TAX PAYMENTS DETERMINANTS IN ROMANIA

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Abstract: *Using a fixed effects panel data estimation model in order to account for individual firm heterogeneity, the paper investigates the determinants of corporate tax payments for Romanian non-financial companies listed at Bucharest Stock Exchange over twelve years period (2000 – 2011), adopting a new approach, the natural logarithms of corporate income taxes actually paid as dependent variable. This removes the inherent flaws of firm specific effective tax rates, while establishing a more comparable field for subsequent similar research. All the determinants investigated were found as having an impact, albeit at different level of significance. Capital intensity, leverage and labour intensity were found as having a negative effect, while profitability and size have a positive impact. The findings correspond in general to conventional theory. Moreover, the paper produces evidence concerning the impact of loss carry-forward provisions on firm tax payments.*

Keywords: tax payments, determinants.

JEL classification: H32

1. Background

Taxation was always considered a major obstacle in doing business, especially in Romania. A recent survey of Romanian Chamber of Commerce shows that taxation is the first impediment for business in Romania. Moreover, the World Economic Forum Global Competitiveness Reports usually rank tax related issues among the first half of the restraining factors for doing business. For instance, in 2010, tax rates and tax regulations were ranked as the first and respectively the seventh (out of 15) barriers against business, while in 2011, they were ranked on the second and respectively the fifth position.

Under these circumstances, investigating what affects the tax payments of Romanian companies is highly desirable, since it may disclose the underlying factors that play a role in this respect. That is controversial, since Romanian enjoys one of the lowest statutory tax rates in Europe and some some well-established forward looking methodologies, namely Devereux – Griffith (Devereux and Griffith, 1999, 2003) and European Tax Analyzer (Jacobs and Spengel, 2000), rank Romania in terms of corporate effective tax rates on the fifth and respectively on the fourth position among European Union member states, which is consistent with Romania's low statutory corporate income tax rate.

For the purpose of this research, the paper measures the tax payments as natural logarithm of corporate income taxes actually paid by companies. In this respect, the paper adopts a new approach since usually similar research deals with the so-called effective tax rate, which is a ratio of corporate income tax (current or total) to some metrics such as earnings before interest and taxes (EBIT), earnings before interest, taxes, depreciation and amortization (EBITDA), cash-flow, etc. By doing so, I overcome some inherent flaws of the firm-specific effective tax rates, which reside in the fact that some well-established determinants (capital intensity, leverage, etc) influence both the numerator and the denominator, making the interpretation of the results misleading.

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

2. Literature review

The literature covering firm-specific tax determinants is developed on different versions of firm-specific effective tax rates. While these have some built-in advantages, they also have some flaws. The topic came into attention of tax researchers in the '80s, in the US, when a debate concerning the fair share of taxes that big companies actually pay had emerged. While at the beginning, the studies were univariate, investigating mainly firm size as determinant of Effective tax rate, gradually the determinants looked upon were extended to many others, among which leverage, capital intensity and profitability are the most common. For instance, Stickney and McGee (1982) considered the extent of foreign operations and involvement in natural resources, Manzon and Smith (1994) considered industry sector and profitability, while Gupta and Newberry (1997) considered firm performance (return on assets) and asset mix (inventory intensity and research and development intensity). The results are mixed especially with regard to firm size, while for capital intensity and leverage it seems that both negatively affect effective tax rate through capital allowances and interest deduction.

With respect to other countries of the world, the research is not so vast. So far, empirical studies covered countries like Netherlands (Janssen, 2005), Australia (Richardson and Lanis, 2007), China (Xing and Cao, 2007; Chiou et al, 2012; Wu et al, 2013), Malaysia (Adhikari et al, 2006; Noor et al, 2010). Moreover, multi-countries studies emerged recently that covers USA and China (Fernández-Rodríguez and Martínez-Arias, 2012) or BRIC countries (Fernández-Rodríguez and Martínez-Arias, 2014). These studies follow closely the approach of Gupta and Newberry (1997), with some variations related to the definition of both dependent and independent variables, as well as to the methodology employed. With regard to dependent variables, differences consist in defining the effective tax rate, either by considering or not the deferred portion of the corporate income tax expense, either by employing different measures for denominator. For instance, Janssen (2005) took into consideration only the current tax expense in the numerator and earnings before interest and taxes (EBIT) and adjusted cash flow respectively in the denominator, while Richardson and Lanis (2007) considered income tax expense without any deferred tax adjustment in the numerator and book income and cash flow from operations in the denominators. As for the dependent variables, the things are much more homogenous in terms of their selection and definitions. However, differences among coefficient signs and significance level also exist. While Janssen (2005) found a positive sign for leverage, Adhikari et al (2006), Richardson and Lanis (2007), Xing and Cao (2007), Noor et al (2010), Wu et al (2013) found a negative relation as prescribed by theory. Also, different estimation methods were used: pooled OLS, fixed effects, random effects or quantile regression.

