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Linear determinants of the effective tax burden of ICT companies in the Republic of Croatia*

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Abstract

The actual tax burden of a company often differs from that prescribed by law, but there are also differences among the companies themselves. The question arises whether there are systematic explanations for these differences and whether they can be related to the type of business activity, asset structure, debt and other determinants. Therefore, the main objective of the research is to identify the determinants of the effective tax burden of ICT companies in the Republic of Croatia. The time horizon includes companies from the section J information and communication (NACE Rev. 2), in the period from 2008 to 2016. Using an unbalanced sample and dynamic panel regression with the Arellano-Bover/ Blundell-Bond estimator, the determinants of the effective tax burden identified were as follows: effective tax burden from the previous period, company size, debt, capital and labor intensity, inventory intensity, profitability, and business cycles. However, the determinants differ according to the size classes of the company and the divisions. Compared to previous research, the subject is focused on companies of all sizes, not only large companies including not only listed companies but all companies in an industry that contributes to the homogeneity of the sample and the reliability of the results.

Key words: *effective tax burden, ICT activity, dynamic panel regression*

JEL classification: *H2, C23*

1. Introduction

The issue of the tax burden of corporate income tax arises not only in the period of tax reforms and increasing international tax competition, but it is constantly present in the implementation of the country's economic policy. Kostal (2000) notes

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that there is insufficient empirical research on the issue of corporate tax burden. However, in the last decade, there has been a significant increase in research on this topic. The existence of different approaches and indicators of the effective tax burden, as well as their selection, depend on the empirical question to be answered. The choice of a particular method has a decisive impact on the results and therefore answers only certain questions. First, the research questions to be answered dictate the choice of approach to measuring the tax burden. The latter concludes that there is no universally accepted method for measuring the tax burden of companies.

The simplest measure of tax burden is the nominal tax burden, which is measured by the statutory tax rate. However, a high/low statutory tax rate does not simultaneously mean that a high/low amount of tax is paid, because the amount of tax depends on the tax base (Devereux et al., 2002), which amount depends on the use of tax credits, tax reliefs, and tax exemptions allowed by a country's tax system (Bretschger and Hettich, 2002). Since the nominal corporate tax rate does not take into account tax breaks, exemptions, and incentives that affect the size of the tax base, it does not show the actual tax burden. To measure the actual or effective tax burden, one must focus on effective tax rate (ETR). According to Harris and Feeny (2003) the effective tax rate, as a measure of the effective tax burden, provides a complete picture of tax performance because, unlike the statutory tax rate, it includes the use of various tax breaks, exemptions and incentives allowed by the tax legislation.

In the period from 2001 to 2016, corporate profits in the Republic of Croatia were taxed at the proportional statutory corporate income tax rate of 20%. In Croatian law, there are tax incentives and reliefs that make it possible to reduce the tax burden, so that few companies pay a profit tax at the statutory rate. However, the effect of the tax incentives is not uniform among companies. Some companies benefit from more tax incentives than others, resulting in differences in effective tax rates across companies. While some companies pay a lower effective tax rate than the statutory rate, other companies may even pay a higher effective tax rate than the nominal rate. An important tax policy issue is whether the government should tax certain activities more favourably or aim for neutral taxation. For tax policymakers to adequately address this policy issue, the following empirical questions need to be examined: (1) Are there differences in corporate tax burdens?; (2) Are there systematic explanations for these differences, and can they be related to the nature of corporate activity, asset structure, debt, and other factors? This study aims to provide answers to the questions raised. In addition to the government on the one hand, the question of the actual tax burden is also important for the companies themselves. In most business decisions, the tax implications have to be taken into account. Therefore, it is of interest for the management to know the determinants that affect the effective tax burden in order to influence them and thus the effective tax burden.

In this study, companies considered from the ICT sector are those that, in terms of their main activity, are classified in section J information and communication

according to the National Classification of Economic Activities (NACE Rev. 2) (Eurostat, 2008). The selection of this activity is determined by its economic importance, and Korent (2018) states that section J is one of the three most important activities in the Croatian economy. According to Mamić Sačer et al. (2013), the mentioned activity was the most profitable in 2009, measured by the net profit margin as the ratio of net profit to total revenue in the amount of 7.7%. According to the data of the National Statistics Institute (DZS, 2021) in 2020, this section achieved year-on-year growth in gross value added of 4.92% (measured in basic prices). Better results were achieved only by the construction sector, with a growth of 5.94%, while the gross value added of the entire Croatian economy decreased by 6.67%. The *info.biz* database managed by the Financial Agency (FINA) shows that the number of exporters in section J is growing faster than in the overall economy. While the number of exporters from the information and communication section increased by 19.44% in 2021 compared to the previous year, it increased by 11.66% at the level of the whole of Croatia (FINA, 2022). The above facts suggest that section J is more resistant to economic downturns.

The main research objective arises from the described problem, namely the study of the determinants of the effective tax burden of companies from the ICT sector in the Republic of Croatia. In addition to the main research objective, secondary research objectives also arise. The first relates to the study of the existence of differences in determinants in relation to the size categories of companies from the ICT sector and the second to the categories of divisions of section J.

From the defined problem and set research goals, the set research hypotheses are as follows:

H1: *The selected set of determinants has a significant linear impact on the effective tax burden of companies in section J information and communication in Croatia.*

H2: *Determinants of the effective tax burden of companies in section J information and communication differ depending on the category of company size.*

H3: *Determinants of the effective tax burden of companies in section J information and communication differ depending on the companies division in section J.*

The work consists of six parts. After the introduction, the second part of the paper contains a literature review of research on the determinants of the effective tax burden of companies. The third part of the paper presents the research methodology, while the fourth part describes the research data and variables. The fifth part of the paper presents the results of the analysis. The sixth part discusses the main findings and concludes the paper.

2. Literature review

According to Nicodeme (2001) an ex-post[2] micro approach is used to identify the impact of determinants on the effective tax burden of companies. The advantage of this approach is that it uses real data and concurrently allows for a multidimensional analysis of the effective tax burden, such as an industry analysis or an analysis in terms of the size of the company. (Nicodeme, 2001) The ex-post micro approach measures effective tax rates based on historical and current data from the financial statements of existing companies (Giannini and Maggiulli, 2002). Nicodeme (2002) states that this approach takes into account the effects of the macroeconomic context, the behaviour of companies and the tax administration, and all the characteristics of the tax system. Based on the above, this approach is optimal to achieve the set research objective. Ex-post micro effective tax rates are usually calculated as the ratio between taxes paid and an indicator of company performance from financial statements such as pre-tax profit or gross operating profit (Nicodeme, 2001). Because the ex-post micro effective tax rate indicates how many units of tax are paid per unit of profit, the rates are often referred to in the literature as average effective tax rates (Callihan, 1994; Bansadja, 2011). In general, these effective tax rates (ETR) are defined as the amount of tax paid on the tax base, expressed as a percentage (Callihan, 1994). They express the tax rate paid on total profits (Bansadja, 2011). In the studies on the determinants of effective tax burden, ETR represents a dependent variable (measured by various indicators). Since the main objective of this paper is to identify the determinants that affect the companies' effective tax burden, the literature review in Table 1a, 1b, 1c, 1d, 1e, 1f, and 1g systematizes selected research papers in which the ex-post effective micro tax rate (ETR) was used as a dependent variable. From this, it can be seen that these studies mainly focus on companies listed on the stock exchange of a specific country. For these companies, there is an obligation to publish financial statements due to information transparency, so the availability of data is relatively easy. There are a small number of studies that cover companies across the industry. For example, Moreno-Rojas et al. (2017) look at companies in the tourism industry, Omer et al. (1993) look at the pharmaceutical and oil industries and Bubanić and Šimović (2021) look at the telecommunications industry. As for the size of the companies studied, most of the research focuses on large companies. The data source for this type of research is mainly publicly available databases. Most of the studies are longitudinal. The most commonly studied determinants of effective tax burden firm size, debt, capital intensity, inventory intensity, and profitability. To find out which determinants affect the effective tax burden, regression analysis, especially panel regression analysis, has been predominantly used.

