



The impact of the auditor and tax advice on the effective tax rate

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Abstract

This paper studies the effect of tax advice expenses and the auditor on the effective tax rate for large Belgian firms. Moreover, we analyze how this relation changes when the corporate governance code was implemented in 2003. Following the Sarbanes Oxley Act of 2002, Belgium approved a similar but less strict code. This study uses Belgian firm-level data between 1999 and 2007. The results indicate that spending money on tax advice does not reduce the ETR, while hiring a big4 auditor does. Although it seems that hiring a big4 auditor in the years after the corporate governance code went into practice leads to a smaller reduction in ETR than before. On average, a big4 auditor can lower the ETR of a Belgian firm by 1 percentage point. This indicates that information transfer between the auditor and the tax department is less common after the implementation of the corporate governance code.

Keywords: auditor, tax advice, effective tax rate, corporate governance

JEL codes: M41, M42, H25

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1. Introduction

After the introduction of the Sarbanes Oxley Act (SOX) in the US, also Belgium approved a corporate governance code in 2002 which implied a stricter supervision on the auditor and non-audit services. As a consequence, competing auditors will not easily transfer information between departments so that expenses for tax advice are less profitable. The Belgian audit market differs from the US audit market in several ways. Belgian companies of a certain size² are obliged to have their annual financial statements audited by a licensed auditor. This auditor must be a member of the institute of auditors IRE/IBR and satisfy to some regulations. Moreover, audit fees should be reported to the IRE/IBR. As a consequence, the Belgian audit market is characterized by a large audit demand, a smaller and less concentrated audit supply. This leads to a less competitive audit market (Willekens and Achmadi, 2003). Furthermore, previous empirical research about the Belgian auditor market observed that big4 auditors (Deloitte & Touche, Ernst & Young, KPMG, Pricewaterhousecoopers) charge higher audit fees (Willekens and Achmadi, 2004), but do not seem to differ in quality. Janssen et al. (2005) found that hiring a big4 auditor can reduce the effective tax rate (ETR) of a large Belgian firm by 1 to 2 percentage points. Their analysis was conducted before the corporate governance code (1993-2002). Moreover, they did not take into account the amount of tax advice costs.

This paper aims to analyze the relation between tax advice costs, the auditor and the effective tax rate (ETR) of a Belgian firm. In particular, we study whether spending extra money for tax advice or whether the type of auditor can reduce the ETR even after the corporate governance code. The analysis is carried out using Belgian firm level data for different time periods between 1999 and 2007. The results show that spending extra money on tax advice after the code does not yield a lower ETR. By contrast, hiring a big4 auditor does significantly lower the ETR of the firm. It seems that before the corporate governance code, a big4 auditor could lower the ETR by 2 percentage points, while after the corporate governance code this effect is only 1 percentage point anymore, due to stricter rules for providing non-audit services to the same firm.

The structure of the paper is as follows. Section 2 gives a short overview of the relevant literature. Section 3 deals with the data for this research, while section 4 explains the empirical model. The descriptive and estimation results are reported in section 5. Finally section 6 concludes the results.

² Small companies have maximum 100 employees or do not exceed more than one of these criteria: 50 employees, 6 250 000 euro turnover, 3 125 000 euro total assets.

2. Literature overview

After a series of fraud scandals in the US (Enron, Worldcom,...), the Sarbanes Oxley (SOX) act was introduced in 2002 and limited the supply of non-audit services. Since then, stakeholders are better protected and commissioners need to guarantee their independence of the company. The SOX act allows auditors to offer fiscal advice only if this advice includes more transactions than avoiding taxes (Omer et al., 2006). Following SOX, Belgium introduced the Corporate Governance code that sets up rules about among others the independence of the auditor and a stricter supervision on the non-audit services performed by the auditor (KB, 2003). The influence of the auditor on the effective tax rate of a company is therefore reduced, but still chances are high that the auditor cooperates with the fiscal department of the company (Gleason and Mills, 2006). The discussion between advocates and opponents of an even stricter policy of the auditor independence continues even after the act (Cook et al., 2008; Kinny et al., 2004; Rankin, 2004; Robinson, 2008; Zhang, 2007), also in Belgium (IBR, 2005).

