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Corporate tax-mix and firm performance. A comprehensive assessment for Romanian listed companies

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ABSTRACT

The paper investigates the impact of overall firm-specific tax-mix on firm performance for Romanian listed companies during the 2000–2011 period. By overall tax-mix, we mean all public finance-related liabilities borne by a company, thus including not only profit taxes, but also non-profit taxes (i.e., real-estate taxes) and labour-related taxes (social security charges borne by companies). Developed around the corresponding tax wedge, the variable of interest is a firm-specific effective tax rate that aggregates all public finance liabilities, based on a unique set of hand-collected data from publicly available corporate reports. Using a fixed-effect model, the results show that one percentage point increase in overall firm-specific tax rate triggers 0.15 percentage points decrease in return on assets. Moreover, tangibles, leverage and size have a negative effect on Romanian listed companies' performance, while liquidity, growth and lagged profitability have a positive effect.

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1. Introduction

The issue of taxation as a major determinant of doing business is of great interest both for policy makers and business executives. Many well-established surveys investigate taxation and its effects on business. The most widely known methodology in that respect is the 'Doing Business/Paying Taxes' methodology developed by PricewaterhouseCoopers and World Bank. According to this, countries are ranked on the three indicators total tax rate, number of tax payments and time to comply. The larger these figures are, the larger the negative effects of taxation on business are.

Since many indigenous surveys (C.N.I.M.P.M.M. [Consiliul National al Intreprinderilor Private Mici si Mijlocii], 2012) as well as widely acknowledged international surveys (World Economic Forum, 2011) identify taxation as one of the main barriers against business in Romania, this paper empirically investigates the effects of taxation on Romanian firms' performance. In doing so, a unique dataset which contains not only profit taxes, but also non-profit taxes and labour-related taxes for all non-financial companies listed at the Bucharest

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Stock Exchange, was collected by hand for the 2000–2011 period. This dataset allows us to account for the whole corporate tax picture, providing a comprehensive setting of all public finance liabilities charged to companies' accounts no matter if they are related to capital or labour, and irrespective of their arguable final economic incidence.

The major motivation for such an investigation resides in existing controversies concerning the corporate tax burden in Romania. As is widely acknowledged, Romania enjoys one of the lowest corporate income tax rates in Europe (16%). In terms of corporate effective tax rates among European Union member states, well-established methodologies, such as Devereux–Griffith (Devereux & Griffith, 1998, 2003) and European Tax Analyzer (Jacobs & Spengel, 2000), rank Romania in fifth and the fourth position, respectively, in Europe. In spite of this, the World Economic Forum Global Competitiveness Report, which is based on the World Bank/PricewaterhouseCoopers approach (Djankov, Ganser, McLiesh, Ramalho, & Shleifer, 2010), consistently identifies the most problematic factors for doing business as tax rates (ranked 1st of 15 in 2011–2012 edition) and tax regulations (ranked 7th of 15 in 2011–2012 edition), and ranks Romania in 15th position among European member states in terms of total tax rate. While the first two approaches account only for corporate income tax and real-estate taxes, the latter also accounts for labour-related taxes, namely social security contributions borne by companies, which explains the inconsistency of the Romanian tax ranking. Therefore, investigating only the effect on corporate income tax burden on firm performance might not provide the full picture of the real impact of all taxes on business. Moreover, as conventional wisdom argues, keeping the tax preferences and total assets constant[1], a firm-specific tax rate based solely on profit tax is positively correlated with return on assets (R.O.A.) (Wilkie, 1988, p. 77). Consequently, we decided to mitigate these conflicting views by aggregating all public finance liabilities into one metric, and to investigate the effect on firm performance using a backward-looking approach. This was possible through a very meticulous hand-collecting data process for all Romanian non-financial listed companies. Basically, the collection of company data concerning non-profit taxes and labour-related taxes opened new research directions and made possible such an investigation (tax-mix effects on firm performance).

In this setting, the paper empirically investigates taxation as determinant of firm performance, by considering all taxes borne by companies. In order to quantify the corporate tax burden, a firm-specific effective tax rate that aggregates all public finance liabilities was constructed based on the corresponding tax wedge. In order to control for differences in accounting and financing policies of the firms to the extent possible, the tax wedge was computed around earnings before interest, taxes, depreciation and amortisation (E.B.I.T.D.A.).

