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An overall effective tax rate for the Romanian companies listed on the regulated market of the Bucharest Stock Exchange

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Abstract:

Research Question: How could we better measure the total tax burden of Romanian listed companies, what was its evolution what factors may influence it.

Motivation: In many cases, the accounting literature limit the analyse of the tax burden to the corporate income tax. There are some effective tax rates (ETR) calculated on this basis; the major advantage of these ETRs is the comparability with the statutory tax rates which allows the identification of possible tax avoidance However, the tax burden of the companies include many other taxes and a complete figure of the fiscal efforts of these companies must consider all the taxes expensed and/or paid by the companies. There are studies and reports trying to address this problem, by including the labour taxes/contributions and other taxes.

Idea: This paper extends the literature on the tax burden, taking into account not only the taxes directly expensed by the companies, but also the labour taxes/contributions paid in the name of their employees; thus, I propose an overall effective tax rate (OETR), as a ratio of this total tax burden to sales/revenues.

Data: The data were collected from Romanian listed companies for 2001-2020 period; 1,377 observations are available.

Tools: The study is descriptive: the OETR is calculated by sub-period, according to the financial reporting standards applied; I also provide the separation of the total tax burden intro three components: corporate income tax, labour taxes, other taxes. The evolution of the OETR is analysed by taking into account the size of the companies, the structure of the assets, the leverage, the profitability and the auditor category.

Findings: On average, the most important component of the tax burden of Romanian listed companies is labour taxes/contributions. Despite a steady decrease in nominal tax rates, especially for labour contributions, the OETR has increased systematically over the period.

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The OETR is more important for small companies, for firms reporting more fixed assets, less leveraged, and audited by local auditors.

Contribution: This research contributes to the fiscal research by examining the evolution of the total tax burden of Romanian listed companies in relation with some financial and non-financial variables.

Keywords: overall effective tax rate, total tax burden, Romanian listed companies, labour taxes

JEL codes: H20, M41

1. Introduction

Statistical data published by Eurostat place Romania in the penultimate position in the EU (before Ireland), with regard to the weight of national tax revenues in GDP: taxes and social security contributions represent, in 2020, 27.2 % of GDP, compared to an EU average of 41.3%. This rather low rate of tax pressure at the macro-economic level is due to a multitude of factors, but it is not necessarily felt as such by Romanian taxpayers who often accuse that taxes are too high. In this paper, we try to calculate an overall effective tax rate (OETR) at the micro-economic level, for Romanian companies listed on the regulated market of the Bucharest Stock Exchange (BSE), by aggregating several taxes and contributions.

Effective tax rates (ETRs) are widely used in accounting and financial literature for various purposes. It is used to measure tax evasion (Dyreng *et al.* 2010; Delgado *et al.*, 2012; Laguir *et al.*, 2015; Lanis & Richardson, 2013; Thomsen & Watrin, 2018; Kovermann & Wendt, 2019; Abdelfattah & Aboud, 2020; Nguyen, 2021 and many others), tax aggressiveness (Chen *et al.*, 2010; Donohoe & Knechel, 2014), corporate tax burden (Zimmerman, 1983; Jafaar & Thornton, 2015), the efficiency of the tax authority in collecting taxes (Callihan, 1994), the fairness of the tax system, the gap between the tax systems of different countries (Mendoza *et al.*, 1994). In the vast majority of these studies, the calculation of the ETR is limited to the corporate income tax (Delgado *et al.*, 2012), either the total income tax charge, or the current income tax charge or the tax paid. The literature on the corporate income tax accounting recognition, the corresponding accounting choices, its determinants and its implications really took off after 2000 (Graham *et al.*, 2012). Similarly, there is a very rich literature on the estimated ETR for investment projects; these studies continue and enrich the work of Devereux & Griffith (1999), supplemented by Devereux & Griffith (2003).

Attempts to aggregate several taxes in determining an ETR are not new, both at the microeconomic and macroeconomic levels (Mendoza *et al.*, 1994). Djankov *et al.*

(2010) introduce into the calculation of the total tax burden the labour taxes/contributions, as well as other taxes expensed by companies. At the same time, taking into account several taxes can provide users with a less biased picture of the contribution of companies to public resources and, in the case of firms reporting little income tax (due to tax optimization, a reduced rate of tax, tax credits or even to financial difficulties), these other taxes can, in a way, show that they are not necessarily *free riders*, in the sense of public finances. Moreover, some Romanian firms often pay for advertisements in the press to show the amount of taxes paid during a certain period and it is not necessarily the tax on profits that they put forward.

In a seminal paper, Zimmerman (1983) analyses the relationship between the size of companies and their tax burden, using, to measure the latter, the relationship between, on the one hand, the tax burden on profits (after elimination of the change in deferred taxes) and, on the other hand, operating cash flows. By verifying the appropriation of this way of calculating the effective tax rate, Zimmerman (1983) proposes alternative measures: the ratio between the tax paid and the revenues or the ratio between the tax paid and the income before taxes.