Empirical research studied auditor-provided tax services in the US and found that these services significantly reduced among new or short-tenure clients of the auditor after the introduction of SOX (Omer, Bedard and Falsetta, 2006). Cook, Huston and Omer (2007) come to the conclusion that higher tax service fees paid to auditors are associated with greater reductions in ETRs in the pre-SOX and the post-SOX period. Firms that did not purchase tax services from their auditors did not have this negative association between tax service fees and ETR changes in the post-SOX period. Boone et al. (2010) found that second-tier auditors³ are an alternative for big4 auditors since there is little difference in actual audit quality. In Belgium, providing audit and tax services at the same time is common practice. According to Vander Bauwhede and Willekens (2004) audit fees and service quality are monitored by the Belgian institute of auditors and thus Belgian auditors cannot compete by fees or quality levels. They can compete by transferring knowledge from audit services to non-audit services such as tax planning. Although Vander Bauwhede and Willekens (2004) do not find a relation between auditor size and service quality, Willekens and Achmadi (2003) do report that big4 audit firms charge higher audit fees. Closely related to our work, Janssen et al. (2005) examine the impact of hiring a big4 auditor on the effective tax rate of Belgian firms in the period 1993-2002. They provide empirical evidence that hiring a big4 auditor leads to a 2 percentage points decrease in the ETR. They calculate that a big4 auditor generates up to 26 000 euro tax savings for a firm. This paper continues the work of Janssen et al. (2005) by studying the relation auditor-ETR in the after 'Corporate governance code'-period. Moreover, we analyze the role of tax advice costs and the interaction between big4 auditor and tax advice costs on the ETR.

³ The four largest US auditor firms are PWC, Deloitte & Touche, KPMG and Pricewaterhousecoopers (big4), the fifth and sixth largest US auditor firms (Grant Thornton and BDO Seidman) are second-tier auditors.

3. Data

The data for this research is collected from Belfirst, this database from Bureau Van Dijk includes financial statements of all Belgian companies. We have data available for the period 1999-2007. During this period, the corporate governance code and the corporate tax reform were approved in 2002 and implemented in 2003.

Corporate taxes in Belgium are progressive according to the taxable income of the firm. The progressive tax system since 2003 is as follows:

	STR before 2003	STR since 2003
0<=taxable income<25000	28.84%	24.98%
25000<=taxable income<90000	37.07%	31.98%
90000<=taxable income<322500	42.23%	35.54%
Taxable income >= 322500	40.17%	33.99%

Source: Beghin and Van De Woestyne, 2008

Firms with a taxable income larger than 322 500 euro are subject to the single tax rate of 40.17% before 2003 and 33.99% after 2003. Therefore, to exclude differences in the effective tax rate across firms due to the progressive tax system, we only select active companies with a profit before tax larger than 322 500 euro. Any other small companies⁴ in the sample were excluded because they are not obliged to hire an auditor. Financial companies and insurance companies were excluded since these firms have different accounting and fiscal rules (Vandenbussche et al., 2005; Van Tendeloo and Vanstraelen, 2008). Finally, all observations with an effective tax rate larger than 1 or smaller than 0 are deleted as being extreme observations (Collins and Shackelford, 2002; Vandenbussche et al., 2005). This leads us to a final dataset of 37 004 observations. Unfortunately, the data for the variable tax advice expenses is only available for the last two years, 2006-2007. Therefore, we will start our estimations for 2006-2007 and expand the sample in later estimations.

4. Empirical model

The empirical model is based on Vandenbussche et al. (2005), adding extra variables to analyze the effect of the expenses for tax advice and the auditor on the effective tax rate of a company. The model is as follows:

$$ETR_{it} = \beta_0 + \beta_1 firm\ size_{it} + \beta_2 capital\ intensity_{it} + \beta_3 leverage_{it} + \beta_4 R\&D_{it} + \beta_5 Sector_i + \beta_6 tax\ advice_{it} + \beta_7 big4_i + \beta_8 year_t + \varepsilon_{it}$$

Where i= Belgian company and t=year

⁴ Small companies have maximum 100 employees or do not exceed more than one of these criteria: 50 employees, 6 250 000 euro turnover, 3 125 000 euro total assets.