[2] In the literature it can also be found under the term *backward-looking approach.*

Table 1a: Overview of existing research on ex-post micro effective tax rate (ETR)

Author(s) (year) of research	Country/s	Analysis period	Analyzed companies and data source	Variables	The scientific method
Stickney and McGee (1982)	United States of America	1978-1980	Large companies from the database Annual Compustat Industrial File	Capital intensity Extent of foreign operations Extent of natural resource involvement Size of companie Leverage	Cluster Analysis
Omer et al. (1993)	United States of America	1980-1986	Pharmaceutical and oil industry companies from the database Annual Compustat Industrial File	Size of companie	Spearman Rank Correlations
Kim and Limpaphayom (1998)	Hong Kong, Korea, Malaysia, Taiwan and Thailand	1979-1892 (Hong Kong), 1980-1992 (Korea), 1977-1992 (Malaysia), 1975-1992 (Taiwan and Thailand)	Companies listed on the country's stock exchange. Database provided by the Sandra Ann Morsilli Pacific-Basin Capital Markets Research Center (PACAP) at the University of Rhode Island.	Size of companie Leverage Future growth Profitability	Panel ordinary least squares (OLS) regressions

Source: Authors' compilation

Table 1b: Overview of existing research on ex-post micro effective tax rate (ETR)

Author(s) (year) of research	Country/s	Analysis period	Analyzed companies and data source	Variables	The scientific method
Buijink et al. (1999)	EU 15 (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, United Kingdom)	1990-1996	Consolidated financial statement dana from the Worldscope financial statement (CD-ROM) database.	Size of companie Number of employees Research and development Investments Level of foreign sales Industry Leverage	Multiple regression
Feeny et al. (2002)	Australia	1993-1996	IBIS Enterprise Database contains information on an annual basis for medium to large firms in Australia	Depreciation Size of companie Interest payments Research and development	Panel regression (Fixed Effects Model and Random Effects Model)
Harris and Feeny (2003)	Australia	1993/1994-1996/1997	Large Business and International (LB&I) taxentities from the ATO taxreturn database	Capital intensity Leverage Size of companie Extent of foreign operations Profitability Research and development	Panel regressions Pooled ordinary least squares (OLS)

Source: Authors' compilation

Table 2c: Overview of existing research on ex- post micro effective tax rate (ETR)

Author(s) (year) of research	Country/s	Analysis period	Analyzed companies and data source	Variables	The scientific method
Derashid and Zhang (2003)	Malaysia	1990-1999	Companies listed on the stock exchange	Sector of activity Size of companie Leverage Capital intensity Inventory intensity Profitability Percentage of government equity ownership Year effects	Multiple regression
Rego (2003)	United States of America	1990–1997	Data from COMPUSTAT U.S. Multinational Corporations	Size of companie Pre- tax accounting income Companie report foreign assets or foreign income Interaction variable of size and companie report foreign assets or foreign income Interaction variable of Pre- tax accounting income and companie report foreign assets or foreign income	Ordinary least squares (OLS) regression
Janssen (2005)	Netherlands	1994-1999	REACH data base	Size of companie Size of companie Capital intensity Extent of international activities Profitability Leverage Public company	Panel Ordinary least squares (OLS) regression

Source: Authors' compilation

Table 3d: Overview of existing research on ex-post micro effective tax rate (ETR)

Author(s) (year) of research	Country/s	Analysis period	Analyzed companies and data source	Variables	The scientific method
Liu and Cao (2007)	China	1998-2004	Companies listed on the stock exchange	Size of companie Leverage Asset mix Profitability Ownership structure Overemployment	Panel estimations with the random effect model
Costa et al. (2012)	Portugal	2006-2010	SABI data base	Size of companie Leverage Capital intensity Inventory intensity Profitability Location Sector of activity	Panel Estimations by generalized least square EGLS method
Chiou et al. (2014)	China	2007-2009	Companies listed on the stock exchange	Leverage Capital intensity Inventory intensity State ownership; Profitability Size of companie Total of outstanding shares	Panel regression with two-sided vinsorization
Lazăr (2015)	Romania	2000-2011	Companies listed on the stock exchange	Leverage Capital intensity Size of companie Labor intensity Profitability Dummy variable if companie recorded a net operating loss (NOL) Dummy variable for tax reform	Fixed effects panel data estimation

Source: Authors' compilation

Table 4e: Overview of existing research on ex-post micro effective tax rate (ETR)

Author(s) (year) of research	Country/s	Analysis period	Analyzed companies and data source	Variables	The scientific method
Andreas and Savitri (2017)	Indonesia	2009-2014	45 largest companies listed on the stock exchange	Size of companie Leverage Capital intensity Profitability Inventory intensity	General multiple regression model
Moreno-Rojas et al. (2017)	Spain	2008-2013	Companies in the tourism sector (hotels or travel agencies); data from the SABI database.	Size of companie Leverage Profitability Type of company (hotels or travel agencies)	Dynamic panel model whit Arellano-Bond Generalised Method of Moments (GMM) estimator
Vintilă et al. (2018)	Romania, Hungary, Poland, Bulgaria, Slovenia	2000-2016	Companies listed on the stock exchange of the analyzed countries	Firm characteristics (profitability, firm-level control); Assets structure (capital and inventory intensity, equity multiplier); Indebtedness (solvency ratio and financial leverage); Additional (liquidity, audit fees and statutory rates)	Panel regression estimated by generalized least squares (GLS) with White's method

Source: Authors' compilation

Table 5f: Overview of existing research on ex-post micro effective tax rate (ETR)