For an emerging country, taxation (after corruption and political stability) is one of the decisive factors in the choice of investments (IMF/OECD, 2017). Thus, highlighting the evolution of an OETR of Romanian firms listed on the regulated market, possibly compared with the rate calculated for firms listed on the alternative market, can be used by investors in making decisions concerning business conducted in Romania, as well as to public authorities in the future structuring of the Romanian tax system.

The rest of the paper includes a literature review, the presentation of the methodology and the population analysed, the results, the conclusions and, at the end, the references.

2. Literature review

Measuring the tax burden of companies – especially listed companies – is part of the methodology or even the objective for many studies in the accounting and financial literature. Most of the time, the only tax taken into account to establish effective tax rates is the income tax. The impact of a multitude of variables on this tax rate is analysed (the size of the firms, the industry to which the firms belong, the compensation of the board etc.); at the same time, there are many studies that seek to measure the direction and magnitude of the influence of tax rates on other variables. A systematic decrease in the effective tax rate of American firms, by analysing the corporate income tax is observed by Drake *et al.* (2020), but also by Chen *et al.* (2020). The negative effects of the total tax burden on business activity

are highlighted by Djankov *et al.* (2010) who find that taxes impact corporate investments, but also entrepreneurship.

In a first attempt (to our knowledge) to measure the effective tax rate of Romanian listed firms, Lazăr (2013) finds that, for the period 2000-2010, the three ETRs he uses (all taking into account all taxes recognized directly as expenses by companies: income tax, employer labour contributions, other taxes) are experiencing a downward trend, justified by the reduction in legal tax rates. Lazăr & Istrate (2018), also taking into consideration the total tax burden of Romanian listed companies, for the period 2000-2011 (before the application of IFRS in the individual accounts of these firms), confirm that the overall tax burden of these companies has a negative effect on performance, despite the reductions in statutory tax rates that occurred during this period.

Labour taxes are often perceived as very burdensome for firms, including in Romania. Thus, it can be expected that tax evasion will also manifest in this area. Argilés-Bosch *et al.* (2021) find that e-commerce activities generate more tax evasion in labour taxes than traditional retail activities. A recent study (Istrate, 2021), whose methodology we partially replicate, tells us that Romanian firms listed on the BSE alternative market (AeRO) experience a systematic increase in the total tax burden during the period 2010-2019, despite the decreases in certain nominal tax rates/compulsory contributions.

3. Methodology and population

A model for calculating an overall tax rate pressure is provided by the World Bank papers which, with PwC, regularly publishes a report - Paying Taxes - comparing tax systems throughout the world. The methodology used in these reports has common elements with that of Djankov *et al.* (2010). In the latest available version of the report (PwC & WB, 2020), we find an overall tax rate (TTCR – Total Tax and Contribution Rate) which takes into account income tax and other taxes expensed directly by businesses, including employers' social security contributions. To calculate the TTCR, the total of these tax charges is divided by the commercial profit, that is to say the accounting profit to which they add all the tax charges identified. From this methodology, Lazăr (2013) constructs several effective tax rates for Romanian listed companies: if, at first, the total tax burden is divided by the pre-tax profit, Lazăr (2013) continues by using as denominator net profit to which he adds profit tax, employer payroll contributions and other expensed taxes – very close to PwC & WB's TTCR. Finally, Lazăr (2013) proposes a third ETR, by dividing the total tax burden by the revenues. Later, Lazăr & Istrate (2018) provide another ETR, dividing total tax burden by adjusted EBITDA. Another ETR that does not only use gross profit appears in Janssen (2005) which uses earnings before interest and taxes

(EBIT) as the denominator. Argilés-Bosch *et al.* (2021), in measuring tax evasion in payroll taxes, divide social charges by net income, but also by total payroll charges.

Before presenting our methodology, we must specify that the Romanian system of financial presentation for firms listed on the BSE requires the existence of two sets of accounts. First of all, there are the documents imposed by the tax authorities, in a format relatively common to all Romanian companies: a balance sheet, a profit and loss account, a long list of informative data and three tables including the values of fixed assets, as well as their depreciation and impairments. In this series of documents, the balance sheet is in a list format (since 2001, for certain companies – notably listed companies – and since 2003, for the others). The profit and loss account presents expenses by nature (like for French firms – Argilés-Bosch *et al.*, 2021), which allows us to easily identify the total of payroll expenses, the employer's social security contributions, the other taxes expensed, as well as current income tax and deferred tax expense/income. There are no actual notes, except the information provided in explanatory data. These financial statements are drawn up on the basis of current accounting under IFRS, but the format of the balance sheet and the profit and loss account does not necessarily correspond to the criteria for the evaluation, recognition and classification of assets, liabilities, income and expenses specific to IFRS. For Romanian listed companies, this set of accounts is available on the BSE website. Second, the application of IFRS requires a complete set of financial statements that meets specific requirements. These financial statements – in which listed firms make choices among the options offered by IFRS – are generally published as part of the annual report. Very often, the formats of the financial statements, the dimensions of their components, the classifications of assets, liabilities, income and expenses seriously deviate from the format imposed by the Romanian Ministry of Public Finances.