ETR is the effective tax rate of a Belgian, large company. This is measured as the amount of corporate taxes paid by the company divided by its profit before tax. This is the micro-backward method to define the real tax burden of a company (Nicodème, 2001; Vandebussche et al., 2005). As independent variables, we first include control variables that might affect the ETR. Firm size is the number of employees and possibly influences the ETR of a company. According to Siegfried (1972), large companies are more visible and thus more controlled so that tax evasion becomes more difficult (political cost theory). Watts and Zimmerman (1978) state that large companies have more political power to negotiate a lower ETR. Moreover, large companies have more means to manipulate their taxes (political power theory). But the relation between firm size and ETR is even more complicated. Nicodème (2007) analyzed this relation in depth and found that the sign of the correlation varies with the definitions of firm size (total assets, number of employees, sales ...). In this paper, we will use the number of employees since it is a common measure of firm size in the economics literature and to avoid colinearity with other control variables that are scaled with total assets. The second independent variable is capital intensity. This is the amount of tangible fixed assets divided with total assets and controls for possible tax exemptions for investments (Gupta and Newberry, 1997; Harris and Feeny, 2000; Janssen, 2005; Stickney and McGee, 1982; Vandebussche et al., 2005). A third independent variable is leverage, a ratio of long term debt to total assets. Interest payments can be deducted from the taxable income and thus can lower the ETR of a company. Since 2007, Belgium also allows to deduct a certain percentage of equity from the taxable income. Capital intensity and equity intensity are highly correlated and can therefore not be used simultaneously in a regression analysis. As a robustness check, we will substitute the variable capital intensity into equity intensity. Both measures are expected to lower the ETR. Fourth, we control for tax exemptions for R&D investments by taking the R&D expenses divided by total assets. According to Vandebussche et al. (2005), the effective tax rate can differ across sectors and therefore we include sector dummies as a fifth variable. Our variable of interest in this paper is the cost of tax advice divided by total assets. We expect that companies spending more on external tax advice have a lower effective tax rate. Finally, we control for common shocks to all firms or to a particular sector by including year and sector dummies.

5. Results

In this section, we describe the results of our analysis. First, we give some descriptive insights in the data. Next, we show the results from the empirical model and some robustness checks.

5.1 Descriptive results

The collected data consists of firm information during the period 1999-2007. In this period, the statutory tax rate (STR) for large firms changed from 40.17% to 33.99% in 2003. The

descriptive results show that the firms in our sample have a real tax burden (ETR) of 36% before 2003 and 30% after 2003, both close to the STR.

Table2: Descriptive results

a) 1999-2002

stats	etr	leverage	capitalintensity	R&D expenses	employment
min	0	0	0	0	1
max	1	1.3	1	3 581 162	20 122
mean	0.36	0.1	0.22	1196.18	115.59
sd	0.17	0.15	0.21	47 955.56	633.95

Note: R&D and tax advice expenses are in thousands of euros.

b) 2003-2007

stats	etr	leverage	capitalintensity	R&D expenses	employment	Tax advice expenses
min	0.00	0.00	0.00	0.00	1.00	0.00
max	1.00	1.01	1.00	7 259 644.00	15 957.00	364.00
mean	0.30	0.07	0.19	1796.91	121.10	14.63
sd	0.13	0.14	0.21	83 184.67	563.23	37.39

Note: R&D and tax advice expenses are in thousands of euros.

We observe that on average these Belgian firms spend 1 796 910 euro on R&D and 14 630 on tax advice (2003-2007, panel b). Table 3 shows that firms with a big four auditor spend more on tax advice, but are also larger in terms of employment and total assets. In this sample, 18.93% of the firms hire a big four auditor (Deloitte, KPMG, Ernst & Young and Pricewaterhousecoopers).

Table 3: Descriptive results, big four or non big four auditor, 2006-2007

	Tax advice expenses	employment	total assets
big4	1068.4	4.3	281 573 900
non big4	164.6	3.2	66 126 450

5.2 Regression results

Table 4 reports the regression results from the empirical model for the years 2006-2007 since the variable tax advice expenses was only available for these years. The first column shows the basic model with the variable for tax advice added. Column (2) adds a dummy variable for hiring a big4 auditor. Column (3) includes dummy variables for firms that are listed on the stock market, one for firms with a foreign shareholder and a last dummy variable for firms with a foreign subsidiary. Finally, column (4) adds an interaction variable between tax advice expenses and hiring a big4 auditor. The results in the table show that the

basic control variables come with the expected sign. A firm with higher capital intensity, leverage and more R&D expenses has a lower ETR, while a larger firm in terms of the number of employees has a higher ETR. These results are similar to previous literature (Gupta and Newberry, 1997; Janssen, 2005; Nicodème, 2001 and 2007; Stickney and MGee, 1982; Vandebussche et al., 2005).