Therefore, the major contribution of this paper consists in investigating the overall corporate tax-mix as a determinant of firm performance. To the best of our knowledge, such an empirical investigation that aggregates all firms' tax liabilities is performed here for the first time, mainly because such data were previously unavailable. Companies do not usually report data on social security contributions charges or real-estate taxes, therefore none of the major suppliers of company data accounts is able to provide this type of data. To date, this type of data was collected only by PricewaterhouseCoopers in their Total Tax Contribution surveys, but solely for informative purposes as a figure of a company's overall tax contribution and for a limited number of countries (Australia, Belgium, Canada, India, Japan, Luxembourg, South Africa, Switzerland, United Kingdom and United States). Our paper develops and computes a firm-specific tax rate that aggregates the overall corporate tax-mix, while also accounting for differences in financing and accounting firm-specific

policies to the extent possible, and investigates its effect on firm performance for non-financial Romanian public companies from the Bucharest Stock Exchange.

The rest of the paper is organised as follows: section 2 presents a brief literature review, section 3 develops the hypotheses, section 4 describes the data, section 5 presents the results, and section 6 concludes.

2. Literature review

Firm performance is an issue highly documented in the related literature. Over time, two broad theoretical approaches have emerged in that respect: market-based view (M.B.V.) which focuses on market characteristics and firm's external environment as performance determinants (Cano, Carrillat, & Jaramillo, 2004; Geroski & Mason, 1987; Grinstein, 2008; Porter, 1979) and resource-based view (R.B.V.) which relies on firm-specific determinants in explaining what drives performance up and down (Barney, 1991; Day, 2011; Peteraf, 1993). Which one is more appropriate is often a matter of context. For instance, there is strong evidence that in transition countries the R.B.V. has greater influence because instability of markets renders the firms' market positions less relevant for their performance (Grant, 1991; Makhija, 2003). Also, Hawawini, Subramanian, and Verdin (2003) found that firm-specific factors matter more than market characteristics for dominant firms. Given the fact that our paper deals with dominant firms (listed companies) in a transition economy (Romania), we conducted the analysis within the framework of R.B.V., investigating firm-specific metrics as determinants of firm performance.

According to R.B.V., firm resources include all assets, capabilities, organisational processes, firm attributes, information and knowledge controlled by a firm that enable the firm to design and implement strategies that improve its efficiency and effectiveness (Daft, 1983). These resources are broadly classified into three categories: physical capital resources, human capital resources and organisational capital resources (Barney, 1991). These inputs trigger taxation, which affects company accounts as cash outflows. Physical capital triggers real-estate taxation, while human capital resources triggers labour-related taxes, i.e., social security contributions borne by companies. Obviously, this tax-mix has an effect on business since it generates cash outflows. This effect is the focus of our investigation, which is conducted within the framework of R.B.V. of the firm.

In most of the related literature firm performance is proxied by R.O.A., such as in Hansen and Wernerfelt (1989), Glancey (1998), Goddard, Tavakoli, and Wilson (2005), Zeli and Mariani (2009), Asimakopoulos, Samitas, and Papadogonas (2009), Maçãs Nunes, Serrasqueiro, and Sequeira (2009), Crespo and Clark (2012), Yazdanfar (2013). Alternative measures for firm performance also exist, but to a lesser extent. For instance, McDonald (1999) made use of profit–cost margin, Makhija (2003) relied on share value, while Lee (2009) turned to net income plus advertising expenses to asset ratio as a proxy for firm performance.

With respect to firm performance determinants (independent variables) there is a lot of heterogeneity involved. Hansen and Wernerfelt (1989) used firm-specific human resources determinants along with firm size, while Glancey (1998) used companies' characteristics such size, age, location, inter-industry differences and growth. Lagged profitability, size, market share, financial gear and liquidity were investigated by Goddard et al. (2005), while Asimakopoulos et al. (2009) looked at company size, leverage, sales growth, investments

and current assets as determinants of firm performance. Size was also investigated by Maçãs Nunes et al. (2009) and by Crespo and Clark (2012), together with growth, leverage, liquidity and tangibility for the former and with net working capital, assets mix and firm location for the latter. Lee (2009) investigated size, market share, capital intensity, advertising and research and development intensities, bad debt ratio and inventory, while Yazdanfar (2013) looked at size, age, growth, productivity and lagged profitability and industry affiliation as determinants of firm profitability. It seems that company size measured either as total assets or sales emerged as the sole common determinant across the studies dealing with firm performance. Other determinants extensively used were leverage, capital intensity and liquidity.