In terms of the evolution of taxes in Romania and to better understand the figures that we are going to report, it is useful to know that:

a) for the corporate income tax (CIT), there were two main rates valid during the analysed period: 25% between 2001 and 2004 and 16% from 2005;
b) for labour contributions, we find that in 2001 there was a minimum of 55% and a maximum of 65% (depending on working conditions), while in 2020 the levels are 37.25%, respectively 45.25%;
c) the other taxes expensed by Romanian companies are numerous and it is difficult to characterize them from the point of view of the evolution of the rates and of the tax base;

In this study, we will calculate an overall ETR (OETR) which tries to better characterize the total tax burden of Romanian companies, adding to the charges already used in the literature, the employees' contributions. This choice is justified for two reasons. First, from 2018 there has been a significant change in the way the Romanian tax authorities collect social contributions – most of these contributions

have been transferred to the employee's, instead of remaining in the employer's expenses. Thus, in principle, the employer no longer bears more than 2.25% of social charges (to which are added 4%, respectively 8%, in the event that the working conditions are particular or special), compared to a total employers' contribution rate which was between 39.25% and 49.95% in 2017. Not taking into consideration employees' contributions would make longitudinal comparisons impossible between periods ending with 2017 and after this year. Secondly, in Romania, the tax on salaries and social contributions employees have been withheld at source for decades, before and after the fall of communism. This means that employees receive the net salary, do not have to declare this income to the tax authorities and have nothing to pay or receive in the relationship with these authorities. Transfers of social security contributions to public budgets (employees and employers combined) are made by the employer and, as a general rule, the latter does not differentiate between its own contributions and those of its employees, as long as this directly affects its cash-flows.

For the denominator, we follow Lazăr (2013) - with his third ETR - and Istrate (2021) who divide the total tax expense by the revenues/sales reported by the entities in their profit and loss accounts. Figures corresponding to revenues/sales are also used in the literature on the relationship between accounting and taxation by Fekete *et al.* (2009), with the argument that this indicator is less influenced by tax rules. Our numerator includes tax burdens directly expensed and/or paid by entities and can be identified directly or reconstructed from data published by companies and available statistical data. We have taken up the formulas proposed, in this sense, by Istrate (2021). The components of this total tax burden are:

a) current CIT expense: deferred taxes – specific to IFRS – have been ignored to ensure comparability with pre-IFRS data which does not include deferred taxes (like Bradshaw *et al.*, 2019); in fact, given the IFRS period taken into account (9 years), it can be assumed that the effects of deferred taxation have offset each other over time – indeed, the average OETR for the IFRS period (2012-2020) is 16.05% with current tax only, while it reaches 15.74% with the total tax charge (current + deferred); we also ignore the corporate income taxes (especially deferred taxes) which are recognized directly in equity or which are attached to the net income from discontinued operations;
b) a charge which is presented separately in the profit and loss accounts of Romanian firms, which is called *Other taxes, duties and similar payments* and which includes in particular local taxes (on buildings, on vehicles, contribution to various special funds, non-deductible VAT, etc.);
c) employer's salary contributions – this information appears explicitly in the profit and loss account completed by companies on the forms intended for the tax authorities;
d) employees' social and tax contributions (labour contributions): this information is not presented separately in the financial statements, so we proceeded to

reconstitute it, based on gross salaries – information available –,nominal rates applied to calculate contributions employees, the tax rate on wages (with progressive rates, from 2011 to 2004, followed by a single rate for all income: 16%, from 2005 to 2017, and 10%, from 2018) and of the total tax burden on wages published by the Romanian National Institute of Statistics.

The outliers are winsorized to the 1 and 99 percentiles (following Lazăr, 2013).

The population analysed is represented by the Romanian companies listed on the regulated market of the Bucharest Stock Exchange (BSE). We have eliminated financial companies, due to their particularities in terms of regulation and operation, as well as in financial presentation. After eliminating incomplete observations, we obtained 1,377 observations, for the period 2001-2020 (table 1). Accounting standards are indicated, as well as the number and percentage of firms having presented losses. Henry & Sansing (2018) identify, in the Compustat database, an ever-increasing number of listed firms reporting losses and which are difficult to analyse on the basis of the CIT alone. Thus, we have chosen to highlight loss-making firms (negative pre-tax income) in order to underline the fact that the total tax burden does not depend on the CIT, in the very probable case where a negative accounting net income corresponds to an absence of such a tax: of the 310 observations with an accounting loss, there are 220 (70.97%) for which the current tax charge is zero.

