However, nowadays some authors deal with the issue of fiscal policy (specifically dividend taxation) in relation to the futures prices on stock indexes. They include Fink, Theissen´s study (2014) which sought to predict future prices of the DAX index shares in relation to tax policy on dividends.

Gomes, Michaelides, and Polkovnichenko (2013) investigated the impact of fiscal policy on macroeconomic activity, wealth distribution and asset prices. Simultaneously, this study, similarly to the authors above, also believes that this impact has a major effect on the political stability of national governments within EU countries, as done with the comparison here, and as apparent by electoral campaigns reflected in turnouts and the electoral results recently (not only in Germany, but in Italy and Slovakia, also in British political crises in general). The authors Gomes, Michaelides, and Polkovnichenko (2013) used overlapping generation models to replace government debt and capital. Higher public debt leads to an increase in the riskless rate and to a lessening in the equity premium, while the increase of capital income tax rates leads to a higher equity premium. The results of models confirmed the existence of a crowding-out effect in case of substitution of government debt and capital.

For Greenhalgh (2016) terms as science, technology, and innovations are very important for the relation between tax policy and stock market. The government can support innovations through direct and indirect stimulus. These stimuli have an impact on fiscal position and of course on the real economy. The new progressive companies have very perspective growth potential. After IPO these companies will be able to reach interesting revenues compared with index revenues average.

Ochmann (2016) examined the impact of tax cuts on household savings decisions and the distribution of wealth to an asset portfolio. Ochmann used simulation based on an ex-ante behavioural microsimulation approach. The remarkable reduction in tax rates has a consequence in income profit for households and investors. Households also increase their savings and change the structure of asset demand because of a move in relative asset prices.

According to Mbanga and Darrat (2016), the fiscal policy impact on the stock market has a short-term and long-term aspect. The Force of influence on the stock market is stronger in long-term relation. The model of error-related relationships supported the existence of a robust long-term fiscal policy (nonmonetary policy) on current shares. The positive correlation can be explained by a transmission to the real economy through the stock market. According to the authors, results for fiscal policy are inconsistent with market efficiency.

Gowriah, Boopen, Lamport, and Seetah (2014) highlighted that the relationship between stock prices and most of the macroeconomic variables (for instance, tax rate) was statistically significant. A long-run significant relationship was perceived between stock prices and most of the macroeconomic variables, except for budget deficit. A short-run significant relationship was found between stock prices and both money supply and GDP.

In this context, Ali, Zaman, Ziaei, and Anuar (2014) emphasized important position of commodity prices and house prices for public finance. Stable price of commodities is necessary for net commodity exporters due to a significant connection between state budget revenues and commodity prices. On the contrary, for net commodity importers, decrease of commodity prices is an important impulse for domestic economy through lower level of energy prices. According to the authors (Ali, Zaman, Ziaei, Anuar ,2014), the wealth effect of house prices has positive influence on the stock market, but house prices impact is very weak on stock returns.

Some authors from 'new democracies' such as Švec Bušovská and Bušovský (2016) are concerned with the issue of tax convergence in the EU, and they sought to quantify the impact of individual taxes and tax competition on the convergence of tax burdens within the Union. The similar approach was applied by Mihóková, Andrejovská, and Martinková (2018).

The relationship between tax policy and the stock market is often not a centre of scientific attention. The focus by Ushakov, Bandurin, and Bandurin (2017) was on this relationship, and the national tax system and its impact on economic growth and global trade was examined.

The impact of fiscal policy was studied in more detail and its impact on the stock market from a fundamental analysis of the stock market by Czech economists, Musílek (2002).

2 METHODOLOGY

Corporate taxes are the most volatile tax, which means that very minor changes in the tax regime of this tax will cause significant changes in the tax value. Factors that most significantly affect corporate tax revenue include tax rates, depreciation policy, and tax loss amortization. Due to the fact that, in addition to the three mentioned internal factors, external factors such as the fiscal crisis, oil shocks, and the energy crisis significantly affect the corporate tax revenue, this tax is one of the most difficult taxes to predict.

The content and structure of this article are based on an examination of this relationship in selected countries that represent a sample of 'old' and "new" democracies reflecting their democratic development. An important limit in the analysis of stock markets of selected countries is the current state of their stock markets, therefore, research is aimed at the period 2000- 2021. The period under research includes the transition period of the countries of democracies, where the V4 countries more intensively implemented political decisions with the aim of supporting the business environment and achieving the set macroeconomic indicators. At the same time, from 2008 to 2010, all the countries under investigation had to respond to the emerging financial crisis. However, the effects of the pandemic have not yet been obvious in the tax variables studied, as the values of corporate taxes in the models have not changed. The governments of the studied economies preferred other tax instruments to changes in the nominal corporate tax rate.

The countries attributed to the group of "old" democracies in this research are Germany, Great Britain, Sweden, and Italy. Countries from the "old democracies" category were selected based on the similarity in the development of corporate tax rates and on their similar tax burden. Another criterion was high level of development of stock markets and indexes. Great Britain stays included to this group of the EU countries (as old democracies) as the data gathered are tracked back to 2021 latest. i.e., before BREXIT in 2020 was finalized. On the contrary, the "new democracies" of the EU are countries of V4, Hungary, Poland, the Czech Republic, and the Slovak Republic, which joined the EU together in 2004 and underwent the same wave of democratic transition.

Economic transformation and the entry into the EU for new democracies were conditioned by the requirements of the European Union. All newly acceding countries had to meet the Maastricht criteria even before joining the EU in 2004 (for details on criteria based on Treaty on EU see e.g.

Polasek, Amplatz, 2003; Treaty on European Union, 1992). This means that it was the countries of the old democracies that set the conditions for the new democracies. The new democracies used tax policy, aimed at creating favourable investment conditions through corporate tax rates, compared to the old democracies.