The results are mixed. The most extensively used determinant, namely company size, was found to have a positive impact on firm performance (Asimakopoulos et al., 2009; Yazdanfar, 2013, Maçãs Nunes et al., 2009), a negative effect (Goddard et al., 2005) or no effect at all (Crespo & Clark, 2012; Glancey, 1998). Company growth was found to have a positive effect (Asimakopoulos et al., 2009; Maçãs Nunes et al., 2009; Yazdanfar, 2013), while leverage is considered to have a negative effect (Asimakopoulos et al., 2009; Maçãs Nunes et al., 2009). Liquidity was found to have a positive effect (Crespo & Clark, 2012; Goddard et al., 2005) or no effect at all (Maçãs Nunes et al., 2009). Lagged profitability has a positive effect in all cases (Goddard et al., 2005; Yazdanfar, 2013). We attribute this lack of consistency of results to the different country scenarios in which the investigations were carried out. Different countries have different economic backgrounds which affect firm performance differently. For instance, the effect of size depends heavily on how larger companies are managed, controlled and scrutinised, as well as on the country-specific antitrust laws and competition climate.

With regard to Romania, the literature on firm performance is rather limited. Pantea, Gligor, and Anis (2014) found that firm size, capital intensity and number of employees positively affect firm performance. Following a corporate governance approach, Gavrea and Stegerean (2012) found that board size has a negative impact on firm performance. Mihai and Mihai (2012) found that leverage has a negative impact on performance of Romanian mining and quarrying companies. More recently, Lazăr (2016) found that company size, leverage, tangibility and labour intensity have a negative effect, while company growth and company value added have a positive effect.

The present paper goes beyond the approaches undertaken so far, by explicitly looking at firm-specific tax-mix burden as one of the performance determinants of companies. This is justified by the various international and domestic surveys that place corporate tax burden as one major factor that affects business performance. In the context of R.B.V., the firm-specific tax rate may be seen as the result of firm-specific inputs mix (assets, human resources, organisational processes). Therefore, the paper will not only investigate the profit tax burden, but thanks to a unique set of data, the investigation will expand to labour-related taxes and non-profit taxes.

3. Research design and hypotheses

3.1. The dependent variable

The firm performance is measured using R.O.A. computed as net income to total assets ratio.

3.2. The independent variables and research hypotheses

The design of independent variable of interest is challenging since the investigation strategy of firm-specific overall tax burden as a key determinant of firm performance brings some inherent problems. Consequently, we constructed a firm-specific effective tax rate based on all taxes borne by a company starting from the corresponding tax wedge, which is the standard approach in the field (Reister, Spengel, Heckemeyer, & Finke, 2009, p. 47). According to this, the best way of isolating the effects of taxes is to determine the tax wedge triggered by taxes of interest, namely the difference between the pre-tax and post-tax values of target variable plotted against its pre-tax value.

$$ETR = \frac{Target\ variable_{before\ tax} - Target\ variable_{after\ tax}}{Target\ variable_{before\ tax}} = \frac{Tax\ wedge}{Target\ variable_{before\ tax}}$$

The choice of target variable raises some issues. Ideally, the target variable should not be influenced by financing or accounting techniques, since these imply deductions that simultaneously influence both the numerator and the denominator. For instance, a higher amount of debt leads to higher interest expenses, which triggers a lower net income, which in turn may lead to an increase in effective tax rate for that company. In other words, the effect of tax-induced distortions on firm-specific corporate tax rates is difficult to interpret, since taxes influence both the numerator and the denominator. Therefore using net income as target variable is not a good choice. A possible remedy for avoiding such conflicting consequences consists in using denominators that are less prone to such effects. For instance, using earnings before interest and taxes (E.B.I.T.) instead of net income as the proper tax base may render the interpretation of leverage outcome more straightforward. The same scenario applies to capital intensity, when one needs to go further up to E.B.I.T.D.A. in order to account for the real effect of capital allowances. E.B.I.T.D.A. is a way to measure profits without having to consider factors such as financing costs (interest), accounting practices (depreciation and amortisation) and tax rates. Therefore, we chose E.B.I.T.D.A. as the proper target variable since this metric is before any deductions that simultaneously affect the corporate tax payable and the denominator used to express the corresponding effective tax rate.