Table 1. The population analysed: Romanian companies listed on the BSE regulated market

Year	Standards	Total observations, from which	Losses companies	
			N	%
2020	IFRS	67	21	31.34
2019	IFRS	68	15	22.06
2018	IFRS	69	17	24.64
2017	IFRS	71	24	33.80
2016	IFRS	72	18	25.00
2015	IFRS	72	19	26.39
2014	IFRS	73	21	28.77
2013	IFRS	73	23	31.51
2012	IFRS	71	23	32.39
Total IFRS period		**636**	**181**	**28.46**
2011	NCR	79	20	25.32
2010	NCR	78	22	28.21
2009	NCR	79	19	24.05
2008	NCR	78	15	19.23
2007	NCR	79	9	11.39
2006	NCR	70	9	12.86
Total RAS period		**463**	**94**	**20.30**
2005	IAS+D4	64	7	10.94
2004	IAS+D4	61	6	9.84
2003	IAS+D4	59	7	11.86

Year	Standards	Total observations, from which	Losses companies	
			N	%
2002	IAS+D4	50	7	14.00
2001	IAS+D4	44	8	18.18
Total IAS+D4 period		**278**	**35**	**12.59**
Total 2001-2020		***1,377***	***310***	***22.51***

Source: companies' and BSE websites

At the same time, following the literature (Dyreng *et al.*, 2010, among others) and taking into account only the CIT, we should have eliminated observations with negative income, but this would have reduced our population by more than 20%.

The data comes from financial statements published by Romanian listed firms and from official Romanian national statistics.

With regard to financial reporting standards applied, Romania has an interesting track record, due to its initial orientation towards European directives, followed by a fairly rapid reorientation towards international standards, to arrive at a system where the two were mixed. In the case of listed companies - presented in Table 1 - three periods (for individual accounting) could be identified:

1) 2001 – 2005 (IAS+D4): the Romanian authorities published a normative act (an order of the Minister of Public Finance - OMFP 94/2001) which tried to harmonize the fourth European directive (D4) with international standards (IAS, at the time); its standards have been applied in a fairly approximate way by a good number of Romanian firms (Istrate, 2006), in particular because of the major difficulties encountered in contact with the philosophy underlying the international standards which were felt to be very different in relation to the manner in which the accounts were kept up to that date;
2) 2006 – 2011 (RAS): preparation and accession to the European Union, which required compliance with European directives which led to Romanian accounting standards (RAS) in line with the directives;
3) 2012 – 2020 (IFRS): membership of the European Union led to the obligation to apply Regulation 1606/2002 which imposed IFRS in the consolidated financial statements of listed groups; following the recommendations of international financial organizations, the Romanian authorities have activated the option allowed by Regulation 1606/2002 to extend the obligation to apply IFRS in the individual financial statements of listed Romanian companies; this obligation was introduced starting with the 2012 financial statements (all Romanian listed firms that were subject to this obligation closed on 31 December).

The consideration of several major taxes is not new in financial research. Mendoza *et al.* (1994) use taxes on consumption, on capital income and on labour income to measure the overall tax burden at the macroeconomic level, using statistics from the national accounts.

The calculation of an overall tax rate that takes into account all the taxes presented in the profit and loss account can be interpreted as an indicator of tax pressure at the level of listed companies. In the literature, it is common to introduce various variables that can have an effect on this tax burden. Although, most often, the results of the studies retain variants of ETRs taking into account only the CIT; we also propose to identify the correlations between the proposed OETR and the firm size (measured by total assets), the weight of fixed assets in total assets, leverage (total liabilities/total assets), return on equity (ROE - net income/equity), auditors category, audit opinion.

4. Results

Our descriptive study proposes to present the results of calculations and tests on the OETR of listed Romanian firms without establishing econometric correlations between this measurement and other variables.

4.1 Evolution over time and composition of the total tax burden

The figures reported in Table 2 allow us to note a significant increase in the OETR in 2020, compared to 2001, after a downward trend until around 2006. The decreases in 2005 and 2006 could be explained by the decrease of the CIT rate from 25% to 16%, although the weight of this tax in the total tax burden has not been reduced – on the contrary, it has increased from 10.77% (in 2004) to 10.97% in 2005 and 18.45% in 2006. The main consequences of the 2008-2010 crisis seem to have been the increase in the share of labour tax burdens. In fact, the evolution of labour costs is strongly linked to the evolution of the minimum wage, as the minimum basis for calculating these contributions. This minimum wage increased from 140 lei in 2001 to 2,230 lei in 2020, i.e. a total increase of more than 1,700% which makes an annual average of around 16%. At the same time, the average net salary is increased by only 965% (an annual average of almost 13%), while the cumulative inflation rate is around 750%. This development was accompanied by a reduction in the rate of labour contributions of around 20 percentage points, insufficient to compensate for the increase in salaries and, consequently, in social security and employee tax contributions. In 2018, we can see the effect of the change in the system of social charges/salary tax: reduction of 2 points in contributions and 6 points in tax on wages. The three sub-periods are distinct from each other from the point of view of the average OETR, which is not necessarily explained by the accounting standards applied, but by economic and fiscal evolutions. We can, for example, note the systematic increase of the OETR, from 2007 – the year of Romania's accession to the European Union, which has probably contributed to a better efficiency of the Romanian tax system.