Consequently, their primary macroeconomic objective to support economic growth was to attract foreign direct investment through appropriate tax policies. And corporate tax and dividend policy are the most important factors influencing investors' decisions. Therefore, in the pre-accession period, the new democracies were characterized by low corporate tax rates and dividends not taxed compared to the old democracies. They have significant deficits and problems with the functioning of the stock market, especially with regard to the composition of the stock index.

The aim of the article is to identify eventual differences in between "old" and "new" democracies in one specific segment of national economies, i.e. the aspect of the role of the tax policy in supporting the stock market with the aspect of democracy as a significant variable to analyse the positive or negative relationship between the change in corporate tax rate and the development of stock markets in 2 groups of EU states, old and new democracies. From an economic analysis point of view, the authors of the research introduced in this article, are to prove the mutual interconnection of tax policy and stock markets with the focus on its individual components, and to determine the most significant impact of one of them on the stock market. The original objective of this study is to analyse the impact individual components of tax policy on the stock markets and their mutual interactions at the theoretical (economic-political) level and in more detail. They are placed in the political sphere, and therefore the authors of this article take into account the political context of the EU (new and old democracies).

Considering the group of the EU member states classified in this research as old democracies, the paper focuses on four old democracies, Germany, Sweden, the United Kingdom and Italy, in particular, representing the group of the countries mostly of the first waves of democratisation and with developed stock markets. The group of "new democracies" joined within the EU is represented here by four states - the states gathered in a regional grouping of Visegrad Four (hereinafter referred to as V4), i.e. Slovakia, Hungary, Poland, and Czechia. These are the countries sharing the same political history (Austro – Hungarian, and later on as countries forming the Soviet Block, and since 90s on as countries under a common wave of democratic transition) and closely cooperating in economic sphere today.

From an economic point of view and based on the mutual comparison with the sample of "new democracies" considering their tax burden of the stock market the authors of this article were able to develop final conclusions and recommendations for economic practice. From a time point of view, the study focuses on the time line from 2000 to 2021.

This study is based on a hypothesis that is crucial to the resolution of the above relations. At the same time, however, the development of corporate taxation and the development of the stock market must be questioned - whether the evolution of old democracies and new democracies is identical, or some differences have occurred there.

This research is to verify the hypothesis:

• *Hypothesis no.1: Tax policy, represented by the corporate tax rate, has a significant effect on the stock market.*

The subject of the research, the relationship between corporate tax and stock market in chosen old and new democracies, was the period from 2000 to 2021. The period of the research includes multiple significant economic and political milestones. During this period, in 2004 new democracies entered the EU, in 2008 the financial crisis occurred, and in 2020 the impacts of Covid-19 pandemic were observed. The most important sources of statistical data were the databases of the National Statistical Office of the researched countries, the national stock market database, and OECD statistics. Secondary data sources were mainly electronic documents of national legislation, studies prepared by the European Commission, and OECD data.

Analysing these issues, this article applies the method of linear regression and Cohen´s correlation analysis, which mathematically describes the statistical dependence between the quantitative statistical variables studied such as the development of the stock market in relation to changes in corporate taxation. The role of linear regression analysis is to find a functional relationship by which the dependent variable changes with the change of the independent variable. It should result in a suitable regression function together with an estimate of its parameters. The criteria set by Cohen (1988) are applied in this research to describe individual correlations in the analysis.

Table 2: *Interpretation of Cohen's Correlation Coefficient*

Range	Characteristics	Range	Characteristics
0,0 - 0,1	Trivial correlation	0,5 - 0,7	Large
0,1 - 0,3	Small	0,7 - 0,9	Very Large
0,3 - 0,5	Medium	0,9 - 1,0	Nearly perfect

Source: Authors based on Cohen (1988)

In processing and analysing the 'old democracies', the authors used the data of the official institutions such as the European Central Bank, the International Monetary Fund and the Ministry of Finance of the countries compared (of both the groups). Data were collected during the years 2000 – 2018. In addition, other databases were used for data processing, such as Trading economics, Econstats, and others. In the two comparison groups, the research introduced in this article examines the correlation between stock market indices and corporate tax rates.

3 THE IMPACT OF CORPORATE TAX ON THE STOCK MARKET AT THE NATIONAL LEVEL OF SELECTED OLD AND NEW EU DEMOCRACIES

This chapter highlights the role of this tax in the tax system of countries – the old and the new democracies. The impact of corporate tax on the development of the stock market is analysed here in the selected EU countries.

As indicated by the text above, interdisciplinary views and research are needed in this way, which is becoming a necessity. This applies especially if one starts from the statements of several political researchers in the sense that the functionality and effectiveness of the governance system in a democracy is tied to the contextual framework of the life of the state, i.e. dynamic and lively connection to the social, economic and cultural-historical conditions of the development of society (which is evident when comparing the so-called old and new democracies, or in the language of European studies, when comparing the original EU member states and the states in the last waves (2004, 2007 and 2013) as states in transit (e.g. Říchová, 1999; Novák, 2001; Cabada, 2008; Tökölyová, Děd, 2019; Plichtová, 2010; Keypour, 2022, and others). From this research point of view, the classification above is interesting, as the so-called Copenhagen criteria form the basic conditions for the transition of a country from the status of a candidate to a member

country (either through the assessment of tax burden, stability of stock market, or overall macroeconomic stability). And, in addition to political and administrative (respectively, institutional) criteria, the basic conditions are also economic criteria: a functioning market economy and the ability to face competition and market forces, which is the focus of this research. (Treaty on European Union, 1992)

Current scientific knowledge provides a non-uniform way of understanding the development of the term "new democracy" and its current context and meaning. Some authors define new democracies as "New democracies are political regimes in which transition led the democratic institutions to be combined with important legacies from a recent authoritarian past." (Weffort, 1998), other authors refer, for example, to the concept of K. Marx, where this term is used to indicate the state of transition from feudalism and the achievement of independence from colonialism (Springborg, 1984). Currently, the term "new democracy" is used in the context of the power of the Communist Party in China (Schram, 2018). In one of the investigated regions (V4) the term is understood in accordance with theories of democratic transitions applied to developments since the 1990s, that is, as a transition process, which is traditionally used in the Slovak and Czech political environment as an interval between two different regimes. This shows that it is a more complex term expressing the process of changing the regime to a democratic one predominantly in Central and Eastern Europe (Blokker, 2014 or Bornschier, 2009). From a political science point of view, focus comparison appears especially important for this extremely interdisciplinary research, as its aim is to compare a selected sample of political systems with an emphasis on a selected specific problem, namely tax policy and stock market.