Author(s) (year) of research	Country/s	Analysis period	Analyzed companies and data source	Variables	The scientific method
Dias and Reis (2018)	Denmark, Slovenia, Finland, Luxembourg, United Kingdom	2012-2014	Bureau van Dijk's Amadeus data base	Nominal tax rate Size of companie Leverage Capital intensity Profitability	Model of Linear Regression method of estimation of the ordinary squared minimums
Aksoy Hazır (2019)	Turkey	2007-2016	Companies listed on the stock exchange	Size of companie Leverage Capital intensity Inventory intensity Profitability	Panel data estimation using fixed effects model (FEM), random effects model (REM) and pooled ordinary least squares (pooled OLS)
Bubanić and Šimović (2021)	Croatia	2008–2017	Telecommunications companies; data from the Financial Agency	Size of companie Leverage Capital intensity Inventory intensity, Profitability Labour intensity Economic cycle	Panel regression analysis dynamic panel-data estimation

Source: Authors' compilation

Table 6g: Overview of existing research on ex-post micro effective tax rate (ETR)

Author(s) (year) of research	Country/s	Analysis period	Analyzed companies and data source	Variables	The scientific method
Fernández-Rodríguez et al. (2021)	Brazil, Russia, India, China, South Africa, Mexico, Indonesia, Nigeria, Turkey	2006-2015	Companies listed on the stock exchange	Size of companie Leverage Capital intensity Inventory intensity, Profitability Companie's sales growth Discretionary accruals Deferred tax liability Gross Domestic Product growth Government effectiveness Regulatory quality Rule of law	Regressions are estimated using the Panel Corrected Standard Errors (PCSE) estimator

Source: Authors' compilation

3. Methodology

Descriptive and inferential statistics methods are used for research purposes and conclusions. Descriptive statistics is used primarily to describe the sample. Panel regression analysis is used to identify the determinants that affect the effective tax burden. Conducting a panel analysis is most appropriate for the research subject because the data on which it is conducted contain a temporal and spatial component. The spatial dimension is represented by a sample of companies from the section J information and communication, i.e., ICT companies, while the temporal dimension of the research focuses on annual observations from the time horizon of 2008 to 2016. The time frame is restricted to 2016, given that significant tax changes began in 2017 and persisted well after that year. The aforementioned could affect the results because the time after 2017 is so brief and subject to so many changes. This makes 2016 the final year covered by this research. In addition, the choice of the method is also determined by its advantages over static cross-sectional analysis or time series analysis, which are reflected in the following: (1) the combination of cross-sectional data and time series allows for a larger number of observations, and therefore the results are more informative and allow for greater variability (Baltagi, 2005); (2) a larger number of observations allows for a larger number of degrees of freedom, which helps to reduce collinearity and increases the efficiency of the estimator, i. e. increasing the strength of the tests (Škrinjarić, 2011); (3) the problem of multicollinearity is reduced (Škrabić Perić, 2012); (4) heterogeneity between data is allowed, which reduces the problem of bias in the results, i.e. estimators obtained by panel analysis are assumed to be unbiased (Baltagi, 2005); (5) it is possible to avoid the possible problem of endogeneity; (6) allows solving and analysing more complex problems (Baltagi, 2005; Brooks, 2008).

According to the criterion of data availability, we use unbalanced panel data, common for typical empirical economic research (Baltagi, 2005), for three basic reasons. First, the number of companies in the industry fluctuates over time due to entry and exit. Second, such research typically excludes companies with negative gross profit or negative income tax expense because it is problematic to interpret a negative effective tax rate (Zimmerman, 1983; Liu and Cao, 2007). Third, excluding companies with a negative income tax rate and negative pre-tax business income and observing firms that survived in all of the above years would lead to a significant reduction in the sample size, which could consequently affect the impartiality of the results. The study uses a short panel characterized by many observation units (many companies) and several time periods (9 years, from 2008 to 2016) (Cameron and Trivedi, 2010).

It is realistic to assume that the effective tax burden from the previous period affects the effective tax burden of the current period. The above analysis requires the use of the dynamic panel method. Dynamic panel models include a dependent variable

that is lagged by one or more time periods depending on the characteristics of the dependent variable (Mamić, 2015). In studies on identifying factors affecting the effective tax burden of companies, some authors used dynamic panel models using the generalized method of moments (GMM) (Harris and Feeny, 2003; Moreno-Rojas et al., 2017; Bubanić and Šimović, 2021). This is also used in the present study. In addition, an autoregressive panel data model is used in which the lagged values of the dependent variable are included as independent variables (Greene, 2003). Arellano and Bond (1991) developed the difference method GMM dynamic panel estimator to solve problems with the autoregressive model. In the case of unbalanced panel data or when T (time horizon) is small, data loss occurs when the first difference step is transformed. For example, if there is no data for Y_{it}, the data for ΔY_{it} and ΔY_{it-1} will be lost in the first difference transformation (Bostanci et al., 2018). Due to these problems, Arellano and Bover (1995) improve the difference method GMM by developing an efficient estimator of instrumental variables using the method of orthogonal deviations. This method, instead of calculating the difference between the current period and the previous period, the average of the future values of the variables is used. In this way, the data loss caused by the difference GMM method is minimized, especially in the case of unbalanced panel data. This method, which balances the original and transformed systems and estimates them together as one system, is called the GMM system. The GMM system is based on the combination of the difference equation and the level equation and has been shown to have proportionally higher estimation performance than GMM (Bostanci et al., 2018). In the present study, Arellano-Bover/Blundell-Bond estimator was used as one of the methods of GMM system with *one-step system*. Its use is justified considering that an unbalanced sample is used and the time horizon is short. Fernández-Rodríguez and Martínez-Arias (2014) state that the GMM model controls for the presence of company-specific unobserved effects and the endogeneity of the explanatory variables. The same authors note that this method solves three relevant econometric problems: (1) the presence of unobserved company-specific effects, which are eliminated by introducing the lagged value of the regressor; (2) autocorrelation in the data with respect to the dependent variable of effective tax burden, which captures the dynamic nature of effective tax rates; and (3) likely endogeneity of the explanatory variables. Moreno-Rojas et al. (2017) find that the inclusion of a lagged variable of the effective tax burden allows for an adjustment between the long-run and the short-run assessment of the impact of the effective tax rate. The inclusion of a lagged dependent variable as an explanatory variable in the model avoids the problem of overestimation of parameters caused by the use of static models.

The relevant set of variables whose influence on the companies' effective tax burden is studied was selected based on a literature review of the most commonly used determinants and the availability of data for their calculation. The linear impact of the selected variables on the effective tax burden is examined using dynamic panel

regression and the Arellano-Bover/Blundell-Bond estimator. The test is performed according to the following expression (1) that is (2):

$$\begin{aligned} &\textit{effective tax rate}_{it} = \beta_1 * \textit{effective tax rate}_{it-1} + \beta_2 * \textit{size of companie}_{it} + \\ &+ \beta_3 * \textit{leverage}_{it} + \beta_4 * \textit{capital intensity}_{it} + \beta_5 * \textit{inventory intensity}_{it} + \\ &+ \beta_6 * \textit{profitability}_{it} + \beta_7 * \textit{labour intensity}_{it} + \beta_8 * \textit{real GDP growth}_{t} + \varepsilon_{it} \end{aligned} \quad (1)$$

abbreviated

$$\begin{aligned} &ETR_{it} = \beta_1 * ETR_{it-1} + \beta_2 * SIZE_{it} + \beta_3 * LEV_{it} + \beta_4 * CAPTINT_{it} + \\ &+ \beta_5 * INVINT_{it} + \beta_6 * PROF_{it} + \beta_7 * LABINT_{it} + \beta_8 * RGDP_{t} + \varepsilon_{it} \end{aligned} \quad (2)$$

where the symbol *i* denotes the company, the symbol *t* the year, and ε_{it} symbolizes the random error.