As a concluding remark, one can easily note the heterogeneity among previous studies mostly in terms of defining and computing corporate effective tax rate. However, a remarkable homogeneity is detected when screening the firm-specific determinants, especially with regard to firm size, capital intensity, leverage and profitability. This renders the results not only difficult to interpret, but often misleading, since some determinants affect both the numerator and denominator, and also makes any comparison between different studies ineffective. Thus, the research provides little useful insights to policy makers, and when it does, these are often controversial and conflicting.

This paper addresses the controversial issue of defining the dependent variable that captures the corporate tax burden, by adopting a simple, straightforward metric of taxes actually paid, namely logarithm of corporate income tax paid. To my knowledge, this is the first study that investigates firm-specific tax determinants in this new setting. By doing so, I

am able to get rid of all the controversies around different measures of firm-specific effective tax rates and provide a viable alternative to subsequent similar research. Results are interpreted accordingly.

3. Research design and hypotheses

In order to avoid the problems that firm-specific effective tax rates pose (Lazăr, 2014), the paper introduces a new measure of corporate tax burden, namely the logs of taxes actually paid. While this is new in tax research backward-looking methodology, a similar approach is used in one of the well-established tax research forward-looking methodology, namely European Tax Analyzer (Jacobs and Spengel, 2000), which measures the corporate tax burden by the absolute amount of taxes that companies actually pay (EUR).

With regard to determinants, most of them are based on conventional theory which states that firm size, capital intensity, leverage and profitability are the most common determinants of corporate effective tax rates. They were used in almost all previous studies on the topic. While there is a wide consensus about their impact on the effective tax rates, mixed result exists when it comes to the sign of the relationship. Therefore, we state the research hypothesis in a slightly different approach triggered by the new dependent variable, namely the logs of taxes.

With regard to firm size (logarithm of the total assets at book value), there are two opposing views on how it affects corporate tax burden: the political power theory (Stigler, 1971; Becker, 1983) and the political cost theory (Zimmerman, 1983; Watts and Zimmerman, 1986). According to the former, larger companies are engaging more aggressively in tax planning and are using their influence in order to promote tax provisions that are in their favor, thus achieving larger tax savings. Oppositely, the political cost theory states that given the increased public opinion scrutiny on larger firms, triggered by their visibility and success, they are more likely to be the target of tax provisions that impact more aggressively on them. Consequently, their tax burden are expected to be higher. Given the fact that the dependent variable is not a ratio, but the logs of taxes, I expect a positive sign, since larger firms (in absolute terms) tend to pay higher taxes (also in absolute terms). A negative and significant coefficient would, in turn, provide evidence in favour of aggressive tax planning of large companies.

The capital intensity (depreciable assets to total assets ratio) is another important determinant of corporate tax burden that was extensively used in the previous studies (Gupta and Newberry, 1997, Janssen 2005, Richardson and Lanis, 2007, Wu et al, 2013). Given the tax incentives related to investment in fixed assets (i.e. generous capital allowance such as accelerated depreciation or writing-off the cost of tangible assets over periods shorter than their economic lives), companies should be able to decrease their corporate income tax liability. Therefore, I expect a negative sign.

The leverage (medium and long term debt to total assets ratio) impacts on corporate tax through interest expenses which are deductible for tax purposes, while dividends are not. Thus, companies with higher leverage would tend to have lower tax payments. Moreover, thin capitalization rules and interest stripping rules are not so strict in Romania, and, as a result, I expect a negative sign of the relationship between leverage and tax burden.

Labor intensity (personnel costs to turnover ratio) is a determinant that was not investigated in previous research worldwide, the only exception being Lazăr (2014). Being a high debatable issue in Romania and given the burden triggered by employers' social security charges, documented by World Bank and PricewaterhouseCoopers surveys and other indigenous sources, I decided to empirically investigate if labor intensity really has an influence on firm-specific effective tax rates. Since a full shift of employers social security contributions to employees is hardly to be accomplished, especially in the case of Romania's social security system that is more redistributive oriented than insurance oriented, the burden (at least a part of it) triggered by employers' social security charges falls on the companies themselves (Ooghe et al, 2003). This lowers profitability and

consequently the corporate tax burden (Wilkie, 1988). On the other hand, the inclusion of labor costs in the production costs postpones deductibility to the period in which the underlying products are sold (Spengel et al, 2011), which increases the corporate tax burden. Given the hypothesized lack of shifting for employers' labor related taxes, I expect a negative sign.