From the aspect of economic development, the main differences of the so-called democratically older and newer countries associated in the EU, can include the state of market development, the development of the tax system (see e.g. von Hagen, Traistaru, 2014) as well as the demographic conditions of the country at the time of their entry into the EU. From an economic point of view, the new democracies, due to their shorter duration, i.e. due to the still ongoing process of consolidation of their democratic regimes, do not show such stable macroeconomic regularities as is the case in the long term ones, the so-called old democracies. (see e.g. Buček, 2012) In these countries, it should be pointed out that consensual national political visions are still being formed, which are now decisive for new democracies. (Gbúrová et al., 2015, p. 11-15), namely especially for V4 countries. These

countries are undergoing the formation of the so-called Action plans that are already being formed in the environment of the knowledge economy, digital economy, e-economy, or economy based on innovations (see e.g. Lisbon strategy, March 2000).

3.1 The potential implication of corporate tax policy on the stock market in selected old democracies

The first old democracy under analysis is Germany, as the ESUO founding country. The German stock market represents one of the best-known indicators, World Stock Indexes DAX 30 with the representation of the biggest German companies from various industries of the German economy. Germany as the most developed EU country has a quite complicated tax policy. The tax system is divided into three levels. They are federal taxes, land taxes and local taxes.

Companies in Germany are subject to corporate and business tax. Corporate tax with a surcharge of the central state administration in 2021 reached the value of 15.825%. Business tax is the combination of basic regional surcharge and the surcharge of local self-government depending on the seat of a company. The local rates of corporate tax range from 12.6% to 19.25%. After the increase of basic corporate tax by a surcharge of central and local self-government, the final amount of corporate taxation for companies could reach above 35%.

The German tax system has undergone extensive changes since the beginning of the 1990s. The amount of corporate tax was above 50% at the beginning of 1990s. The most significant tax reduction was manifested in the time of technological bubble bursting which significantly hit the German economy, too. The tax reduction by 15% in this period was aimed at the re-start of economic growth. A similar tax reduction happened in 2008, when the taxes of business entities in German were reduced by further 10%. These data are illustrated in the following Figure 2.

**Figure 2:** *The Development of the DAX30 Stock Index and Corporate Tax in Germany (2000-2021)*
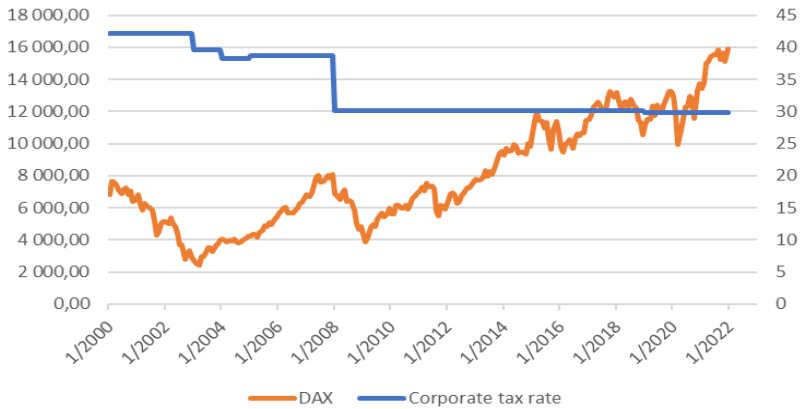
The following Figures 4, 6 and 8 illustrate the dependence of the variables examined for each country of old democracies under comparison here, and simultaneously determine the degree of dependence using the Cohen´s interpretation. The result in Germany is a medium correlation between DAX30 and corporate tax.

Figure 3: *Correlation of DAX30 and Corporate Tax in Germany*

$$y = -419{,}23x + 22170$$
$$R^2 = 0{,}3817$$
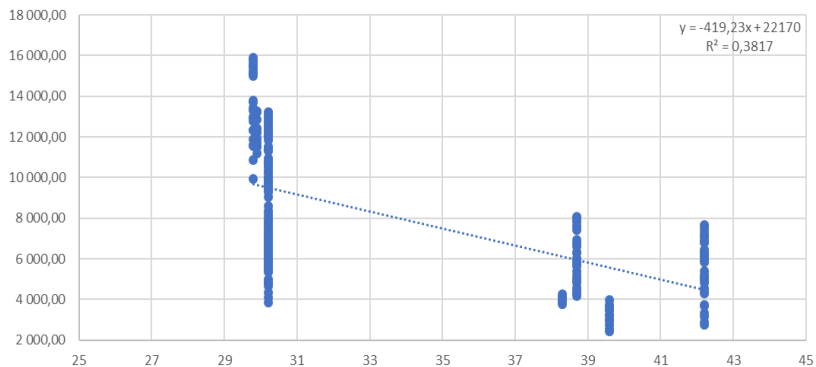
Italy, the economy of another ESUO founding member including its stock market, has been fighting with serious economic problems for the last 10 years. High unemployment rate exceeding 10% and massive government debt above 130% GDP arouse mistrust even among investors. It also mirrored in the development of the stock market, which is shown in the following Figure 4. Data in Figure 4 "The Development of FTSE MIB Stock Index" make it apparent that even in 2018 Italian stock market did not reach the level of 2000 or 2008 in comparison to other world indices, including Europe.