The same model is applied to a total of nine sub-samples in terms of company size categories and to sub-samples in terms of divisions. This makes it possible to compare the results and draw more appropriate conclusions. The sub-samples in terms of size consist of three categories: small, medium and large companies. The categorization was done according to the concept used by the Finance Agency, which is based on the provisions of the Accounting Act (NN 109/2007) (Hrvatski sabor, 2007). At the end of 2015, the new Accounting Act (NN 78/2015) (Hrvatski sabor, 2015) was adopted, which came to force in 2016 and categorize companies into micro, small, medium and large. In order to ensure the comparability of results depending on the size category of the company, the study re-categorized the companies from 2016 into small, medium and large companies according to the criteria of the Accounting Act (NN 109/2007). In addition, the companies were divided into six sub-samples with regard to the divisions of section J Information and Communication (NACE Rev. 2), namely: J58 Publishing activities, J59 Motion picture, video and television programme production, sound recording and music publishing activities, J60 Programming and broadcasting activities, J61 Telecommunications, J62 Computer programming, consultancy and related activities, and J63 Information service activities (Eurostat, 2008).

4. Empirical data and analysis

This chapter provides a description of the used data, variables, and indicators of these variables based on the previous literature review besides the sampling process described along with the final research sample.

4.1. Data and variables

The data used for this research are data on the companies that make up the defined sample and macroeconomic data, i.e., the variable. The data are secondary in nature and come from the Finance Agency and the National Statistics Office databases. Variables and indicators of variables that have a theoretical basis and for whose calculation data are available are used. The indicators of variables at the company level are defined for each company and each observed year. The macroeconomic variable is defined on an annual basis. Table 7 provides an overview of the research variables, the ways in which they are measured, and the existing research in which the aforementioned variables and their indicators have been used. The primary variable of interest, the dependent variable, is the effective tax burden. This variable is measured by the effective tax rate (ETR). Determinants whose influence on the effective tax burden is to be demonstrated are independent variables. The independent variables used in the study are company size (SIZE), debt (LEV), capital intensity (CAPTINT), inventory intensity (INVINT), profitability (PROF), labour intensity (LABINT) and the macroeconomic variable that measures the influence of the business cycle, the real GDP growth rate (RGDP). Fernández-Rodríguez and Martínez-Arias (2012) used the GDP determinant in their study, but it was measured in nominal terms.

Table 7: Variables and their indicator

Variable (abbreviation)	Calculation of variable indicators		Author/-s (year)
	Numerator	Denominator	
Dependent variable			
Effective tax burden (ETR)*	Corporate income tax	Profit before tax – (Deferred tax liability / Nominal tax rate)	Stickney and McGee (1982); Omer et al. (1993) Derashid and Zhang (2003);Chiou et al. (2014)
Independent variables			
Company size (SIZE)**	Natural logarithm of total income		Stickney and McGee (1982); Kim and Limpaphayom (1998); Buijink et al. (1999);Rego (2003)
Debt (LEV)**	Financial expenses	Total income	Harris and Feeny (2003); Feeny et al. (2002)
Capital intensity (CAPTINT)**	Amortization	Total income	
Inventory intensity (INVINT)**	Inventory	Total assets	Gupta and Newberry (1997); Richardson and Lanis (2007); Fernández-Rodríguez and Martínez-Arias (2012)
Profitability (PROF)**	Profit after tax (net profit)	Total assets	Janssen (2005); Liu and Cao (2007); Costa et al. (2012); Vintilă et al. (2017); Vintilă et al. (2018)
Labor intensity (LABINT)**	Employee expenses	Total income	Lazăr (2014); Lazăr (2015)
Business cycle (RGDP)***	Real GDP growth rate		Fernández-Rodríguez and Martínez-Arias (2012)

Note: * The data source for the calculation of the indicators is the database of the Finance Agency and the corporate income tax rate in the observed period according to the Corporate Income Tax Act, i.e. the company's financial statements, in particular the balance sheet and the income statement, and the proportional nominal corporate income tax rate of 20%.

** The data source for the calculation of the indicators is the database of the Finance Agency, i.e. the annual financial statements of the companies, in particular the balance sheet and the income statement.

*** The source of data on annual growth rates of real gross domestic product are the databases of the Central Statistical Office.

Source: Authors' compilation

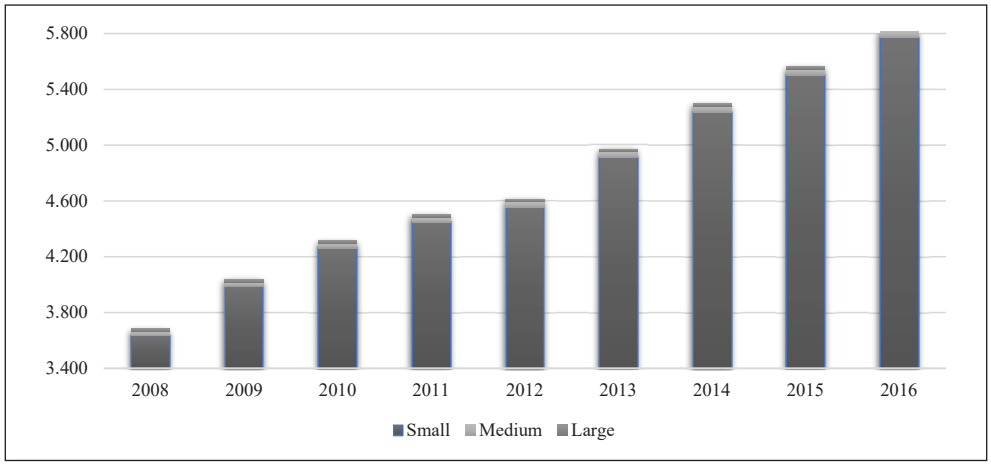
4.2. Sampling procedure and research sample

The statistical research set consists of companies, i.e., data on companies that form annual observations for companies registered in the Republic of Croatia in the section J information and Communication (NACE Rev. 2), in the period from 2008 to 2016, and registered in the database of the Financial Agency (FINA). Figure 1 shows the number and distribution of companies in the section J Information and Communication based on the size criteria of the Accounting Law (NN 109/2007) for the period from 2008 to 2016. The restriction to the period after 2007 is, on the one hand, the result of a break in the time series of the data caused by the revision of the methodology for the statistical application of the National Classification of Economic Activities, which took place in 2007 and was applied from 1. January 2008, and, on the other hand, for the period until 2017, when there was a change in the legal regulations, i.e., a tax reform in which the statutory profit tax rate was reduced from 20 to 18, i.e., 12 percent[3]. (Hrvatski sabor, 2016). And even after that year, considerable and frequent modifications to this tax form continued. This significant change in the profit taxation system could distort the research results and lead to wrong conclusions. Indeed, Guenther (1994) shows that companies usually respond to changes in the law one year after the tax law takes effect. Also, Fernández-Rodríguez et al. (2019) do not take into account the period between the two tax reforms in their study. Due to the relatively short period after the reform and frequent tax changes, which can make the results uncertain, the last year considered is 2016. Since this is a 9-year period, the study in question can be considered longitudinal.

