

RESEARCH

Open Access



The detection of earnings management through a decrease of corporate income tax

Kawa Wali*

Abstract

This paper explores the manner in which Dutch and German listed companies were able to manage earnings by the decline in corporate income tax toward the end of the 2000s. In addition, a recent article examines the existing state of earnings management at a European level in the Netherlands and Germany. This empirical study sampled 1350 firm-years for the Netherlands and 1850 firm-years for Germany between 2000 and 2018. The study indicated that those firms with larger prospect tax savings appeared to exercise earnings management to hasten discretionary accruals. In view of the income-reducing impact these discretionary deductions have on financial statements, the findings show corporate income taxes are a significant incentive. Since companies can reduce tax costs by deferring income tax to a subsequent year and lower the tax tariff cycle, theoretically, this tax reform incentivizes management to manage their earnings with the purpose of minimize tax payments. More research is needed into the impact of tax compliance on declining earnings management in this area.

Keywords: Corporate income tax, Earnings management, Discretionary accruals, Tax cycle, Tax savings

Introduction

This paper extends the literature on the management of earnings to a European setting, namely the Netherlands and Germany, and includes the effects of corporate taxes on earnings management decisions. The Dutch government reformed national taxation in 2007 by enacting the Income Tax Act 2007. In Germany, the 2000/2001 Tax Reform Act formed part of a series of European Union harmonization initiatives across Member States and was the first major tax reform since 1977. The German Reform Tax Act changed the previous imputation system, which restricted the free movement of capital within Europe, and introduced an internationally more compatible shareholder relief system. It was not designed to affect the relative investment of low-cash and high-cash companies.

In the Netherlands, the maximum corporate tax rate was decreased from 35% to 29.5% in 2006 and to 25.5% in

2007. The corporate local tax rate was also reduced from 15 to 10% in 2006 and to 5.5% in 2007. This resulted in a net reduction in the absolute tax rates of 5.5% in 2006 (a relative reduction of 18.6%) and of 4% in 2007 (a relative reduction of 14.6%). In Germany, the maximum corporate tax rate was decreased from 52 to 38.9% in 2007 and to 30.2% in 2008, resulting in a net reduction in the tax rate of 13.1% in 2007 (a relative reduction of 33.7%) and of 8.7% in 2008 (a relative reduction of 17.5%). Companies may decrease tax costs by converting income tax for 2006 or 2007 to a subsequent year, with the aim of reducing tax costs. As such, managers can postpone income tax to a lower tax tariff cycle. Hypothetically, this tax reform incentivizes management to manage earnings in order to minimize tax payments. The purpose of this study is to investigate the impact of a reduction in the rate of corporate income tax on earnings management decisions. The study contributes to the empirical literature in a variety of ways. First, it offers a last opportunity to reach earnings objectives by lowering corporate income tax rates, which is a compelling environment to analyze profits management across a wide variety of firms. Secondly,

*Correspondence: kawa.wali@su.edu.krd
Department of Finance and Banking, College of Administration and Economics, Salahaddin University-Erbil, Erbil, Kurdistan Region, Iraq

because the scope of corporate income tax rates has not been completely documented, the findings of this paper provide wide evidence that reported taxes are utilized to limit earnings, which is helpful to financial statement readers and policymakers.

Corporation tax—corporate income tax

Corporation or corporate income tax is levied on companies in the Netherlands (i.e., resident taxpayers) and on certain companies not established there, which receive income from the Netherlands (non-resident taxpayer). In this context, the term ‘company’ includes companies with: capital consisting of shares; co-operatives; mutual insurance and credit companies; foundations; other legal persons incorporated under civil law, when they administer an enterprise, funds for common account; and most publicly controlled industrial and commercial undertakings. Profits are defined in the widest sense, with a number of additions or deductions. The determination of taxable profits corresponds largely with the determination of profits taxable under personal income tax, including the deductibility of losses from other years.