Profitability could also exert an influence over corporate tax burden, therefore using return on assets (ROA) measured as pre-tax income to total assets ratio, I can roughly control for changes in book income. This is in line with previous research on the topic (Gupta and Newberry (1997), Buijink and Janssen (2000), Janssen (2005), Richardson and Lanis (2007). Wilkie (1988) showed that holding tax preferences, tax rate and total assets constant, an increase in ROA will lead to an increase in tax burden. Therefore, I expect a positive sign.

Apart from firm-specific characteristics based on data from corporate reports, others determinants may also play a role. For instance, some features of the tax code may exert influence on tax payments. I refer to loss carry-forward provisions that may cause variation in taxes beyond balance sheet and income statement determinants. Since I do not have access to tax return data, I set the corresponding dummy variable LCF equal to1 if the company recorded a net operating loss (NOL) in the previous year and 0 otherwise. With regard to loss carry-back, this was never available in Romania, therefore no tax refunds were possible. I expect that firms with NOLs in previous year to have lower tax payments.

Finally, since my investigation spans over twelve years period in which some tax reforms took place, I set a tax reform dummy variable TREF equal to 1 for the time period from 2005 onwards (when flat tax was adopted) and 0 for 2005 backwards. As a result of 2005 tax rate cut from 25% to 16%, I expect a negative sign.

In this framework, the multivariate model is:

$TPAY_{it} = \alpha_0 + \beta_1 * CINT_{it} + \beta_2 * LEV_{it} + \beta_3 * SIZE_{it} + \beta_4 * LINT_{it} + \beta_5 * ROA_{it} + \beta_6 * LCF\ \beta_7 * TREF + \varepsilon_{it}$, where i denoted the firm and t the year. ε_{it} is the error term.

TPAY (*tax payments = natural logarithm of corporate income taxes actually paid*)
CINT (*capital intensity = fixed assets to total assets ratio*)
LEV (*leverage = medium and long term debt ratio*)
SIZE (*company size = natural logarithm of total assets*)
LINT (*labor intensity = personnel costs to turnover ratio*)
ROA (*return on assets = pre-tax income to total assets ratio*)
LCF (*dummy variable equal to 1 if firm recorded a NOL in the previous year, 0 otherwise*)
TREF (*dummy variable for tax reform equal to1 after 2005 onwards, 0 before 2005*)

All variables are computed using data from companies' financial reports. Usual checking did not reveal any concerns with regard to multicollinearity between explanatory variables.

4. Data
The dataset contains detailed information from balance sheet and income statement. It follows closely the BACH data scheme and covers all non-financial Bucharest Stock Exchange listed companies for twelve years period (2000 – 2011), thus having 668 complete company-years observations. I used unconsolidated data in order to better capture 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 the Internet sites, both of the companies and of the Bucharest Stock Exchange and National Security Commission. Also, a subscription access to Bucharest Stock Exchange data directory was acquired in order to get the data for earlier years.

The final sample contains only 502 firm-years observation since 111 firm-years are lost due to negative profits (losses) and additionally 55 firm-years are lost when considering the lagged values for net operating losses of the previous year.
Descriptive statistics are reported in Table 1.

Table 1. Descriptive statistics for the final sample

stats	N	mean	sd	min	max
TPAY	502	12.39	2.15	6.49	18.99
CINT	502	51.47	20.42	0.00	96.19
LEV	502	6.59	10.92	0.00	73.88
SIZE	502	17.48	1.41	15.11	22.76
LINT	502	21.29	11.94	0.23	76.91
ROA	502	6.04	9.36	-34.91	82.26
LCF	0 (n = 456)			1 (n=56)	

TPAY (*tax payments = natural logarithm of corporate income taxes actually paid*)
CINT (*capital intensity = fixed assets to total assets ratio*)
LEV (*leverage = medium and long term debt ratio*)
SIZE (*company size = natural logarithm of total assets*)
LINT (*labor intensity = personnel costs to turnover ratio*)
ROA (*return on assets = pre-tax income to total assets ratio*)
LCF (*dummy variable equal to 1 if firm recorded a NOL in the previous year, 0 otherwise*)

5. Results

I used panel data fixed effect model in order to account for company heterogeneity through firm-specific intercepts that capture the effects of unobserved or unmeasurable firm characteristics that are relatively constant over time but vary over firms (Gupta and Newberry, 1997). By including firm-specific intercepts, variables which are likely to be correlated with the explanatory variables (ownership structure, managers team, earnings management) may be controlled.
The results are reported in Table 2.