The tax/sales ratio also depends on the evolution of the numerator. The evolutions of the sales, during the period of calculation, show us a systematic average increase from 2001 to 2008, followed by an abrupt decrease in 2009 - justified by the global crisis - and, from 2010, a spectacular increase for two consecutive years. From 2013, the evolution of the average sales is, as a general trend, upward, but with an alternation of annual increases and decreases until 2016/2017. 2018 saw a significant increase, continued in 2019, but followed – due to the health crisis – by a significant drop in 2020.

Table 2. OETR and composition of the total tax burden, for the Romanian listed companies

Year	OETR – tax burden divided by sales (%)	Composition in % of the total tax burden		
		Labour taxes	Other taxes	Corporate income tax
2020	21.18	48.32	37.06	14.62
2019	17.56	39.00	43.62	17.38
2018	18.22	37.08	41.74	21.18
2017	17.72	42.82	39.15	18.03
2016	15.80	41.75	43.76	14.49
2015	14.17	37.96	43.37	18.67
2014	13.85	33.48	43.88	22.64
2013	13.70	39.17	33.53	27.30
2012	12.80	43.77	28.87	27.36
Total IFRS period	**16.05**	**39.96**	**39.80**	**20.24**
2011	12.28	41.61	28.68	29.71
2010	11.90	49.48	30.16	20.36
2009	12.06	53.65	29.11	17.24
2008	11.03	46.29	28.79	24.92
2007	11.25	47.45	27.93	24.62
2006	10.84	51.57	29.98	18.45
Total RAS period	**11.57**	**47.78**	**29.07**	**23.15**
2005	11.80	34.60	54.43	10.97
2004	12.05	32.94	56.29	10.77
2003	13.26	35.93	52.54	11.53
2002	13.92	36.38	56.10	7.52
2001	14.75	41.51	47.07	11.42
Total IAS+D4 period	**13.01**	**35.70**	**53.79**	**10.51**
Total 2001-2020	***13.93***	***41.47***	***38.99***	***19.54***

Source: financial statements of companies and national statistical data

By calculating the rate of change in average annual sales and the tax burden in annual average, we see that there are similarities between the two variables:

- for the average sales, the years with decreases compared to previous years are 2008, 2013, 2015, 2016 and 2020;
- for the total tax burden, there are seven years of decrease compared to the previous year (2005, 2008, 2011, 2012, 2015, 2016 and 2020);
- by comparing the two series, we observe that the trend of the average annual changes is, in general, the same as for the revenues/sales, in different proportions, except for four years: 2005, with an increase in the sales accompanied by a decrease in the tax burden; 2011 and 2012, with a very slight increase in sales and a small reduction in the tax burden; 2013, with the decrease in sales and the increase in the tax burden.

4.2 The size of listed companies and the overall effective tax rate

There are, in the literature, many studies that link the size of firms with the effective tax rate (taking into account, generally, only the corporate income tax).

Table 3. OETR according to the size of companies

Year	Annual median of total assets	Average OETR for companies with below median assets	Average OETR for companies with above median assets
Panel 1 –IFRS period : significant differences, according to T-test			
2020	206,694,858	23.34	19.08
2019	220,795,197	19.13	16.00
2018	201,422,858	20.85	15.67
2017	181,319,186	21.53	14.01
2016	172,450,844	19.32	12.27
2015	176,219,694	16.38	11.84
2014	169,717,869	14.86	12.88
2013	159,365,683	14.73	12.70
2012	159,382,755	13.77	11.85
Panel 1 – RAS period: significant differences, according to T-test			
2011	179,125,518	13.57	11.02
2010	167,206,849	13.02	10.78
2009	170,794,692	13.08	11.06
2008	146,484,214	11.84	10.23
2007	128,104,038	11.99	10.52
2006	88,367,382	11.26	10.42
Panel 1 –IAS+D4 period: non-significant difference, according to T-test			
2005	75,901,510	13.26	10.34

Year	Annual median of total assets	Average OETR for companies with below median assets	Average OETR for companies with above median assets
2004	59,347,832	12.21	11.90
2003	42,432,888	14.14	12.61
2002	39,461,612	14.11	12.23
2001	29,489,261	14.39	15.11

Source: financial statements of companies and national statistical data

Zimmerman (1983) finds that the income tax rate is positively associated with firm size, which confirms the hypothesis of using size as a proxy for the political costs borne by firms.
Our analysis period extends over 20 years; the Romanian economy experienced fairly sustained inflation, especially during the first 3 years (2001-2003), a period described by the Romanian National Bank as hyperinflationary and which, on the occasion of the transition to IFRS, forced the listed companies involved in restating assets and liabilities, in application of IAS 29 Financial Reporting in Hyperinflationary Economies. Even after 2003, the annual rates of inflation remain sufficiently large that the financial data published by companies are not fully comparable over time. In this context, we calculated the medians of total assets for each year available, in order to separate large firms (above the median) from small firms (below the median) for each of the years analysed. The average OETR is thus calculated for each year, for the two groups of firms (Table 3).