More interesting is that the variable for tax advice expenses is not significant in any regression estimation we tried. This indicates that paying for extra tax advice does not lay off in lower effective tax rates. By contrast, hiring a big4 auditor does lead to a lower effective tax rate for the firm, more specific it lowers the ETR by 1 percentage point. The dummy variable for hiring a big4 auditor is significant in all 4 columns of Table 4. Moreover, we also observe that listed firms have on average a lower ETR than non-listed firms, while firms with a foreign shareholder have on average a higher ETR.

Table 4: Regression results, 2006-2007

	1	2	3	4
Capital intensity _{i,t}	-0.03*** (0.01)	-0.03*** (0.01)	-0.03*** (0.01)	-0.03*** (0.01)
leverage _{it}	-0.07*** (0.01)	-0.07*** (0.01)	-0.07*** (0.01)	-0.1*** (0.01)
R&D _{i,t}	-0.00002 (0.00001)	-0.00002 (0.00001)	-0.00002* (0.00001)	-0.00002* (0.00001)
Log(empl) _{i,t}	0.01*** (0.001)	0.01*** (0.001)	0.01*** (0.001)	0.01*** (0.001)
Tax advice_{i,t}	-0.24 (0.2)	-0.22 (0.2)	-0.22 (0.2)	-0.12 (0.46)
Big4_i		-0.01*** (0.003)	-0.01*** (0.003)	-0.01*** (0.003)
listed _i			-0.1*** (0.02)	-0.1*** (0.02)
Foreign shareh. _i			0.01*** (0.004)	0.01*** (0.004)
Foreign subsid. _i			-0.01 (0.01)	-0.01 (0.01)
(Big4*tax advice)_{it}				-0.12 (0.5)
Year2007	-0.01*** (0.003)	-0.01*** (0.003)	-0.01*** (0.003)	-0.01*** (0.003)
Industry dummies	Yes	Yes	Yes	Yes
Constant	0.29*** (0.01)	0.3*** (0.01)	0.29*** (0.01)	0.29*** (0.01)
Obs	8021	8021	8021	8021
R ²	0.03	0.03	0.03	0.03
Prob. F-stat	0.00	0.00	0.00	0.00

Note: standard errors are between brackets. *=significance at 10% level, **= significance at 5% level and ***= significance at 1% level.

5.3 Robustness checks

Since tax advice expenses do not significantly affect the ETR of a firm, we can leave this variable out of the model and enlarge the sample with extra years. First, column (1) in Table 5 runs the model for the period after the introduction of the corporate governance code, 2003-2007. The results are similar as before and show that hiring a big4 auditor lowers the ETR even after this stricter code. Second, columns (2) and (3) include three years before the corporate governance code, 1999-2002. This means that we can analyze the effect of implementing the code on the auditor-provided tax services by including a dummy for the corporate governance code period, 2003-2007 and an interaction variable between this time period and hiring a big4 auditor. Column (2) in Table 5 reports a negative and significant effect of the time period 2003-2007 which indicates that on average the ETR of the firms in the sample is lower in this period than before 2003. This was expected since the Belgian corporate tax rate reduced in 2003 from 40.17% to 33.99% for these firms. Hiring a big4 auditor lowers the ETR in general by 2 percentage points which is similar to the result of Janssen et al. (2005). Most interesting is that after the introduction of the corporate governance code, the effect of hiring a big4 auditor reduces (the interaction variable is positive and significant), that is the ETR decreases by 1 percentage point. Taking into account that the average ETR is 32% and the average profit before tax is 6 672 780 euro, this means that a big4 auditor can on average cut back 66 727 euro of taxes or 3 percent of the ETR. Finally, column (4) replaces the variable leverage by the variable equity intensity. The results indicate that a firm with more equity has a lower ETR which can be explained by the new notional interest deduction in Belgium. The other results remain and the R-squared increases to 9% which is still relatively low, but higher than other studies using the ETR as a dependent variable (Gupta and Newberry, 1997; Janssen, 2005; Nicodème 2001 and 2007; Stickney and MGee, 1982; Vandenbussche et al., 2005).