Figure 4: *The Development of the FTSE MIB Stock Index and Corporate Tax in Italy (2000-2021)*
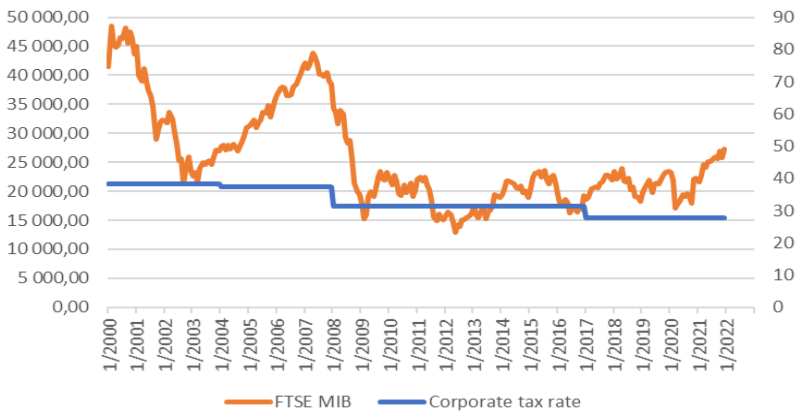
Source: Authors

The most significant modification of corporate taxation in Italy was implemented in 2007, when the corporate tax rate decreased from 37.3% to 31.4 %. The last change corporate tax rate came into place in 2017 to 27.8 %. Figure 5 shows the correlation between the FTSE MIB, the stock index and the corporate tax in an old democracy, specifically Italy. There is a positive relationship identified between stated variables; thus, increase in the corporate tax rate increased the stock index. The corporate tax accounted for 61% variability of the stock index. It was due to other variables that influenced the stock index, not only the corporate tax.

**Figure 5:** *Correlation of FTSE MIB & Corporate Tax in Italy*
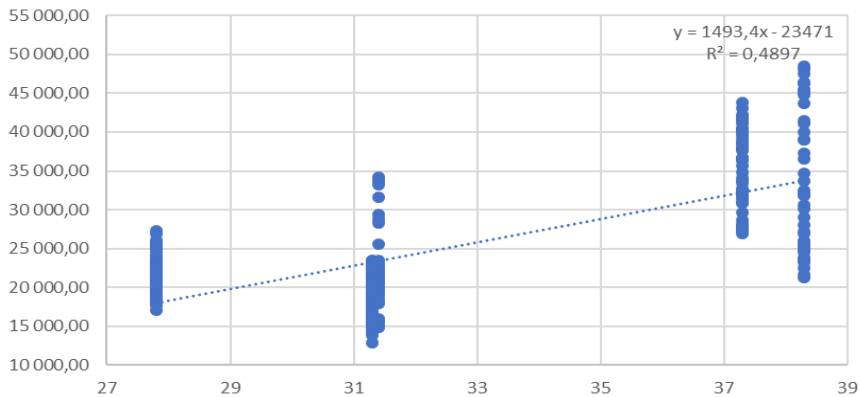
Source: Authors

Sweden**,** as a Scandinavian country, which joined the EU in 1995, is characteristic by a social and economic system, known as a welfare state model. Alestalo, Hort, and Kuhnle (2009) pointed out the fact that Scandinavian countries managed to connect high taxes, low social and economic inequality, and complex social security systems with a very satisfactory economic growth from the long-term point of view.

This trend also mirrored in the development of the stock market in Sweden. Its stock index OMX 30 largely copied the development of the indexes in other developed stock markets. German stock index DAX largely copied its development. Figure 6 outlines the extent of the impact of tax changes on the positive development of OMX 30 index with the particular emphasis on the corporate tax in Sweden.

Figure 6: *Development of the OMX 30 Stock Index and Corporate Tax in Sweden (2000-2021)*
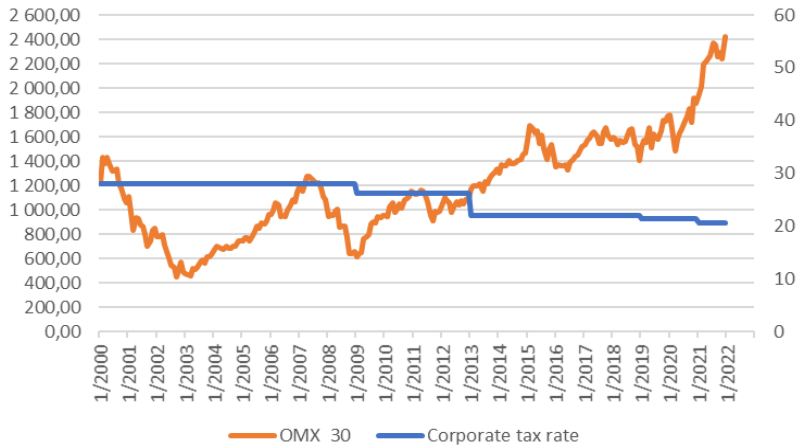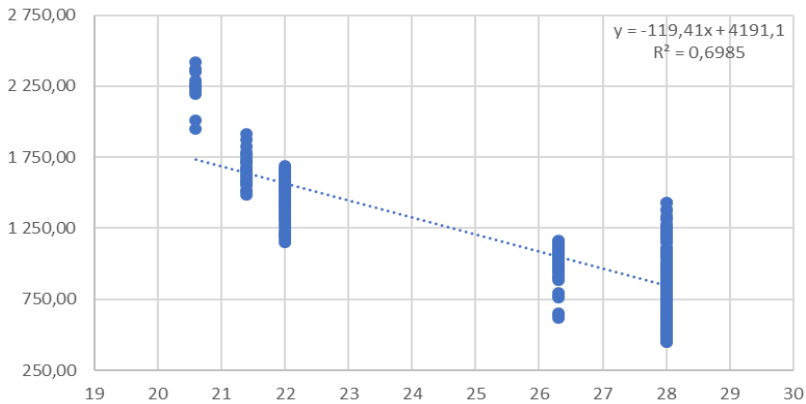

Source: Authors

Tax burden of the legal entities in Sweden was slightly over average in comparison with the EU average, where the income from the legal entities taxation in 2016 represented 2.8% of GDP of Sweden. Since 2000 the corporate tax rate has reduced from 28% to 26,3% and later in 2013 further to the level of 22% in 2018. All the reductions of corporate tax rate were accompanied by the measures aimed at broadening of tax base, which resulted in the relative stability of the income from the taxation of legal entities despite the reduction of the rate (Thomann, 2014). The result found in Sweden is a very large correlation between OMX30 (vertical axis) and corporate tax (horizontal axis).