Excepting 2001, we find that firms whose assets exceed the median have lower OETRs than other firms – the tax burden seems less felt by large firms. This influence of firm size in the direction of the decrease in the OETR is similar with analyses that take into account, in particular, income taxes (Richardson & Lanis, 2007; Beverinotti *et al.*, 2021). Our results (Table 3) can also confirm the hypothesis that larger firms have more resources to apply tax optimization techniques. The evolution for Romanian firms listed on the BSE alternative market is similar (Istrate, 2021).

If we put all the years together, the T-test tells us that the differences are significant. The same result is valid for the last two sub-periods: on the other hand, for the IAS+D4 period, the differences in OETR between large and small companies are not significant.

4.3 Weight of fixed assets in total assets

Asset structure is often taken into account as an explanatory variable in accounting research. The weight of the various asset components can influence the level and the trend of certain indicators. As far as we are concerned, following the literature, we

have retained the weight of total fixed assets in total asset. With only one exception (2011), firms whose weight of fixed assets is lower than the median have lower OETRs than the others (Table 4). The trend of recent years is obvious: there are significant differences between the OETRs of the two categories of firms.

The limitation to the sole corporate income tax could lead to an inverse relationship between the effective tax rate and the proportion of fixed assets in total assets, in accordance with the results reported in the literature (Richardson & Lanis, 2007; Fernandez-Rodriguez *et al.*, 2021).

Table 4. OETR according to the structure of the assets

Year	Average winsorized OETR	
	For companies with a below median ratio fixed asset/total assets	**For companies with an above median ratio fixed asset/total assets**
2020	16.60	24.68
2019	15.54	19.16
2018	13.12	22.38
2017	13.94	21.00
2016	12.74	19.41
2015	11.32	17.03
2014	12.59	15.15
2013	12.05	15.22
2012	11.76	13.70
Total IFRS period	**13.18**	**18.66**
2011	12.33	12.23
2010	11.83	11.97
2009	10.83	13.13
2008	10.38	11.75
2007	10.65	11.92
2006	10.44	11.23
Total RAS period	**11.07**	**12.07**
2005	11.14	12.76
2004	11.69	12.58
2003	12.56	13.94
2002	12.66	15.53
2001	13.96	15.70
Total IAS+D4 period	**12.24**	**13.98**
Total average (2001-2020	***12.26***	***15.60***

Source: financial statements of companies and national statistical data

However, taking into account other taxes expensed seems to change the direction of the relationship OETR – fixed assets. Indeed, its other tax charges include local taxes on buildings, vehicles, land, etc., which contribute significantly to the total tax charge. The 2005 reduction in the rate of income tax (from 25% to 16%), followed and supplemented by numerous tax reductions in the case of reinvested profits, probably stimulated investment in tangible fixed assets, which increased other taxes more than the corresponding reductions in CIT, which could explain, to a certain extent, the evolution of the OETR, particularly during the IFRS period. Istrate (2021) finds the same meaning of the relationship total tax burden – weight of fixed assets for firms listed on the BSE alternative market.

4.4 Overall effective tax rate, according to the leverage

Leverage can have a negative influence on income tax, in particular due to deductible interest charges (Fernandez-Rodríguez *et al.*, 2021; Richardson & Lanis, 2007). Our results (Table 5) show that taking all the taxes into account does not change the relationship between the OETR and leverage and that the differences between firms whose leverage is above the median and the others are significant.

Table 5. OETR according to the leverage

Years	Average winsorized OETR	
	For companies with below median leverage	For companies with above median leverage
2020	22.47	19.38
2019	20.20	14.01
2018	21.78	13.31
2017	20.27	14.79
2016	18.47	12.81
2015	15.75	12.68
2014	16.76	11.02
2013	16.48	11.15
2012	15.06	10.72
Total IFRS period	**18.72**	**13.10**
2011	14.86	9.49
2010	14.18	9.62
2009	14.89	9.29
2008	13.77	8.30
2007	14.18	8.23
2006	13.33	9.08
Total RAS period	**14.25**	**9.00**
2005	14.27	9.87

Years	Average winsorized OETR	
	For companies with below median leverage	For companies with above median leverage
2004	14.49	10.24
2003	15.07	11.39
2002	17.32	11.25
2001	15.46	14.04
Total IAS+D4 period	**15.23**	**11.12**
Total average	***16.60***	***11.26***

Source: financial statements of companies and national statistical data

4.5 The profitability and the OETR

There are no significant differences between the firms whose profitability (measured by ROE) is above the median and the others, with regard to the OETR, and this for the whole period, as well as for the RAS and IAS+D4 periods (Table 6). On the other hand, the IFRS period sees higher OETRs for less profitable companies than for others. This result confirms that the taxation of profits is not the first component of the tax burden of listed firms and that other taxes and social charges weigh significantly on firms.