Once the target variable is determined, the computation of firm-specific tax rates becomes straightforward. However, given that fact that we investigate the burden triggered by all taxes borne by a company, labour-related taxes and non-profit taxes should also be considered (in addition to profit tax). In this setting, using E.B.I.T.D.A. as target variable needs some adjustments in order to properly isolate the tax wedge. Since E.B.I.T.D.A. has non-profit taxes and labour-related taxes already deducted, these should be added back in to compute the pre-tax level of the target variable. Another adjustment is to correct for corporate income tax which is included in E.B.I.T.D.A. Therefore, after-tax E.B.I.T.D.A. is computed as E.B.I.T.D.A. minus corporate tax payable. A detailed description of data is provided in the Appendix.

In doing so, we were able to isolate the tax wedge consisting in profit tax, non-profit taxes and labour-related taxes, while controlling to the extent possible for differences in financing and accounting practices. The tax base that we used is able to control for tax-induced distortions, and at the same time makes comparability among firms more meaningful.

In this setting, we expect that firms that display a higher overall effective tax rate to have lower performance, since paying taxes negatively affects firms' earnings.

The control variables are firm-specific characteristics that were intensively used in similar previous research: firm size, leverage, liquidity, tangibles, growth and lagged profitability.

With regard to firm size, the related literature summarised two contrasting views related to effects on firm performance. The first one claims that, given the fact that larger firms are able to capitalise on economies of scale, have better access to funding (Titman & Wessels, 1988) or may easily impose barriers to newcomers (Maçãs Nunes et al., 2009), they tend to perform better. The second one argues that, because of less control of management behaviour and wider diversification (Pi & Timme, 1993), larger firms may perform poorly. Which of these is prevalent in Romania is difficult to hypothesise. However, given the transition character of the Romanian economy, larger firms generally represent former communist enterprises which, due to political connections or strong labour unions, tend to underperform. Therefore, the expected sign is negative.

With regard to leverage, there are also two opposing views on its effect on firm performance. Goddard et al. (2005), Asimakopoulos et al. (2009) and Maçãs Nunes et al. (2009) argue that the need to continue servicing the debt reduces the ability of companies to invest in profitable projects, with negative effects on profitability. Conversely, authors like Jensen (1986) and Adams (1996) claim that debt forces managers to use resources more efficiently by not wasting them on unprofitable projects. However, for the specific case of Romania, given higher interest rates for company loans, we expect a negative sign.

With respect to liquidity as a determinant of firm performance, the expected sign is positive. Goddard et al. (2005) argue that more liquid companies tend to be more profitable, since they can take advantage of investment opportunities and are able to respond promptly to market shocks. For the specific case of Romania where, as a result of the transition to a market economy, both liquidity constraints and market shocks were significant, we expect a positive sign.

Lagged profitability is expected to have a positive effect on current firm performance, mainly due to the dissipating/persistence effect in the following year. Last-year profit means more resources available for new investments, better liquidity and better prospects and market signals.

Asset mix was investigated as a determinant of firm performance to a lesser extent. In general, studies investigated the hypothesis that companies with a higher level of intangibles are more profitable, since they are more likely to benefit from research and development and patents (Maçãs Nunes et al., 2009; Crespo & Clark, 2012). But intangibles are below 1% of total assets for Romanian listed companies, whereas tangibles are over 50% of total assets. These figures provide evidence that Romanian companies are still prisoners of communist industrial organisation characterised by huge industrial platforms and acres of land, which in principle are not directly involved in producing goods for sale (as opposed to machines and equipment). Therefore, we expect a negative effect of tangibles on firm performance. This effect is further supported by the frequent revaluation of buildings and land, which increased total assets without any subsequent increase of profits, thereby reducing R.O.A.

Company growth (annual percentage sales growth) is seen in general as having a positive impact, mainly due to the additional receipts that company generates. Therefore, we

Table 1. Independent variables and their expected sign.

Firm-specific overall effective tax rate (ETR)	(Profit tax + labour taxes + non-profit taxes)/EBITDA before all taxes borne	-
Firm size (SIZE)	Logarithm of total assets	-
Leverage (LEV)	Total debt to total assets ratio	-
Liquidity (LIQ)	Cash to total assets ratio	+
Lagged profitability (LPROF)	Profits to sales ratio in the previous year	+
Tangibles (TANG)	Tangible assets to total assets ratio	-
Company growth (GROWTH)	Sales growth	+

Source: Author calculation.

expect a positive sign, similar to Asimakopoulos et al. (2009), Maçãs Nunes et al. (2009) and Yazdanfar (2013).