Like Figure 5, also Figure 7 shows the relationship of the stock index, specifically OMX30 and the corporate tax in another old democracy, Sweden in this case. Compared to Italy, here a negative relationship between the mentioned variable is evident, thus increase in the corporate tax led to a decrease in the stock index. By the moment of finishing this study (November 2022), in Sweden the corporate tax accounted for 70% of variability of OMX30, which was almost three quarters. The remaining quarter of the variability of the index in Sweden may be explained by other factors that influence the stock index.

Figure 7: *Correlation of OMX30 & Corporate Tax in Sweden*

$y = -119,41x + 4191,1$
$R^2 = 0,6985$

Source: Authors

Another country of the old democracies under comparison in this research is Great Britain, a model political system and the ECC member state since the 1970s. The FTSE 100 index on the English stock exchange is an index of the British stocks with the highest capitalization. This English stock index contains the 100 best companies (the so-called blue chip) according to the market capitalization listed on the London Stock Exchange. The companies represent approximately 80% of the English market. It is mainly used as the base for other investment products such as derivatives and funds. The index belongs to a broad group of FTSE stock indices, international, national, regional, or industry. The FTSE 100 stock index is the most widely used stock market indicator in Great Britain.

Figure 8: *The Development of the FTSE100 Stock Index and Corporate Tax in Great Britain (2000-2021)*
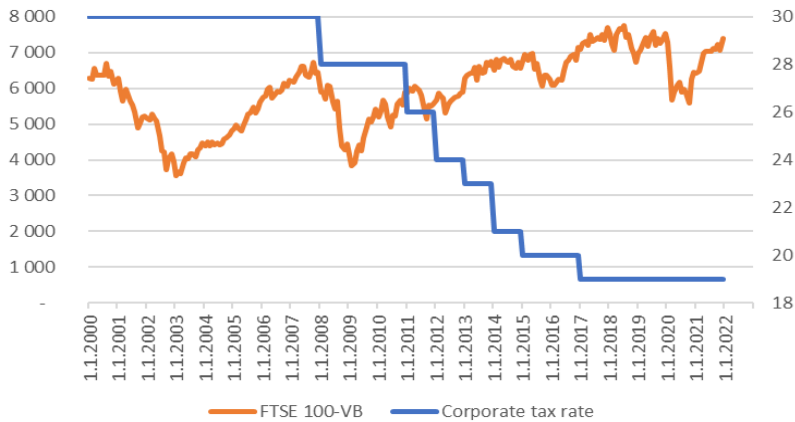
Source: Authors

The resident companies in Britain tax worldwide income. At the same time, there is a special tax regime that applies to companies that trade with oil, gas, and shipping companies (this special tax regime is, however, not included in Figure 8). The link between corporate taxation and dividend taxation can be declared on the principle that when paying dividends, the company can reduce the amount of corporate tax by the dividend tax paid, thus eliminating double taxation of the company. The amount of the corporate income tax rate depends on the amount of the company's profit. If the company's profit is less than 300 thousand GBP, the corporate tax rate is 19%. Corporate tax was introduced separately into the tax system in 1965.

Figure 9: *Correlation of FTSE 100 & Corporate Tax in Great Britain*
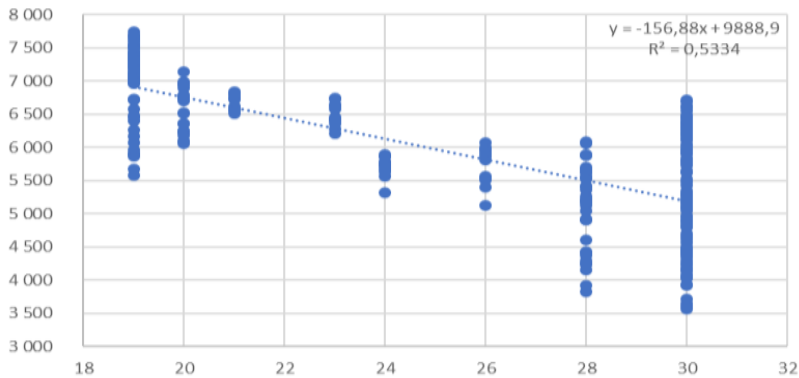
Source: Authors

In this research, an F-test applies to test the use of model suitability (linear regression line). For all four regression lines the hypothesis was rejected at the 5% level of significance and thus the selected linear regression line model is appropriate.

Table 3: *Interpretation of the Correlation Results*

| Variable 1	Variable 2	Correlation coefficient	Proportion	Cohen´s interpretation
Germany CT (y-o-y)	DAX30	-0,62	Indirect	Large
Italy CT (y-o-y)	FTSE MIB	+0,70	Direct	Very large
Sweden CT (y-o-y)	OMX	-0,84	Indirect	Very large
Great Britain CT (y-o-y)	FTSE100	-0,73	Indirect	Very large

Source: Authors
Note: CT = Corporate Tax rate

Likewise, the statistical significance of the constant and regression coefficient in the linear regression line model used was tested by P-value, with hypothesis being rejected at the 5% level of significance and thus the values of constant and regression coefficient are statistically significant. Values in Table 3 show overall strong relationship between the tax policy and the stock market.