Table 6. OETR according to the ROE

Year	Average winsorized OETR	
	For companies with below median ROE	For companies with above median ROE
2020	23.29	18.87
2019	17.82	17.31
2018	18.92	17.58
2017	22.66	11.70
2016	19.46	11.71
2015	16.00	12.25
2014	15.45	12.13
2013	14.95	11.44
2012	13.82	11.40
Total IFRS period	**17.89**	**13.91**
2011	13.25	10.93
2010	11.84	12.01
2009	11.76	12.61
2008	10.33	11.94
2007	9.91	12.20
2006	12.29	9.87

Year	Average winsorized OETR	
	For companies with below median ROE	For companies with above median ROE
Total RAS period	**11.62**	**11.52**
2005	12.57	11.39
2004	12.80	11.81
2003	13.54	13.08
2002	15.09	13.21
2001	13.29	15.36
Total IAS+D4 period	**13.47**	**12.79**
Total	***14.98***	***12.88***

Source: financial statements of companies and national statistical data

For firms listed on the BSE alternative market (AeRO), the differences in profitability materialize in significantly higher OETRs for less profitable firms (for 2010-2019), which brings them closer to the results of our IFRS period (Istrate, 2021).

4.6 Auditor category and audit opinion influence on the OETR

In the financial auditing literature, it is common to separate the opinions of auditors belonging to international Big N networks from other auditors.

Table 7. OETR according to auditor category

Year	Average winsorized OETR			
	For internationally affiliated auditors			Local auditors
	Total, from which	Big N	Non Big N	
2020	18.00	16.35	19.57	25.10
2019	15.46	15.50	15.41	19.93
2018	15.86	15.28	16.57	20.80
2017	13.94	12.40	16.89	21.39
2016	12.13	10.76	14.85	19.47
2015	11.12	10.56	12.67	16.91
2014	11.89	11.14	13.43	15.88
2013	11.81	11.99	11.38	15.55
2012	11.70	12.04	11.04	13.70
Total IFRS period	**13.58**	**12.65**	**15.14**	**18.55**
2011	11.05	10.76	11.98	13.21
2010	10.40	9.56	13.04	12.64
2009	11.03	9.75	15.52	12.59
2008	9.83	9.30	11.82	11.36

Year	Average winsorized OETR			
	For internationally affiliated auditors			Local auditors
	Total, from which	Big N	Non Big N	
2007	9.17	9.20	9.10	12.16
2006	10.10	9.66	11.16	11.54
Total RAS period	**10.32**	**9.76**	**12.11**	**12.25**
2005	10.62	9.95	12.55	12.73
2004	10.29	10.37	10.13	13.34
2003	11.72	9.44	15.83	14.26
2002	11.51	11.92	10.94	15.73
2001	11.50	11.13	12.98	16.33
Total IAS+D4 period	**10.99**	**10.39**	**12.33**	**14.30**
Total	***12.28***	***11.38***	***14.13***	***15.29***

Source: financial statements of companies and national statistical data

In Romania, there are authors who identify three or even four categories of auditors (Păunescu, 2015; Levanti, 2019, Istrate *et al.*, 2020): Big N, non-Big N affiliated with international networks and local auditors. In Table 7, we report the OETRs by year and by type of affiliation of the auditors who sign the financial audit reports for Romanian listed firms. Among the 1,377 observations analysed, there are 1,325 for which the name of the auditor is available (96.22%). The distribution by affiliation of auditors is, for the total of the period, as follows:

- 561 observations (42.34%) with internationally affiliated auditors, including 378 Big N and 183 belonging to other international networks;
- 764 observations (57.66%) where local auditors intervene.

Differences between the OETRs calculated for companies audited by local auditors are (after applying the T-test) significantly higher than the OETRs of firms audited by internationally affiliated auditors (Table 7).

We also checked the OETRs by audit opinion (unmodified vs. modified): the differences are not significant, according to T-test, both for the whole period and for each of the sub-periods, taken individually.

4.7 Other analysis

Romanian firms often use the fair value model for the subsequent valuation of tangible fixed assets. This option for more or less systematic revaluation can be justified for tax reasons: deductibility of the resulting additional depreciation, but especially building tax at normal rates, untill 2015. The presentation of the subsequent valuation method is not always very clear in the notes. For this, we have considered that the presence of a revaluation reserve among equity constitutes an

evidence for the option in favour of the revaluation of tangible fixed assets. Over the entire period, we have identified 1,076 observations (78.14%) which present a revaluation reserve, with a slightly decreasing trend over time. The average OETRs of firms that revalue do not differ significantly from the OETRs of firms with no revaluation reserve in the balance sheet.