Table 5: Results robustness checks

	1 2003-2007	2 1999-2007	3 1999-2007
Capital intensity _{i,t}	-0.02*** (0.005)	-0.02*** (0.01)	-0.1*** (0.004)
leverage _{it}	-0.08*** (0.01)	-0.11*** (0.01)	
R&D _{i,t}	-0.00002** (9.97e-06)	-0.00003*** (0.00001)	-0.00003*** (0.00001)
Log(empl) _{i,t}	0.01*** (0.001)	0.01*** (0.001)	0.01*** (0.001)
Tax advice _{i,t}	-0.09 (0.5)		
Big4_i	-0.01*** (0.002)	-0.02*** (0.003)	-0.02*** (0.003)
listed _i	-0.12*** (0.01)	-0.11*** (0.01)	-0.11*** (0.01)
Foreign share _i	0.004 (0.003)	-0.002 (0.002)	-0.003 (0.002)
Foreign subsid _i	-0.005 (0.004)	0.0002 (0.003)	-0.005 (0.003)
(Big4*tax advice) _{it}	-0.11 (0.5)		
Equity_intensity			-0.05*** (0.003)
Period 2003-2007_{it}		-0.1*** (0.002)	-0.04*** (0.004)
(Period 2003-2007*big4)_{it}		0.01*** (0.004)	0.01*** (0.004)
Year2004	-0.01*** (0.003)		
Year2005	-0.02*** (0.003)		
Year2006	-0.04*** (0.003)		
Year2007	-0.05*** (0.003)		
Industry dummies	Yes	Yes	Yes
Constant	0.33*** (0.01)	0.38*** (0.01)	0.4*** (0.01)
Obs	19199	31957	31954
R ²	0.05	0.08	0.09
Prob. F-stat	0.00	0.00	0.00

Note: standard errors are between brackets. *=significance at 10% level, **= significance at 5% level and ***= significance at 1% level.

6. Conclusions

This paper studied the effect of tax advice expenses and the auditor on the effective tax rate for large Belgian firms. Moreover, we analyze how this relation changes when the corporate governance code (in line with SOX) was implemented in 2003. This study uses Belgian firm-level data between 1999 and 2007. The results indicate that spending money on tax advice does not lower the ETR significantly after the corporate governance code (2006-2007). By contrast, hiring a big4 auditor does lower the ETR of a firm. This indicates that information is transferred from the (big4-) auditor to the tax department where it is efficiently used in the tax accounting. The analysis also tested whether this effect continued after the corporate governance code was implemented in 2003. The results show that after this code, hiring a big4 auditor still reduces the ETR of the firm, but significantly less than before. More specific, it seems that before the corporate governance code, the big4 auditor can lower the ETR by 2 percentage points, while after the corporate governance code the big4 auditor can reduce the ETR only by 1 percentage point anymore. This still means a tax saving of 66 727 euro or 3 percent of the effective tax rate.

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8. Appendix

Table A.1: Variable definitions

Variable	Definition
ETR	Taxes/profit before tax
Leverage	Long term debt/total assets
Capital intensity	Tangible fixed assets/total assets
R&D intensity	R&D expenses/total assets
Logemployment	Log(number of employees)
Tax advice intensity	Tax advice expenses/total assets
Foreign shareholder	= 1 if a foreign shareholder holds at least 10% in the firm, 0 otherwise
Foreign subsidiary	= 1 if the firm holds at least 10% in a subsidiary abroad, 0 otherwise
Big 4	= 1 if the firm hires a big 4 auditor (Deloitte, KPMG, Ernst & Young, Pricewaterhousecoopers), 0 otherwise
Sector dummies	= 1 if the firm is active in sector I, 0 otherwise
Big4*tax advice	Interaction term
Equity_intensity	Equity/total assets
Listed	=1 if the firm is listed on the stock market, 0 otherwise

Table A.2: Correlation matrix

	etr	leverage	capitalintensity	R&D	log(employment)	tax advice	foreign shareholder	foreign subsidiary	big4	Listed	Equity_int	Big4*tax advice
etr	1											
leverage	-0.09	1										
capitalintensity	-0.06	0.47	1									
R&D	-0.03	0.001	-0.003	1								
log(employment)	0.05	0.04	0.05	0.09	1							
tax advice	0.01	-0.01	-0.01	0.01	0.01	1						
foreign shareholder	0.02	-0.08	-0.12	0.07	0.30	0.02	1					
foreign subsidiary	-0.002	0.02	-0.05	0.02	0.09	0.01	0.06	1				
big4	-0.02	-0.04	-0.07	0.05	0.29	0.01	0.3	0.03	1			
listed	-0.07	0.02	-0.01	0.01	0.08	0.01	0.06	0.01	0.03	1		
Equity_intensity	-0.14	-0.28	-0.0002	0.01	-0.17	-0.01	-0.09	-0.05	-0.06	-0.17	1	
Big4*tax advice	-0.01	-0.002	-0.01	0.01	0.04	0.9	0.04	0.02	0.05	0.04	0.02	1