A synthesis of independent variables and their expected sign is provided in Table 1.

In this framework, our multivariate model is:

$ROA_{it}=\alpha_0+\beta_1 * ETR_{it}+\beta_2 * SIZE_{it}+\beta_3 * LEV_{it}+\beta_4 * LIQ_{it}+\beta_5 *LPROF_{it}+\beta_6*TANG_{it}+\beta_7*GROWTH+\varepsilon_{it}$, where *i* denoted the firm and *t* the year,

All variables are computed using relevant data collected from companies' financial reports. The variables from the balance sheet were scaled by total assets, while variables from the income statement were scaled by total sales. Usual checking did not reveal any concerns with regard to multicollinearity between explanatory variables.

4. Data and methodology

The dataset covers all non-financial Bucharest Stock Exchange listed companies over the 2000–2011 period and follows closely the B.A.C.H. data scheme (see Appendix). The dataset is unique in the sense that it contains not only profit taxes, but also non-profit taxes (i.e., real-estate taxes) and social security contributions charged to company accounts. Consequently, it allows for a comprehensive picture of company taxation, thus going beyond the standard backward-looking approach of corporate taxation that refers only to profit taxation. Acquisition of such detailed data was possible only by a hand-collecting process which, despite its costs, brings value in terms of new insights on how company-specific overall taxation affects firm performance. We used unconsolidated data in order to better capture the specific country tax provisions and to provide a longer period of comparable data. The sources of data were financial reports of listed companies available on Internet sites, both of the companies and of the Bucharest Stock Exchange and National Security Commission.

Starting from 2012, Romanian listed companies switched from Romanian Accounting Standards (R.A.S.) to International Reporting Financial Standards (I.F.R.S.), so an extension of the period investigated to more recent years is not feasible because of the inherent differences between the two reporting standards. First, I.F.R.S. disclose total corporate income tax expense and not only the current corporate income tax as R.A.S. did. That means that I.F.R.S. data, in addition to the current corporate income tax, also include the deferred taxes, which leads to distortions in corporate income tax data series that affect our investigation. Disentangling the current and the deferred portions of corporate income total tax expense is extremely difficult, if not virtually impossible, given the actual data format of corporate reports. Second, specific I.F.R.S. rules trigger differences in companies' assets

Table 2. Sample selection summary.

Total firm-years	668
Less firm-years with ETR beyond 3 interquartile range	49
Less firm-years with negative firm-specific ETRs	23
Less firm-years with no data for loss carry-forward	59
Final sample firm-years	537

Source: Author calculation.

Table 3. Descriptive statistics.

stats	N	mean	sd	min	p25	p50	p75	max
Dependent variables								
ROA	537	6.09	8.45	−36.37	1.11	4.37	10.34	82.26
Independent variables								
ETR	537	40.78	17.61	6.41	28.66	37.47	50.80	127.89
TANG	537	51.88	20.40	0.00	38.95	50.18	65.75	96.19
LEV	537	7.62	12.53	0.00	0.01	2.33	9.01	78.36
SIZE	537	17.54	1.43	15.11	16.62	17.24	18.16	22.76
LPROF	537	6.29	9.24	−36.37	1.34	4.78	11.12	47.24
LIQ	537	5.61	7.92	0.01	0.95	2.40	6.61	51.77
GROWTH	537	0.18	0.41	−0.65	−0.02	0.13	0.30	3.51

Source: Author calculation.

and liabilities valuation, which also affects the comparability of our control variables. For instance, the switch from R.A.S. to I.F.R.S. triggered an increase of R.O.A. for 36.4% of the companies listed on the Bucharest Stock Exchange, a decrease for 47.6% of the companies, while only 16% of the listed companies remain unaffected by that switch (Săcărin, 2014). Furthermore, Istrate (2014) found that the index of comparability (Gray, 1980) between I.F.R.S. and R.A.S. figures with regard to net income is 1.32, which means that I.F.R.S. figures are far more conservative than the corresponding R.A.S. figures. Săcărin (2014) reached to a similar conclusion, reporting an aggregate difference of –4.2% between the I.F.R.S. net income and R.A.S. net income (i.e., I.F.R.S. net income figures are 4.2% lower than the corresponding R.A.S. figures) and of 3.75% between the I.F.R.S. total assets and R.A.S. total assets (i.e., I.F.R.S. total assets are 3.75% higher than the corresponding R.A.S. total assets). These opposite deviations of I.F.R.S. figures from R.A.S. figures are likely to provoke erratic deviations of our dependent variable (R.O.A. proxied as net income to total assets ratio) when measured according to I.F.R.S. as compared with R.A.S. Consequently, we argue that updating the time span, by merging the I.F.R.S. figures (from 2012 onwards) with R.A.S. figures (until 2011) is not only virtually impossible, but also misleading.