Table 2. Regression results

CINT	-0.0141* (0.00778)
LEV	-0.0137* (0.00749)
SIZE	0.795*** (0.176)
LINT	-0.0218* (0.0124)
ROA	0.0794*** (0.0132)
LCF	-1.093*** (0.262)
TREF	-0.821*** (0.164)
Constant	-0.0504

	(3.142)
Observations	502
R^2	0.568

Robust standard errors in parentheses clustered on firms
[*] $p < 0.10$, [**] $p < 0.05$, [***] $p < 0.01$

Capital intensity has a negative impact on tax payments according to the conventional theory. One percentage point (p.p.) increase in capital intensity leads to 1.4% reduction of the company's tax payments. Leverage also displays a negative sign as expected. In this case, one p.p. increase of medium and long term ratio triggers 1.36% reduction in profit tax payments. The coefficient for size shows that 1% increase in size triggers 0.8% increase in tax payments, which is in accordance to stated hypothesis. Labour intensity is significant, albeit at 10% and shows that 1 p.p. in personnel expenses ratio leads to 2.15% reduction in corporate tax payments. As for ROA, the positive coefficient shows that one p.p increase leads to 8.26% increase in tax payments. Moreover, the coefficients for the two dummy variables are positive and strongly significant, showing that companies are able to take advantage of the loss carry-forward provisions (reducing tax payments by 66% as compared to the companies that do not have NOLs) and that the tax reform in 2005 triggered a reduction in the tax payments which in average amounts to 56% as compared to the pre-tax reform period. This figure empirically confirms the simulation model European Tax Analyzer, which found that corporate tax burden felt by 34% (Spengel et al 2012a, 2012b).

6. Conclusions
The paper investigates the determinants of corporate tax payments for Romanian non-financial companies listed at Bucharest Stock Exchange over twelve years period (2000 – 2011), using for the first time, the log of taxes actually paid as dependent variable. This removes the inherent flaws of firm specific effective tax rates, while establishing a more comparable field for subsequent similar research.
All the determinants investigated were found as having an impact, albeit at different level of significance. Capital intensity, leverage and labour intensity were found as having a negative effect, while profitability and size have a positive impact. The findings correspond in general to conventional theory. Moreover, the paper produces evidence concerning the impact of loss carry-forward provisions on firm tax payments. The results are especially useful for corporate managers who see the ways in which they may reduce the corporate tax burden, for instance by taking more debt or my investing in new assets. However, the results are valid only for Bucharest Stock Exchange listed companies and cannot be extrapolated to private held companies, since they have different investment and financing choices. The results confirm the findings of Lazăr (2014) and show that firm-specific determinants are robust to different measures of corporate tax burden, either in relative forms (effective tax rates), either in absolute terms (log of taxes).

References:
Adhikari, A.; C. Derashid; and H. Zhang. 2006. "Public policy, political connections, and effective tax rates: Longitudinal evidence from Malaysia" *Journal of Accounting and Public Policy* 25, no. 5 (September-October): 574–595.
Becker, G. 1983. "A Theory of Competition among Pressure Groups for Political Influence" *Quarterly Journal of Economics* 98, no. 3 (August): 371-400.
Buijink, W. and B. Janssen. 2000. "Determinants of the Variability of Corporate Effective Tax Rates (Effective tax rate): Evidence for the Netherlands" *MARC Working Paper* 3/2000-08, University of Maastricht.

Chiou, Y.C.; Y. Hsieh; and W. Lin. 2012. "Determinants of Effect Tax Rates for Firms Listed on China's Stock Markets: Panel Models with Two-Sided Censors" *The Business &Management Review* 3, no.1 (November): 306-312.

Devereux, M.P. and R.Griffith. 1999. "The Taxation of Discrete Investment Choices" *Working Paper* 98/16 (Revision 2), Institute for Fiscal Studies, London.

Devereux, M.P. and R. Griffith. 2003. "Evaluating Tax Policy for Location Decisions" *International Tax and Public Finance*, 10, no. 2 (March): 107-126.