3.2 The potential implication of corporate tax policy on the stock market in selected new democracies

The first of the new democracies analysed here, is the Slovak republic launching its democratic and economic transition after Velvet revolution in 1989 altogether with its neighbouring countries, now the V4 partners. The official index of the Slovak stock market is SAX. In mid-2020, due to the growth of technology stocks, the weight of the five largest companies in the index exceeded the level of 20%. At the end of 2020, the basis of the SAX index was formed by only five companies.

Figure 10: *The Development of the SAX Stock Index and Corporate Tax in the Slovak Republic (2000-2021)*
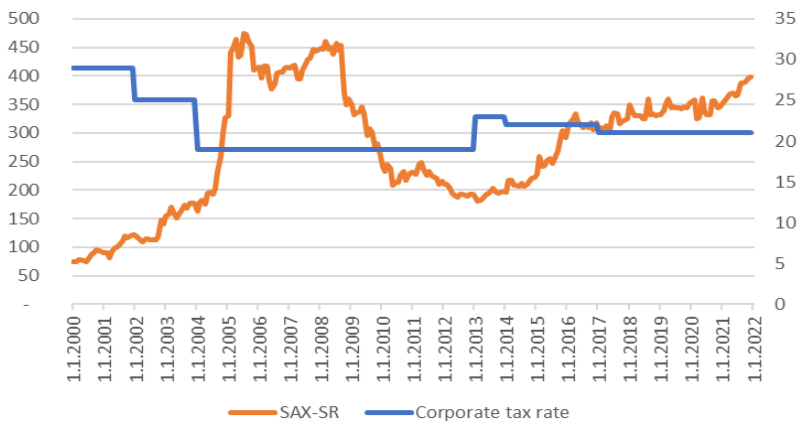
Source: Authors

The last year of before joining the EU in 2004 was characterized by increased requirements resulting from the need to harmonize the business environment with the EU environment. In 2004, the third and most important tax reform was implemented. There was also a decrease in the corporate income tax rate to 19% and dividends were no longer subject to income tax. In particular, due to the crisis since 2009, there has been a decline in the profitability of companies in our country. The business sector has been recovering since 2011. In 2017, the corporate tax rate was reduced by 1% to 21% and major changes were made in the dividend policy. Historically, for the first time since the third tax reform in 2004, a second nominal income tax rate of 15% was introduced into tax legislation with effect from January 2020.

Figure 11: *Correlation of SAX & Corporate Tax in the Slovak Republic*

y = -25,093x + 813,98
R² = 0,4936
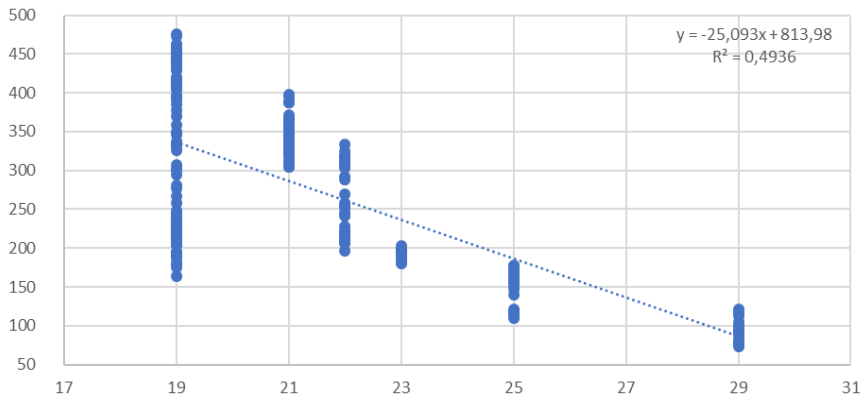
Source: Authors

The closest neighbour of Slovakia is the Czech Republic, joined in one country with Slovakia until the Czechoslovakia split in 1993. The three indices of the Prague Stock Exchange in the Czech Republic are designed as tradable indices and can be used as a basic value for structured products and derivatives. The PX Index is the official price index of the Prague Stock Exchange. It is a price index with a weighted ratio of the most liquid shares. The current Prague Stock Exchange was not established until after the Velvet Revolution in 1993. In 2008, Wiener Börse AG became the majority shareholder of the Prague Stock Exchange, and subsequently the stock exchange became part of the CEE Stock Exchange Group. In 2018, the START market for small and medium-sized enterprises was created from the size of 1 million euro.

Figure 12: *The Development of the PX Stock Index and Corporate Tax in the Czech Republic (2000-2021)*
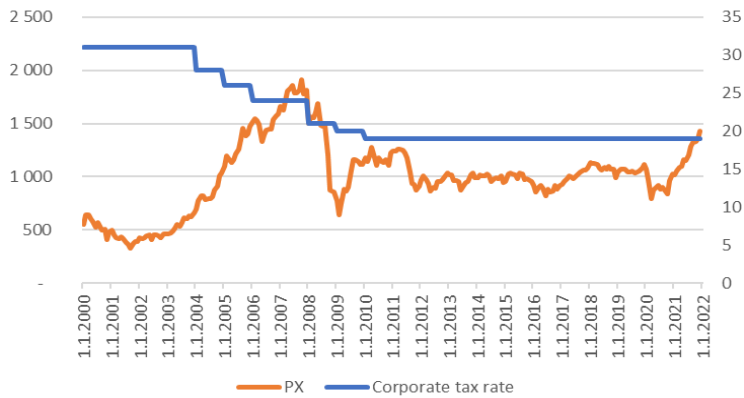
In the Czech Republic, the corporate tax rate decreased from 35% to 30% in 2000, which was reflected in the revenue of this tax in the following year. Data from the Czech tax administration also indicate that it was the case of the Czech Republic when the introduction of a proportional corporate tax rate of 19% from 2010 ensured a relatively stable development of the share of corporate tax revenue in tax revenues. At present (November 2022), corporate income is subject to four tax rates. The basic rate of 19% applies to all legal entities except income: basic investment fund, where income is subject to a tax rate of 5%. Compared to the Slovak Republic, in the Czech Republic, tax legislation still provides corporate income tax relief related to the employment of disabled employees and for employees with severe disabilities.