Figure 1 and Figure 2 show the number of companies in terms of size classes of companies from section J and in terms of divisions. It can be seen that the largest number consists of small companies, which have been previously suppressed in similar studies, and of companies from division J62.

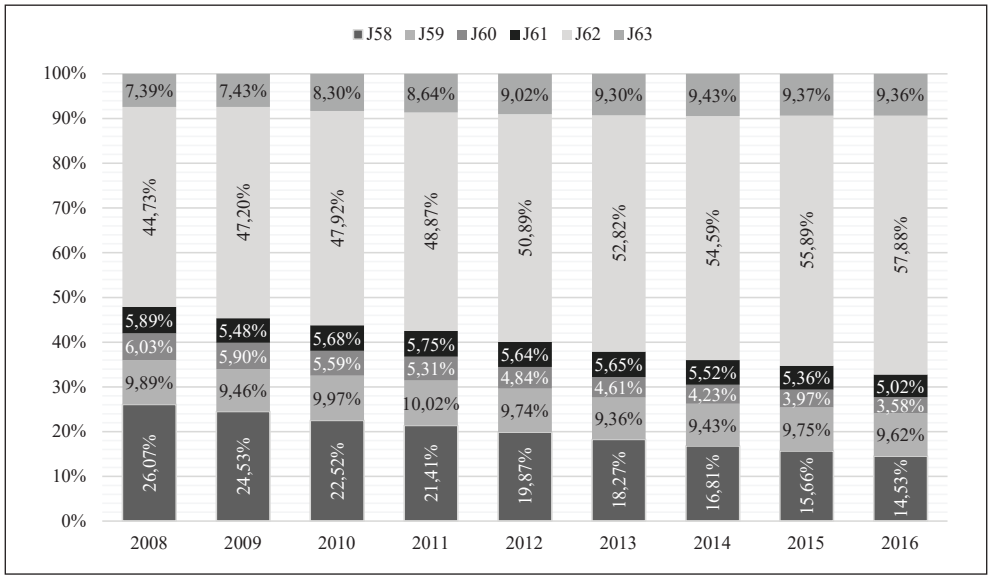
[3] For more information, see the Law on Amendments to the Law on Profit Tax (NN 115/2016). (Hrvatski sabor, 2016)

Figure 1: Number and distribution of companies in the section J Information and Communication based on the size criteria of the Accounting Act (NN 109/2007) for the period 2008 to 2016



Source: Authors' compilation

Figure 2: The structure of the number of companies in the section J Information and communication depending on the divisions of NACE Rev. 2 for the period from 2008 to 2016



Source: Authors' compilation

An unbalanced sample from the statistical set described earlier is used to conduct the study. Table 8 shows the steps of the sample design process. This shows that from the total number of companies in section J information and communication in the observed period from 2008 to 2016 (company-year: 42,797), the observations of companies whose denominator of the effective tax rate (ETR) was less than zero in a given year were excluded. Thus, the entire company is not excluded from the sample, but only the observation in a particular year in which the ETR was strictly negative. In the third step, the winsorization method is applied in the cases where the ETR value is greater than 100, then its value is set to 100. According to the researcher, this method is useful because if the ETR value is greater than 100%, it means that the income tax liability was higher than the tax base, which may be related to tax liabilities from past periods. Also, by using winzorization, less data is lost in the research, which should lead to more realistic results. In the fourth step, if both the numerator and denominator are equal to zero, the observation is not excluded from the study, but is set equal to zero. In the last step, observations of indicators are excluded if they are incomplete or invalid[4]. Based on the described procedure, the final study sample was formed.

Table 8: The process of creating a sample for conducting empirical research

Step	Description of the steps of the sampled formation process
1	Number of companies from the section J information and communication in the period 2008 - 2016 - companies: 42,797.
2	Exclusion of a single observation for companies for which the numerator and denominator of the ETR (dependent variable) were less than zero in a given year.
3	Using the winsorization method for ETRs larger than 100% and setting them to 100%.
4	If both the numerator and denominator of the ETR are zero, the ETR is zero, as are the indicators of the independent variables.
5	Exclusion of observations in a given year for a given indicator of a variable (dependent and independent variable) that is incomplete or invalid.

Source: Authors' compilation

Appendix

Table 12 in the Appendix shows, among others, the total number of year-observations included in the final sample for each variable used. For example, the number of year-

[4] For example, the profitability variable measured by the indicator of net profitability of assets (ratio between net profit/loss and total assets), the value of total assets may be zero, resulting in an invalid value of the indicator. Such observation was eliminated in a single year, but not the whole company. However, the bigger problem is that both the numerator and denominator of the ETR can be negative, which from a mathematical point of view gives a positive result (-/- = +). Such a value is incomplete, because relating a negative tax expense to a gross loss does not imply a tax liability and tax burden. Therefore, such values are excluded from the analysis.

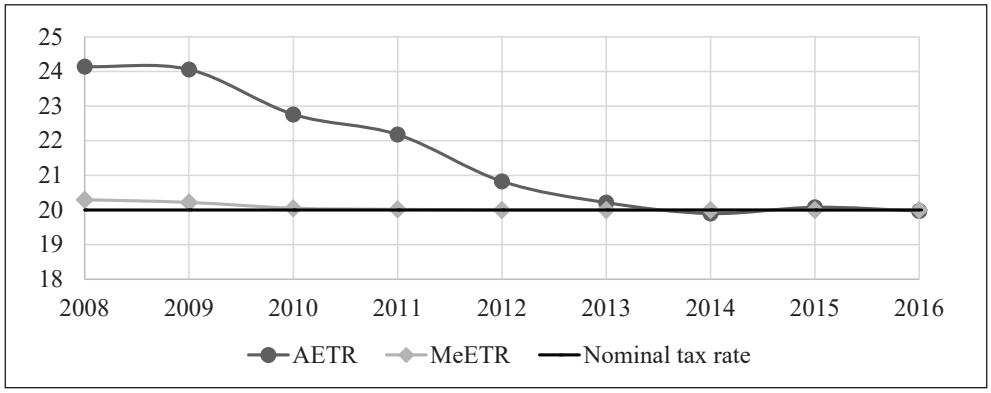
observations for the ETR variable is 27,735 and for the INVINT variable is 42,797, which is characteristic of an unbalanced sample.