Fernández-Rodríguez, E. and A. Martínez-Arias. 2012. „Do Business Characteristics Determine an Effective Tax Rate?" *Chinese Economy*, Nov/Dec 2012, Vol. 45, Issue 6: 60-83.

Fernández-Rodríguez, E. and A. Martínez-Arias. 2014. „Determinants of the Effective Tax Rate in the BRIC Countries" *Emerging Markets Finance & Trade*, May 2014 Supplement, Vol. 50: 214-228.

Gupta, S. and K. Newberry. 1997. "Determinants of the Variability on Corporate Effective Tax Rates: Evidence from Longitudinal Data" *Journal of Accounting and Public Policy* 16, no. 1 (Spring): 1-34.

Jacobs, O. H. and C. Spengel. 2000. "Measurement and Development of the Effective Tax Burden of Companies - An Overview and International Comparison", *Intertax* 28, no. 10*: 334-352.

Janssen, B. 2005. "Corporate Effective Tax Rates in the Netherlands" *De Economist* 153, no. 1 (March): 47-66.

Lazăr, S. 2014. "Determinants of the Variability of Corporate Effective Tax Rates. Evidence from the Romanian Listed Companies", *Emerging Markets, Finance and Trade* 50 (4), 113-131.

Manzon, G. and W.R. Smith. 1994. "The Effect of the Economic Recovery Tax Act of 1981 and the Tax Reform Act of 1986 on the Ddistribution of Effective Tax Rates" *Journal of Accounting and Public Policy* 13, no. 4 (Winter): 349-362.

Noor, R.M.; N.S. Fadzillah; and N. Mastuki. 2010. "Corporate Tax Planning: A Study on Corporate Effective Tax Rates of Malaysian Listed Companies" *International Journal of Trade, Economics and Finance* 1, no. 2 (August): 189-193.

Ooghe, E.; E. Schokkaert; and J. Flechet. 2003. "The Incidence of Social Security Contributions: An Empirical Analysis" *Empirica* 30, no. 2 (June)**:** 81–106.

Richardson, G. and R. Lanis. 2007. "Determinants of the Variability in Corporate Effective Tax Rates and Tax Reform: Evidence from Australia" *Journal of Accounting and Public Policy* 26, No. 6, (November – December): 689–704.

Spengel, C.; W. Li; K. Finke; and B. Zinn. 2011. "The Computation and Comparison of the Effective Tax Burden in Four Asian Countries", *Hitotsubashi Journal of Economics* 52, no. 1 (June): 13-39.

Spengel C.; S. Lazăr; L. Evers; and B. Zinn. 2012a. "The computation and comparison of the Effective Corporate Tax Burden in Romania from 1992 to 2010", *ZEW Discussion Papers No. 3/2012*.

Spengel C.; S. Lazăr; L. Evers; and B. Zinn. 2012b. "Reduction of the Effective Corporate Tax Burden in Romania from 1992 to 2012 and Romania's Current Ranking Among the Central and Eastern European Member States", *Post-Communist Economies* 24, no. 4: 477-502.

Stickney, C. and V. McGee. 1982. "Effective Corporate Tax Rates: the Effect of Size, Capital Intensity, Leverage, and Other Factors" *Journal of Accounting and Public Policy* 1, no. 2 (Winter): 125–152.

Stigler, G.J. 1971. "The Theory of Economic Regulation Source" *The Bell Journal of Economics and Management Science* 2, no. 1, (Spring): 3-21.

Watts R.L. and J. Zimmerman. 1986. *Positive Accounting Theory*, Edgewood Cliffs, NJ: Prentice Hall.

Wilkie, P. F. 1988. "Corporate average effective tax rates and inferences about tax preferences", *The Journal of the American Taxation Association* 10, no. 1: 75-88.

World Economic Forum (2011), *Global Competitiveness Report 2011–2012*, available at http://www.weforum.org/reports/global-competitiveness-report-2011-2012.

Wu, W.; O.M. Rui; and C. Wu. 2013. "Institutional environment, ownership and firm taxation" *Economics of Transition* 21, no.1 (January): 17–51.

Xing, L. and S. Cao. 2007. "Determinants of Corporate Effective Tax Rates: Evidence from Listed Companies in China" *Chinese Economy* 40, no. 6 (November – December): 49-67.

Zimmerman, J. 1983. "Taxes and Firm Size", *Journal of Accounting and Economics* 5: 119-149.