Figure 13: *Correlation of the PX & Corporate Tax of the Czech Republic*
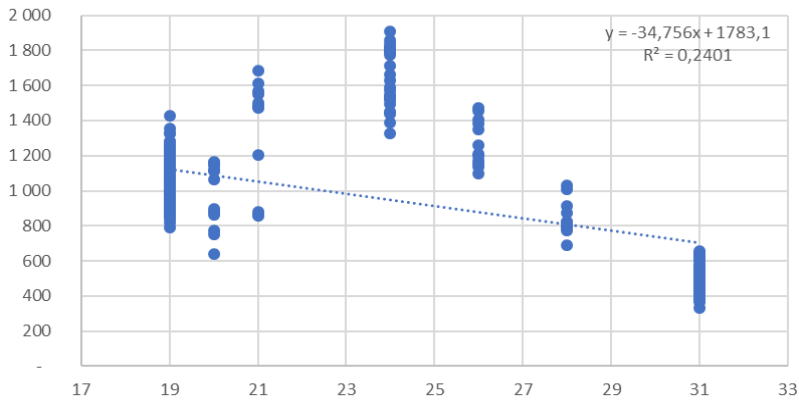
Source: Authors

Another neighbour of Slovakia is Hungary. The official Hungarian stock index is the BUX index. The BUX index base can include a maximum of 25 issues, which must meet certain conditions in terms of the length of BSE trading, its nominal and market value, turnover measured by both the number of transactions and market capitalization.

Figure 14: *The Development of the BUX Stock Index and Corporate Tax in Hungary (2000-2021)*
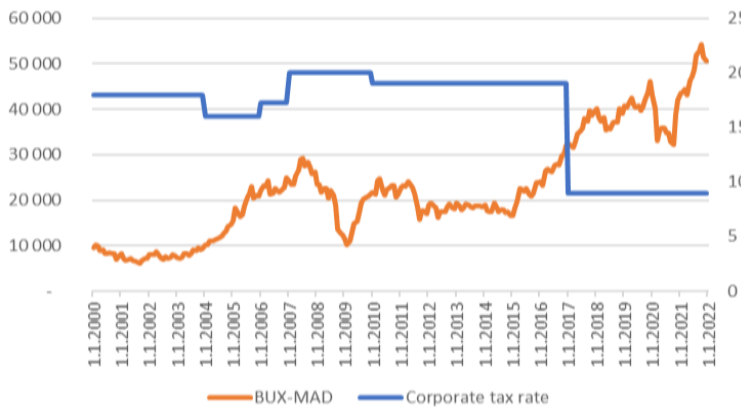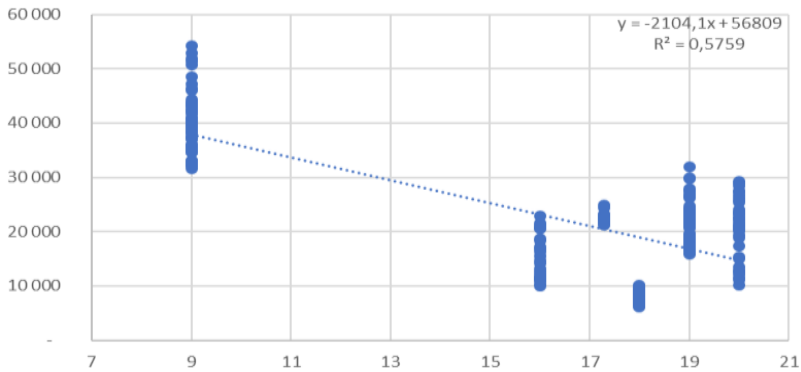

Source: Authors

By finalising this article in November 2022, Hungarian companies were taxed at a rate of 9%, where it did not tax the entire profit made, but only the

part that exceeded the limit of HUF 500 million. Profits up to this limit were taxed at a rate of only 10%. The tax legislation also included income tax for small businesses. It is a simplified type of tax that also replaces corporate income tax.

Figure 15: *Correlation of BUX & Corporate Tax in Hungary*

Source: Authors

The last of the V4 new democracies analysed here, is Poland. By finalising this article in November 2022, the corporate tax rate in Poland was 19%. Poland has embarked on a path of supporting small businesses through the tax system. In 2017, it reduced the income tax for small businesses to 15%. This reduction applied to small businesses and start-ups with a turnover not exceeding 1.2 million euro per year.

Figure 16: *The Development of the WIG Stock Index and Corporate Tax in Poland (2000-2021)*
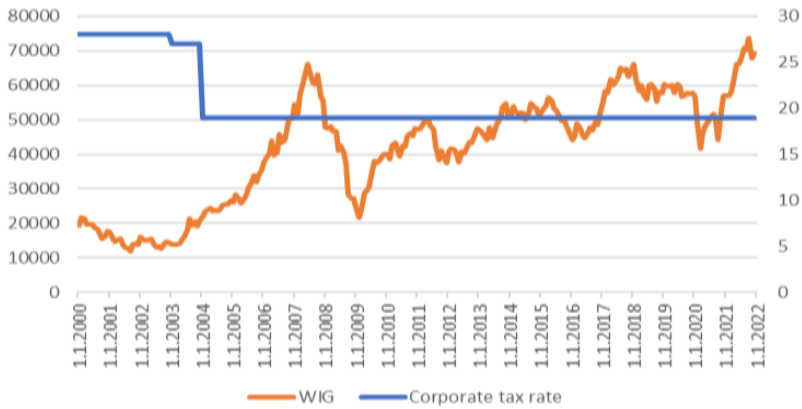
Source: Own processing

The most important official index of the Warsaw Stock Exchange is the WIG index. The base includes all issues traded on the main market of the stock exchange, except for foreign companies and investment funds. The share of one issue in the market capitalization of the base may not exceed 10%, and the share of issues of one sector may not exceed 30%.