Annual calculations may not provide the best picture of the OETR; thus, in the literature, data are often aggregated over several years: 10 years for Dyreng *et al.* (2008), 5 years for Hanlon *et al.* (2017), Platikanova (2017) and Nguyen (2021), 3 years for Lin *et al.* (2017) or Sánchez-Ballesta & Yagüe (2021). With regard to the CIT, by accumulating pre-tax profits and current tax charges and by separating two homogeneous periods from the point of view of the tax rate (25% for the period 2001-2004 and 16% for 2005-2020), we obtain effective tax rates of 27% and 18% respectively. This allows us to see that the Romanian firms reporting profits showed higher tax charges than they would have calculated by applying the statutory rate to the pre-tax profits. We have also aggregated the total tax burden and sales for the periods for which data is available. The OETR calculated for these aggregated data is 12.07%, lower than the winsorized average OETR for the total of the period, of 13.93%. This result can probably be explained by the fact that the changes over time, year by year, of reported sales and total taxes are different.

3. Conclusions

The accounting - taxation relationship in the case of Romanian companies has evolved, after the fall of communism, from a very close initial connection to an increasingly marked *de jure* separation (Deaconu & Cuzdriorean, 2016). At the level of listed firms, this separation is also reflected in accounting choices that differ from the tax rules. In this context, the use of an effective tax rate that takes into account the tax expense on profit and/or the tax paid can tell us about the dimensions of the differences between accounting and taxation, as well although on possible attempts at tax evasion. However, taking into account only the corporate income tax makes it possible to highlight in a very incomplete way the tax effort of companies. Extending the analysis to other taxes opens the way to a better understanding of the tax burden of Romanian firms, particularly in a context where the income tax rate is quite low (16%). By analysing almost 1,400 observations, for a period of 20 years (2001-2020) related to Romanian firms listed on the regulated market of the Bucharest Stock Exchange, we have proposed a measure of the effective tax rate which takes into account all taxes and contributions expensed/paid directly or indirectly by firms – income tax, labour taxes (including taxes and contributions of the employees and not explicitly appearing on the expenses of the company), other taxes – divided by sales. This measure of the tax burden has the advantage of not requiring the elimination of observations with negative income, as it often happens with the analysis of the sole

corporate income tax. We have divided the total period into three sub-periods, depending on the accounting standards applied.

Our results show that the main component of the tax burden of Romanian companies comes from the taxation of labour, followed closely by other taxes and, quite far behind, by the income tax.

After winsorized the outliers to the 1 and 99 percentiles, we calculated the OETR and found a significant general upward trend in this indicator, which reached more than 21% in 2020, compared to almost 15% in 2001, after a steady decline from 2001 to 2006 (to a minimum of almost 11%). The IFRS period (2012-2020) seems to have brought this increase, but it is difficult to explain this by the application of IFRS. Indeed, it is in particular the labour tax burden that has increased sharply during this period, due to significant increases in the minimum wage (16% on average per year) and even in the average salary (12.5% on average per year), despite a reduction in the nominal rates of labour contributions.

The analysis of the OETR according to various characteristics of listed companies leads us to the following results:

- firm size seems to have an effect on the OETR, in the sense that, as a general rule, larger firms have less taxes to sales ratio, particularly in the second part of the interval analysed;
- firms with more fixed assets (compared to total assets), generally report more tax burdens than other firms, with increasingly significant differences over the years;
- leverage influences the OETR, in the same way as if only corporate income tax were taken into consideration; more leveraged firms have significantly lower OETRs than others;
- the financial profitability of companies (measured by ROE) does not seem to be linked to OETR: the differences in OETRs between profitable firms and less profitable firms are not significant for the whole period, although the trend of recent years has led us to differences increasingly important;
- the affiliation of auditors to international networks is associated with lower OETRs than those calculated for firms whose auditors are local; audit opinions (modified vs. unmodified) do not appear to generate significantly different OETRs.

The overall effective tax rate we propose in this study cannot be compared to one or more legal tax rates, which does not allow us to measure how companies fulfil their tax obligations or how these companies avoid taxes. Another limitation of our study comes from its descriptive nature, from the absence of an econometric model for analysing the data.

It would be interesting to continue the analysis by taking into account other correlations: the industry, the composition of the board of directors, the directors' compensation, the concentration of shareholding, the presence of the State among the shareholders, other characteristics of governance, the existence in the organization chart of a tax manager position and the compensation of this manager, the complexity of the organizational structure, the affiliation to a group, the market to book ratio, the internationalization of sales etc. It would also be interesting to rerun the calculations based on the taxes/contributions actually paid, but the information is not available in the financial statements of the Romanian firms: we can only hope that, the 20-year period taken into account that the total charges reported in the profit and loss accounts are a good approximation of the amounts paid. At the same time, the analysis for a single country – Romania – could be supplemented by international comparisons (in particular with other ex-communist countries), insofar as the information would be available in this direction.

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