In order to deal with firm-specific effective tax rates that are of unusual magnitude or have little economic meaning, we applied a recoding treatment. Therefore, we deleted the records that were more than three interquartile range[2]. Moreover, negative effective tax rates which result from negative denominators are difficult to interpret. Normally, this implies tax refunds but these were not available in Romania[3]. Therefore, we eliminated the records with negative firm-specific effective tax rate. The final sample reconciliation is provided in Table 2.

Descriptive statistics for dependent and independent variables are reported in Table 3.

The investigation strategy consists in fixed-effects panel data estimation. The major advantage of the fixed-effects estimator is that it controls for firm-specific characteristics which are not observable or measurable, but are likely to be correlated with the regressors,

thus being less prone to endogeneity and omitted variable bias. A shortcoming of the fixed-effect model is that the results cannot be extrapolated because they are conditional on the sample. However, since our data cover all non-financial companies traded at Bucharest Stock Exchange, we limit our findings only to public companies. Our choice of a fixed-effects model was thus mainly based on theoretical grounds and backed up by statistical tests. The Hausmann test also supports the fixed-effects over random-effects estimator.

The fixed-effects general specification is:

$$Y_{it} = \alpha + X_{it}\beta + u_i + \varepsilon_{it} \quad (1)$$

where Y_{it} is the dependent variable observed for company i at time t, X_{it} is the time-variant 1xk regressor matrix, α is the intercept, u_i are the unobserved time-invariant company effect and ε_{it} is the error term. Unlike X_{it}, u_i stand for permanent differences between firms which cannot be observed, but are likely to be correlated with explanatory variables (ownership structure, managers' team, earnings management, corporate culture, etc.). As a result of the fixed-effects estimator, u_i are cancelled out, therefore we can control for the unobservable or unmeasurable firm characteristics that are correlated with firm-specific regressors.

In order to control time-specific effects which are likely to affect all companies in the same way (tax changes, general economic climate, etc.) we also implemented a two-way fixed-effects model:

$$Y_{it} = \alpha + X_{it}\beta + u_i + v_t + \varepsilon_{it} \quad (2)$$

where v_t controls for time-specific effects, i.e. impacts common to all firms but vary by year.

Finally, since we wanted to control for industry-specific time effects (the industry business or financial risks), we also implemented an industry-year-dummies model:

$$Y_{it} = \alpha + X_{it}\beta + u_i + v_t i_j + \varepsilon_{it} \quad (3)$$

where i_j stand for a rough classification of industries (manufacturing, energy and extractive industry, commerce, construction, transport and hotels and restaurants).

5. Results

Table 4 summarises the results of fixed-effects regression: (1) presents the results of the base model, (2) shows the results of a two-way fixed model with year dummy variables included (not reported), while (3) also adds industry year effects (not reported).

Firm-specific overall effective tax rate negatively affects firm performance in all specifications. One percentage point (p.p.) increase in firm-specific tax rate triggers 0.16 p.p. decrease in firm profitability. This effect is statistically significant for all models. Taxes harm business no matter if they are profit taxes, real-estate taxes or labour-related taxes. Although the latter two are deductible in computing taxable profits, they still affect company accounts. Moreover, when the corporate income tax rate is low, such is the case of Romania at 16%, any increase in labour-related taxes and non-profit taxes triggers tax deductions that value less, and therefore the overall tax burden increases. This makes the investigation of profit tax alone misleading.

The tangibility of assets also affects firm performance negatively. One p.p. increase in tangibles triggers a 0.07 p.p. decrease in profitability. Romanian companies did not make use of their tangibles in a profitable manner. This supports our hypothesis which stated that high levels of tangibles do not generate performance in a former communist country in which

Table 4. Regressions results.