5. Results and discussion

Appendix

Table 12 in the Appendix shows the results of descriptive statistics for all variables used in the research. Looking at the variable of primary interest, i.e., the variable of the effective tax burden, it can be seen from Figure 3 that the average ETR[5] (AETR, average effective tax rate) tends to decrease and converge to the statutory income tax rate over the observed period. The median effective tax rate (MeETR)[6] is close to the statutory corporate income tax rate over the observed period, also with a decreasing trend, which means that half of the companies effectively pay taxes at a rate equal to or below MeETR and the other half at a rate equal to or above MeETR.

Figure 3: Average and median effective tax rate



Source: Authors' compilation

As mentioned in the methodology, the dynamic panel regression method used to create an estimation model identifies the linear determinants of the effective tax burden for ICT companies in the Republic of Croatia. For this purpose, a total of 10 models were estimated: 1 model for the entire sample (section J), 6 models for sub-samples related to divisions (J58, J59, J60, J61, J62 and J63), and 3 sub-samples related to company size classes (small, medium, large). Variables that are

[5] Average ETR of sample companies by year.

[6] Median ETR of companies from the sample by year.

statistically significant at least at the 10% level are considered as determinants of the effective tax burden.

Table 4 shows the results of the assessment of the determinants of the effective tax burden for the entire sample of section J information and communication. From this, it can be seen that all the selected variables are identified as determinants of the effective tax burden at a 1% level of significance, except for the determinant of real GDP, which is statistically significant at a 5% level. Thus, the main objective of the research was achieved, i.e., the determinants of the effective tax burden of ICT companies in the Republic of Croatia are the effective tax burden from the previous period (ETR L1, lagged dependent variable), company size, debt, capital intensity and inventory intensity, profitability, labour intensity, and real GDP growth rate. The effective tax burden from the previous period is a determinant of the effective tax burden of the current period, implying that ETR L1 positively affects the effective tax burden of the current period. Other determinants also have a positive effect on the effective tax burden, with the exception of the determinant of profitability, the growth of which influences the reduction of the effective tax burden.

Table 5 and Table 6 show the results of the assessment of the determinants of the effective tax burden for the subsamples in terms of divisions and company size categories. Thus, the secondary research objectives were achieved, i.e., the determinants of the effective tax burden for the defined subsamples were identified. The variable of the effective tax burden from the previous period was identified as a determinant of ETR in all subsamples, except for division J63, with a statistically significant positive impact at the 1% and 5% levels, respectively. The variables of company size and profitability consistently show a statistically significant positive or negative impact on ETR, except for the subsample of large companies. Other determinants differ across the subsamples.

The results for the sub-sample of small companies and the sub-sample division J62 are consistent with the results for the entire sample of section J, both in terms of statistical significance and in the direction of influence on the variable of primary interest. These results are not surprising given that the company structure is dominated by small companies, as well as companies from division J62 (see Figure 1 and Figure 2).

The statistically significant positive impact of the lagged variable on the current-period effective tax rate in all models except sub-sample J63 is consistent with the research findings of Harris and Feeny (2003) and Moreno-Rojas et al. (2017), which indicate the presence of temporal adjustments between companies' long-term and short-term effective tax rates. Company size, measured by the logarithm of total income, is rarely considered in this type of research, but a statistically significant positive impact is consistent with the results of Rego`s (2003) research in all models, except the sub-sample of the large company category, thus confirming the so-called

political cost hypothesis (Omer et al., 1993)[7]. The variable of profitability of net assets was identified as a determinant in all models, except for the category of large companies, with a statistically significant negative impact on ETR. This is contrary to the research findings of Gupta and Newberry (1997), Janssen (2005) and Liu and Cao (2007), but consistent with the research findings of Vintilă et al. (2018), who found that higher profitability provides more financial resources that can be used to invest in activities to reduce the effective tax burden, i.e. companies direct their efforts and resources toward financial and tax planning. When statistically significant, the debt variable has a positive impact on ETR. Indeed, interest acts as a tax shield (Orsag, 2015; Dvorski et al., 2018), as it reduces taxable profit and thus tax expense. In the present case, however, interest appears to have a stronger effect on reducing the denominator of the effective tax indicator than on reducing the numerator, ultimately leading to higher effective tax rates and thus a positive impact of debt on ETR. Capital intensity is a determinant of the effective tax burden for the entire sample of section J information and communications companies, for divisions J62 and J63 and for small companies, with a positive impact. Harris and Feeny (2003) in their study used a dynamic panel regression and find a negative effect of this variable on ETR, however, the mentioned authors conducted the study on a sample of large and international companies. Based on the results of this study, the negative impact of capital intensity on the ETR of medium and large companies is visible, even though the result is not statistically significant. Inventory intensity was characterized as a determinant of ETR for the whole section J and sub-samples J58 and J62, as well as for small and medium companies, with a positive effect, consistent with the results of Fernández-Rodríguez and Martínez-Arias (2012), such that companies with smaller inventories are subject to a lower effective tax burden. Profitability is statistically significant with a negative impact in section J and in all sub-samples, except for large companies. This is consistent with part of the research findings of Vintilă et al. (2017), which they explain by saying that the overall profitability of a company is reflected in the level of taxation, i.e., they find that a company that is profitable from a financial perspective can lower the effective tax rate as part of that profitability. In other words, more profitable companies can expend more accounting effort to reduce the effective tax burden. The determinant of labour intensity in section J and divisions J59, J60, J62, and J63, as well as in small companies, has a positive statistically significant effect on ETR, which is in contrast to the results of Lazăr`s (2015) study. The impact of the business cycle, measured by the growth rate of real GDP, was confirmed to have a statistically significant impact throughout section J, divisions J60 and J62, and small companies, with a positive effect. Thus, in times of recession, the effective tax burden of companies decreases and vice versa.

[7] The political cost hypothesis is confirmed by the statistically significant positive effect of the size variable on the effective tax burden of companies, suggesting that large companies have a higher effective tax burden than small companies. For more information, see Zimmerman (1983) and Omer et al. (1993).

Table 9: Results of the assessment of the determinants of the effective tax burden for the entire sample of section J information and comunication

System dynamic panel-data estimation			Number of obs		=	19,153
Group variable:	id		Number of groups		=	5,099
Time variable:	YEAR					
			Obs per group:			
			min		=	1
			avg		=	3.756227
			max		=	8
Number of instruments =	42		Wald chi2(8)		=	2,019.33
			Prob > chi2		=	0
One-step results						
ETR	Coef.		Std. Err.	z	P>z	[95% Conf. Interval]
ETR L1.	0.3158692	***	0.0156315	20.21	0.000	0.285232 0.3465065
SIZE	0.8808658	***	0.1444494	6.1	0.000	0.5977502 1.163981
LEV	0.1101455	***	0.0407168	2.71	0.007	0.0303421 0.1899489
CAPTINT	0.1632791	***	0.028959	5.64	0.000	0.1065204 0.2200377
INVINT	0.07513	***	0.023112	3.25	0.001	0.0298313 0.1204288
PROF	-0.041246	***	0.0040973	-10.07	0.000	-0.0492769 -0.033216
LABINT	0.1346359	***	0.0165303	8.14	0.000	0.102237 0.1670348
RGDP	0.1003855	**	0.0489268	2.05	0.040	0.0044907 0.1962803
Instruments for differenced equation						
GMM-type:	L(2/.).ETR					
Standard:	D.SIZE	D.LEV	D.CAPTINT	D.INVINT	D.PROF	D.LABINT D.RBDP
Instruments for level equation						
GMM-type:	LD.ETR					