Figure 17: *Correlation of WIG & Corporate Tax in Poland*

$$y = -3563,9x + 115136$$
$$R^2 = 0,563$$
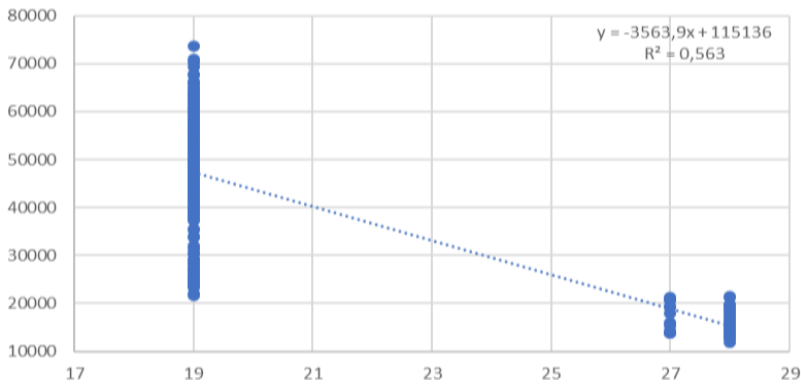
Source: Authors

In the article, an F-test was applied to test the use of model suitability (linear regression line). For all four regression lines, the hypothesis (H1)

was rejected at the 5% level of significance, and thus the selected linear regression line model is appropriate.

Table 4: *Interpretation of the Correlation Results - V4 New Democracies*

Variable 1	Variable 2	Correlation coefficient	Proportion	Cohen´s interpretation
Slovak republic CT (y-o-y)	SAX	-0,69	Indirect	Large
Czech Republic CT (y-o-y)	PX	-0,49	Indirect	Medium
Hungary CT (y-o-y)	BUX	-0,75	Indirect	Very Large
Poland (y-o-y)	WIG	-0,68	Indirect	Large

Source: Authors
Note. CT = Corporate Tax

Tax policy, part of the state's economic policy, is a result of political decisions and has significant socioeconomic impacts on the business environment. The same analysis applied to old democracies was used for countries of new democracies. The results, displayed in Table 4, show that in new democracies the impact of tax policy on stock market is fairly strong.

As proved by this research, the tax policy plays a role of an economic policy tool by the means of which governments can influence economic or environmental processes such as the development on the stock markets. A high mobility of capital – in countries of new democracies - can also result in the fact that some countries are motivated to reduce the corporate tax rate with the aim of the attraction of foreign investors. This effect immediately mirrors also in the positive development of the stock markets.

However, four old democracies were included in this regression and correlation analysis, and the presented hypothesis about impact of tax system, represented by corporate tax rate, on the development of their stock markets was clearly confirmed only in the case of three old democracies analysed in this research, Germany, Sweden, and Great Britain. The most significant effect can be seen especially thanks to the reduction of corporate tax, where according to Cohen´s interpretation, in the case of Germany, the correlation of the stock index and corporate tax rate provides large and in the case of Sweden, a very large indirect correlation.

The accelerating globalization of the world economy is significantly affecting all political and economic areas, including securities trading and corporate taxation in democratically "younger" countries (new democracies

here). For all four compared stock exchanges in V4 countries, it is valid that their origin and development is largely derived from the transformation of the economy and especially from the method of privatization. In the case of all V4 countries, the regression and correlation analyses confirmed the Hypothesis but to a lesser extent than in the old democracies. The most significant effect can be seen mainly due to the reduction of corporate tax, where, according to Cohen's interpretation in all V4 countries except the Czech Republic, the correlation of the stock index and corporate tax rate provides a large (Hungary and Slovak Republic) and in the case of Poland a very large indirect correlation.

CONCLUSION

This research has identified a difference between old and new democracies in the evolution of national corporate taxation and the evolution of their stock market. Old democracies historically apply higher corporate tax rates. Models showed that in these countries there is generally higher impact of corporate tax rate on development of the stock market compared to new democracies.

This regression and correlation analyses included four countries representing the old democracies. Hypothesis 1 focused on the impact of the tax system (corporate tax rate) on the development of their stock markets and was clearly confirmed only in the case of 3 old democracies (Italy, Sweden, and Great Britain). Cohen´s interpretation made the reduction of corporate tax to be the most significant effect. As apparent in the case of Germany, the correlation of the stock index and corporate tax rate provides a large, and in the case of Sweden, a very large indirect correlation.

The decline in corporate tax rates in the V4 countries is more pronounced and faster, which means that economically smaller countries in this way significantly influence the inflow of foreign investment to support the country's economic growth. The results of the models also showed that the greater influence of tax policy on the development of stock markets is manifested in countries with higher corporate tax rates (Sweden, Great Britain, and Poland to some extent). Hungary and the Czech Republic the countries where the corporate tax rate has the lowest impact on price changes in the stock markets.

The EU corporate taxation policy needs to be governed transparently and democratically. The question is whether the current fiscal sovereignty of the Member States in a corporate taxation with high capital mobility still

brings positive effects. Moreover, in corporate taxation policy, it is necessary to focus on the issue of tax avoidance of legal entities, as the negative aspects of this phenomenon also affect the management of local and regional governments. Making research of the impact of corporate taxation on other selected variables may be more important in those EU countries where the corporate tax revenue is shared in financing the budgets of lower government levels. This represents a possible continuation and expansion of the presented research in relevant old and new EU democracies in the future.

In recent years, the European Union's efforts to make tax policy more efficient and democratic could be observed. Mentioned efforts are mainly a result of the impact of globalization, digitalisation and increasing coordination of tax administration with the aim of reforming corporate taxation at the level of the Union. The European Union clearly declares a natural link between taxation and democracy.

Covid-19 brought several, rather short-term, fluctuations to the capital markets, but also the diversity of reactions of individual European economies. After the outbreak of the pandemic, the stock markets fell sharply but subsequently returned to a rising trend (as by November 2022). The economies of individual countries were significantly affected by the quantitative easing of central banks and the expansionary fiscal policy represented by specific tax instruments.

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