	(1)	(2)	(3)
ETR	−0.166*** (0.0409)	−0.168*** (0.0388)	−0.171*** (0.0410)
TANG	−0.0782** (0.0351)	−0.105** (0.0403)	−0.104** (0.0408)
LEV	−0.0822*** (0.0285)	−0.0996*** (0.0303)	−0.0971*** (0.0264)
SIZE	−3.584*** (0.791)	−1.791 (1.342)	−1.703 (1.326)
LPROF	0.235*** (0.0604)	0.195*** (0.0618)	0.156** (0.0662)
LIQ	0.0733* (0.0370)	0.0742* (0.0411)	0.0916** (0.0439)
GROWTH	1.914* (0.988)	1.597 (1.075)	1.829 (1.169)
Constant	84.25*** (15.82)	55.02** (23.08)	55.51**(23.11)
Observations	537	537	537
R^2	0.345	0.373	0.447

Source: Author calculation.
Clustered robust standard errors at firm level in parentheses.
*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$; (1) Base model.
(2) Year effects.
(3) Industry year effects.
ETR = (corporate income tax+non-profit taxes+labour-related taxes) to EBITDA ratio.
TANG=capital intensity (tangible assets to total assets ratio).
LEV=leverage (total debt to total assets ratio).
SIZE=company size (natural logarithm of total assets).
LPROF=lagged profitability (profits to sales ratio).
LIQ=liquidity (cash to total assets ratio).
GROWTH=sales growth (annual sales growth in percentage).

big companies still possess acres of land and huge industrial buildings (the share of land and buildings is 56.12% of total fixed assets). This status quo was continuously reinforced by the frequent revaluations of buildings and lands which triggered an increase in tangible assets and in the corresponding real-estate taxes, without any subsequent increase in profits.

Leverage also displays a significant negative effect on firm performance. One p.p. increase in debt ratio determines a 0.08 decrease in profitability. High interest rates, so common for a transition economy, lowered the profits-generating capabilities of firms[4].

Size has a negative effect on firm performance, but the effect is statistical significant only for the base case model. This supports our hypothesis according to which larger Romanian listed companies deal with difficulties associated with former or present state-owned enterprises (poor performance due to political connections or to strong labour unions) and is line with our findings on tangibles.

Lagged profitability has a positive sign as hypothesised. The effect is significant for all specifications.

Liquidity has also a positive sign as hypothesised. Companies that display higher liquidity can take advantage of investment opportunities both in the short and long term and, at the same time, are able to respond promptly to market shocks and to overcome liquidity constraints, both so common in a transition economy.

Growth measured as annual percentage change in sales has also a positive effect on firm performance. The additional revenue streams from sales represent an important source for increasing profits.

The sign and the statistical significance of the control variables such tangibles, leverage, size, growth are identical to that obtained by Lazăr (2016) using the same data over the same time period (but with different firm-years observations triggered by the use of an additional determinant such lagged profitability which implied losing the corresponding observations for the first year of the period), but different model specification with no tax effect. This acts

as evidence in favour of the robustness of the results with respect to the aforementioned control variables. Introducing a firm-specific effective tax rate into the investigation not only delivered statistically significantly results with regard to the effect of taxation, but also confirmed the positive/negative effects of previously used control variables.

When introducing a two-way fixed-effects model (2), by allowing year dummies, the coefficients retained both their level and significance, while time-specific effects are precisely identified. The model is similar to our base model, with much variation explained by companies' heterogeneity.

The third specification (3) introduced industry year effects in order to simultaneously account for specific industry characteristics and time effects. While coefficients record only slight changes, they also retain their level of statistical significance in most cases. One must take into account that, due to the small number of companies (n=60), only a rough classification of industries was possible (see previous section), and therefore extreme caution has to be displayed when interpreting the results. Nevertheless, the deviations from base (manufacturing 2001) were significant in the vast majority of cases. Commerce recorded the largest deviations (negative) from base, and manufacturing the smallest.

In general, the expected signs were confirmed by empirical data. The main variable of interest, namely firm-specific overall effective tax rate, is statistically significant in all model specifications. This stands as evidence for the negative effect that taxation has on business. The highly documented perception that taxes negatively affect business, which many may find subjective, is now backed up by empirical data for the specific case of Romania. Moreover, with respect to other control variables, common to those used in previous research on firm performance in Romania (size, tangibles, leverage and growth), they retain their sign and statistical significance as in Lazăr (2016), which acts in favour of the robustness of our results.