Note: * p<.1; ** p<.05; *** p<.01 indicate statistical significance levels

Source: Authors' compilation

Table 10: The results of the assessment of the determinants of the effective tax burden for sub-samples with regard to the divisions of section J

Variable	ETR J58	ETR J59	ETR J60	ETR J61	ETR J62	ETR J63
ETR L1.	0.2712551***	0.2580999***	0.2557507***	0.1413119**	0.3387003***	0.0139366
SIZE	1.758333***	1.494912***	1.213157**	2.381632***	0.7101119***	2.937769***
LEV	0.0351913	0.3002226*	0.2851077	0.2616457	0.133139**	0.1430638
CAPTINT	0.1136282	0.0560081	0.381172	0.0742184	0.2001246***	0.258438***
INVINT	0.0982241**	0.0157239	-0.2900275	0.131776	0.1173219***	-0.0771362
PROF	-0.0617497***	-0.4030498***	-0.3690136***	-0.3350358***	-0.0281785***	-0.1921136***
LABINT	0.0658933	0.1248946*	0.238343*	-0.0206324	0.1184744***	0.2052197***
RGDP	-0.0529816	-0.2007853	0.4712753*	0.1754894	0.1871825***	-0.2125692

Note: * p<.1; ** p<.05; *** p<.01 indicate statistical significance levels

Source: Authors' compilation

Table 11: The results of the assessment of the determinants of the effective tax burden for sub-samples with regard to the size of the company

Variable	ETR Small	ETR Medium	ETR Large
ETR L1.	0.3170775***	0.2181564***	0.2942729**
SIZE	0.863861***	1.219998***	0.0202994
LEV	0.1051857**	1.671668***	1.51205
CAPTINT	0.1624205***	-0.0036912	-0.1892655
INVINT	0.0742562***	0.3399432**	1.467683
PROF	-0.041078***	-0.6916378***	0.2069198
LABINT	0.1348565***	-0.0948688	0.5097166
RGDP	0.1102228**	-0.2006293	-0.6385828

Note: * p<.1; ** p<.05; *** p<.01 indicate statistical significance levels

Source: Authors' compilation

As the preceding review of the literature shows, research on the determinants of the effective tax burden in the world is not new. However, they are mainly focused on large listed companies. In contrast, the present study includes companies of all sizes in the investigation, which contributes to a significant reduction of this gap. In this context, the present study points out the existence of differences among determinants in terms of company size categories, which are not considered at all in previous research. With the exception of a few studies (Omer et al. (1993), Moreno-Rojas et al. (2017), and Bubanić and Šimović (2021)), the previous studies do not focus on complete activities. However, the presence of significant heterogeneity across companies due to different activities, whether observed or not, can significantly affect the results. By including companies from one industry, the sample becomes more homogeneous and the results focusing on a specific industry are more reliable. In addition, to control for unobserved heterogeneity, we used a dynamic panel model with the Arellano-Bover/Blundell-Bond estimator, which is not the case in most previous studies.

The research findings suggest that there are systematic explanations for the differences in the effective tax burden of companies and that they can be associated with the type of the company's activities, asset structure, debt, and other identified determinants. The above suggests that company management should manage these determinants with the goal of reducing the effective tax burden. If it is in the interest of tax policymakers to encourage entrepreneurs to engage in the observed activity, it is suggested that the identified determinants should be taken into account and policies designed to address them and reduce the tax burden.

6. Conclusion

The main research objective was achieved through the conducted research, therefore, the identified determinants of the effective tax burden of ICT companies in Croatia are effective tax burden from the previous period, company size, capital and labour intensity, profitability, inventory intensity, debt, and the business cycle. Accordingly, the first research hypothesis, H1, is supported. The secondary research objectives were also achieved. The first research objective shows the existence of differences between the determinants of ETR depending on the size class of the company. While the determinants of the effective tax burden for small companies are the same as those previously highlighted for all ICT companies, capital and labour intensity, and the business cycle were not identified as determinants in the medium-sized category. In the large company category, only the effective tax burden of the previous period is a determinant of ETR. The second research hypothesis is confirmed by the aforementioned. The second research objective indicates the existence of differences between the determinants of effective tax burden depending on the division of section J. While in division J62 all variables examined are

statistically significant, the statistically significant determinants differ in the other divisions, except for the determinants of company size and profitability, which are statistically significant in all divisions. This proves the third research hypothesis. Therefore, depending on the size and division in which the company operates, management should control the variables that have a statistically significant impact on the effective tax burden so that it can be reduced.

Without diminishing the scientific contribution of the study, certain limitations must nevertheless be taken into account. First, the limitation relates to the time horizon in which the last year studied was 2016, and therefore the results cannot be generalized to future periods. In addition, the results cannot be generalized to other activities. The results of the study for section J are consistent with the results for division J62 and for small companies, which is due to the fact that companies from the aforementioned categories of the sub-sample make up the largest share of all companies in section J. The peculiarity of the studied activity section J is that it contains a small number of large companies, so the estimates for the mentioned category are less reliable. For future scientific research, it is suggested to extend the research horizon to the period after 2017 and compare the results with this one in order to identify the differences between the determinants of the effective tax burden before and after 2017, when the nominal corporate income tax rate has decreased. Since the nominal tax rate is lower, the effective tax burden is expected to decrease. However, it is difficult to forecast changes in ETR determinants. It is also desirable to extend the study to other activity sections in order to compare the results with the existing ones and analyse the possible differences between the determinants depending on the sector of the economy.

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Appendix

Table 12: Descriptive statistics of the used variables

Year		ETR	SIZE	LEV	CAPTINT	INVINT	PROF	LABINT	RGDP
2008	N	2,559	3,576	3,682	3,663	3,682	3,682	3,662	3,682
	Mean	24.14	12.37	8.44	1,772.84	7.75	0.84	1,945.10	1.90
	Max	100.00	22.63	100.00	2,048,300.00	100.00	628.88	1,849,740	1.90
	Min	0.00	0.00	0.00	0.00	0.00	-1,263.51	0.00	1.90
	Median	20.29	12.93	0.00	2.34	0.00	2.39	15.19	1.90
	SD	19.23	3.33	19.71	43,400.31	16.91	54.21	45,846.90	0.00
2009	N	2,624	3,926	4,036	4,009	4,036	4,036	4,019	4,036
	Mean	24.06	12.21	7.72	275.75	7.68	-2.71	1,591.94	-7.30
	Max	100.00	22.42	100.00	268,461.50	100.00	1,274.96	1,722,275	-7.30
	Min	0.00	0.00	0.00	0.00	0.00	-3,960.00	0.00	-7.30
	Median	20.22	12.78	0.00	2.32	0.00	1.47	16.41	-7.30
	SD	19.99	3.35	18.89	5,461.85	17.02	104.65	40,771.13	0.00
2010	N	2,736	4,139	4,311	4,282	4,311	4,311	4,286	4,311
	Mean	22.76	12.08	54.54	731.95	8.27	-3,109.84	3,066.47	-1.30
	Max	100.00	22.84	181,600	1,066,750.00	98.50	4,257.04	4,588,980	-1.30
	Min	0.00	0.00	0.00	0.00	0.00	-9,406,300	0.00	-1.30
	Median	20.05	12.62	0.00	1.96	0.00	1.26	15.69	-1.30
	SD	19.52	3.31	2,766.26	18,822.63	17.98	147,734.60	82,809.54	0.00

Source: author's calculations

Table 13: Descriptive statistics of the used variables (continued)

Year		ETR	SIZE	LEV	CAPTINT	INVINT	PROF	LABINT	RGDP
2011	N	2,883	4,316	4,502	4,460	4,502	4,501	4,476	4,502
	Mean	22.18	12.02	154,620.90	655.46	8.22	-201,119.10	3,608.62	-0.10
	Max	100.00	22.78	696,000,000	637,660.00	100.00	5,742,000	4,725,500	-0.10
	Min	0.00	0.00	0.00	0.00	0.00	-892,000,000	0.00	-0.10
	Median	20.02	12.58	0.00	1.80	0.00	1.41	15.88	-0.10
	SD	19.57	3.34	10,400,000	14,069.64	18.34	13,300,000	98,316.85	0.00
2012	N	2,993	4,408	4,610	4,572	4,610	4,609	4,588	4,610
	Mean	20.83	12.06	6,576.51	715.01	8.35	-3,613.68	3,718.24	-2.30
	Max	100.00	22.70	30,000,000	1,259,000.00	99.94	8,895.68	2,732,600	-2.30
	Min	0.00	0.00	0.00	0.00	0.00	-7967800	0.00	-2.30
	Median	20.00	12.56	0.00	1.60	0.00	1.67	16.24	-2.30
	SD	19.00	3.21	441,852.20	20,588.73	18.80	142,141.70	80,709.75	0.00
2013	N	3,351	4,762	4,970	4,939	4,970	4,968	4,948	4,970
	Mean	20.21	12.00	6,072.56	1,243.53	7.76	-7,822.91	4,667.39	-0.40
	Max	100.00	22.61	30,000,000	1,338,700.00	99.98	213,614.30	7,115,800	-0.40
	Min	0.00	0.00	0.00	0.00	0.00	-13,400,000.00	0.00	-0.40
	Median	20.00	12.50	0.00	1.03	0.00	2.48	16.13	-0.40
	SD	18.16	3.24	425,543.40	28,771.16	18.36	268,512.50	132,358	0.00

Source: author's calculations

Table 14: Descriptive statistics of the used variables (continued)

Year		ETR	SIZE	LEV	CAPTINT	INVINT	PROF	LABINT	RGDP
2014	N	3,569	5,071	5,293	5,263	5,294	5,293	5,269	5,294
	Mean	19.90	11.99	406.38	2,553.35	7.52	-29,168.05	2,822.38	-0.30
	Max	100.00	22.55	2,011,300	8,588,700.00	100.00	218,300	4,222,300	-0.30
	Min	0.00	0.00	0.00	0.00	0.00	-118,000,000	0.00	-0.30
	Median	20.00	12.49	0.00	0.91	0.00	2.77	16.72	-0.30
	SD	16.85	3.26	27,650.52	121,035.30	18.25	1,645,761	80,091.43	0.00
2015	N	3,876	5,330	5,560	5,529	5,561	5,558	5,522	5,561
	Mean	20.08	12.02	115,343.10	1,150.28	7.25	-214,211.10	3,491.00	2.50
	Max	100.00	22.52	638,000,000	1,941,000.00	100.00	276,900	4,260,800	2.50
	Min	0.00	0.00	0.00	0.00	0.00	-1,030,000,000	0.00	2.50
	Median	20.00	12.56	0.00	0.82	0.00	3.53	16.98	2.50
	SD	16.40	3.27	8,559,102	31,656.72	17.99	13,800,000	79,769.86	0.00
2016	N	4,144	5,528	5,831	5,793	5,831	5,831	5,774	5,831
	Mean	19.97	12.20	5,720.48	973.92	6.71	-7,653.22	3,810.38	3.50
	Max	100.00	22.54	30,000,000	3,081,800.00	100.00	16,800,000	4,500,500	3.50
	Min	0.00	0.00	0.00	0.00	0.00	-21,300,000	0.00	3.50
	Median	20.00	12.64	0.00	0.82	0.00	4.04	17.45	3.50
	SD	15.37	3.12	394,275.30	42,126.71	17.37	423,502.50	110,224.20	0.00
Total	N	28,735	41,056	42,795	42,510	42,797	42,789	42,544	42,797
	Mean	21.33	12.10	33,501.90	1,141.09	7.67	-55,242.44	3,270.01	-0.20
	Max	100.00	22.84	696,000,000	8,588,700.00	100.00	16,800,000	7,115,800	3.50
	Min	0.00	0.00	0.00	0.00	0.00	-1,030,000,000	0.00	-7.30
	Median	20.01	12.62	0.00	1.35	0.00	2.32	16.35	-0.30
	SD	18.12	3.26	4,571,653	50,489.67	17.93	6,611,014	89,745.65	2.92

Source: author's calculations

Linearne odrednice efektivnog poreznog opterećenja ICT poduzeća Republike Hrvatske

Marijana Bubanić[1]

Sažetak

Stvarno porezno opterećenje poduzeća često se razlikuje od onog propisanog zakonom, ali razlike postoje i među samim poduzećima. Postavlja se pitanje postoje li sustavna objašnjenja za te razlike i mogu li se one povezati s vrstom djelatnosti, strukturom imovine, dugom i drugim odrednicama. Stoga je glavni cilj istraživanja utvrditi odrednice efektivnog poreznog opterećenja ICT poduzeća u Republici Hrvatskoj. Vremenski horizont uključuje poduzeća iz područja J Informacije i komunikacije (NKD 2007), u razdoblju od 2008. do 2016. Korištenjem nebalansiranog uzorka i dinamičke panel regresije s Arellano-Bover/ Blundell-Bond procjeniteljem, identificirane su odrednice efektivnog poreznog opterećenja, i to: efektivno porezno opterećenje iz prethodnog razdoblja, veličina poduzeća, dug, kapitalni i radni intenzitet, intenzitet zaliha, profitabilnost i poslovni ciklus. Međutim, odrednice se razlikuju s obzirom na veličinu poduzeća i odjeljak djelatnosti. U odnosu na prethodna istraživanja, predmetno je usmjereno na poduzeća svih veličina, a ne samo na velika poduzeća, te uključuje ne samo listana poduzeća, već sva poduzeća iz analizirane djelatnosti, što doprinosi homogenosti uzorka i pouzdanosti rezultata.

Ključne riječi: *efektivno porezno opterećenje, ICT djelatnost, dinamička panel regresija*

JEL klasifikacija: *H2*

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