6. Conclusions

The paper investigated the impact of overall company tax-mix on firm performance for Romanian non-financial companies listed at Bucharest Stock Exchange over the 2000–2011 time span using a unique dataset that allowed an aggregation of all public finance liabilities borne by a company, no matter if they are related to capital or labour and irrespective of their arguable final economic incidence. This includes, in addition to profit tax, labour-related taxes, namely social security contributions borne by companies and non-profit taxes, among which the most important are real-estate taxes. The investigation was carried out within the framework of a R.B.V. on firm performance, according to which a firm is able to use its physical capital, human capital and organisational capital resources (at a corresponding tax cost) in order to increase profits.

The results showed that the firm-specific overall effective tax rate has a negative effect on firm performance measured by R.O.A. The effect is statistically significant in all model specifications. This suggests that, in spite of the reduced corporate income tax rate in Romania, the overall tax-mix has a detrimental effect on performance. The results have several policy implications.

First, looking only at corporate income tax rate may lead to erroneous judgements. While Romania is in the first half of European countries with respect to corporate income tax rate, it also ranks in the second half of these same countries with respect to social security

contributions (KPMG, 2011). The gain of competitiveness in terms of profit taxation is partially offset by the aggressive taxation of labour. Moreover, the low corporate income tax rate makes social security contributions tax deductions less valuable for companies. In order to increase competitiveness a reduction of corporate social charges is needed.[5]

Second, the asset mix of Romanian listed companies is not value driving. The effect of tangibles of Romanian listed companies confirmed the features of a transition economy in which large industrial buildings and acres of land still represent the most important share of corporate fixed assets (56.12%), which, in turn, not only do not directly create goods for sale (as machinery and equipment do), but also trigger real-estate taxes. Promoting research and development activities by granting intangibles-related tax incentives may change this status quo (i.e., extending accelerated depreciation beyond patents to include software and know-how as well) and may contribute to an increasingly value-driven management of Romanian firms.

Third, leverage negatively affects firm performance. High interest rates for company loans, which were common in transition countries, triggered cash outflows that put up barriers against new business opportunities. However, the recent drop in interest rates in Romania and all over the world, together with the increasing use of financial derivative instruments (i.e., interest rates swaps), may change this by making debt more attractive for companies. A lower interest cost together with the corresponding tax savings triggered by interest deductibility act in that respect.

The results provide empirical evidence on the effects of overall company taxation on Romanian firms' performance. However, they are valid only for listed companies and cannot be extended to privately held companies, since they have different financing and investment alternatives.

Notes

1. Tax preferences is often used in related literature and represents items which cause taxable income to be different from book income.
2. For instance, companies that have low operating income, but large financial or extraordinary income are likely to record effective tax rates of unusual magnitude. These rates are the result of exceptional events, which have nothing to do with the normal course of the business. Since they distort the results, the corresponding firms were eliminated from the sample.
3. There are no negative numerators in our sample, mainly because Romanian tax regulations do not allow any loss carry-back, thus no tax refund is possible. As a consequence, negative firm-specific tax rates result only if the underlying financial figure (E.B.I.T.D.A.) is negative. Such a scenario is triggered by tax preferences (differences between book income and taxable income) that make taxable income positive and hence gives birth to corporate income tax in spite of the negative financial figure. In order to deal with this scenario, we set the negative rates to 0. We performed additional checks (not reported) eliminating firms with negative effective tax rates and the results stay pretty much the same.
4. It may be the low statutory tax rate in Romania that provides little incentive for debt financing, or it may be the high interest rates which restrain companies from taking debt. During the period surveyed (2000–2011), the annual average interest rate for new corporate bank loans in Romanian New Currency (RON) was above 15% in eight of the 12 years, while the minimum annual average interest rate of 9.40% was recorded in 2010 (National Bank of Romania reports available at http://www.bnro.ro/Publicatii-periodice-204.aspx). Prior to 2005 when corporate income tax rate was 25%, the annual average interest rate for corporate bank loans was above

24%. Therefore, tax deductions triggered by higher corporate income tax rate were offset by higher nominal interest rates, which made debt financing less appealing.

5. This happened in October 2014, when corporate social contributions for public pensions were reduced by 5 p.p.

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