Legal persons whose activities are of a social or charitable nature or otherwise in the public interest are exempt from corporation tax. Exempt categories of profit are those corresponding to the relevant exemptions under personal income tax. Furthermore, the participation exemption applies to all dividends, gains and losses related to the holding of at least 5% of the shares in a subsidiary. This rule, preventing economic double taxation, is in general equally applicable to dividends derived from domestic and foreign subsidiaries. Losses related to the winding-up of a subsidiary are, under certain conditions, deductible by the parent company. The deductibility of interest paid on non-functional loans and loans related to a reshuffle of participations within the group is restricted to certain circumstances. Another amendment permits companies to depreciate loss-making participations of 25% or more during the first five years after acquisition.

Companies were able to decrease tax costs by shifting taxable income from 2006 or 2007 to the later year. The changes in tax rates from the late 2000s examined in this research have a much larger impact. Therefore, to minimize tax costs, managers likely had an incentive to defer income to the lower tax rate period.

The rest of the paper is organized as follows: “[Methods](#)” section presents the study methodologies, objective, design and a clear description of all the processes used. “[Literature review](#)” section explores the previous literature and then develops hypotheses. “[Result and discussion](#)” section presents the experimental results and

discussion. “[Conclusion](#)” section is a conclusion and recommendation for further research.

Methods

The method in which the data were collected is the quantitative method, as the sample was included 1350 company-years for the Netherlands and 1850 company-years for Germany. Companies (other than banks, stock brokerage companies and insurance companies) where one or more of the variables such as stock return, accruals and net income are missing, are deleted, which results in a loss of 400 and 200 company-years for Dutch and German listed companies, respectively (Table 1). Cases with extreme outliers in operating cash flow (CFO), net income (NI), total accruals (ACCR) and stock returns are deleted (values above +1 and below -1). This results in a further loss of 200 and 200 company-years reducing the final sample of Dutch and German listed companies to 750 and 1450 company-years, respectively. Data are collected from the DataStream (Table 2).

From this initial sample, it excludes companies that do not meet at least one of the following criteria:

- (1) Company is listed on one of the Dutch and German Stock Exchanges over the sample period from 2000 through 2017.
- (2) Company has not changed its fiscal year end during the sample period
- (3) Company has not been engaged in merger during the sample period
- (4) Company reports taxable income of €350,000 and more in each year

Model

Accordingly, it uses the following model of expectations for total accruals to control changes in the economic circumstances of the company:

$$ACCR_t/A_{t-1} = \alpha_1(1/A_{t-1}) + \alpha_1(DREV_t) + \alpha_1(PPE_t)/A_{t-1} + v_t \quad (1)$$

where REV_t = revenue in year t less revenue in year $t-1$ scaled by total asset at $t-1$, PPE_t = gross property plant and equipment in year scaled by total asset at $t-1$, A_{t-1} = total asset at $t-1$ and $\alpha_1, \alpha_1, \alpha_1$ = company-specific parameters, v_t = the error term.

Dechow et al. [1] record that an implicit assumption in the Jones model is that revenue is non-discretionary. The Jones model excludes half of the earnings management from discretionary accrual proxy, if the earnings

Table 1 Book income before tax (BIBT) and taxable income (TI) in the Netherlands and Germany from 2002–2009

Country	Year	N ^a	Mean ^b IBTR € million	Mean TI € million	Mean Difference ^c	Ratio of BIBT/TI ^d
the Netherlands	2002	647	6031	6905	−874	0.87
	2003	721	5413	5834	−421	0.92
	2004	650	6124	6735	−611	0.91
	2005	648	6436	6938	−502	0.92
	2006	670	7296	7653	−357	0.95
	2007	621	8163	8762	−599	0.93
	2008	641	8207	8952	−745	0.91
	2009	671	4232	8677	−4445	0.49
Germany	2002	787	7189	7737	−548	0.93
	2003	690	7860	9620	−494	0.82
	2004	796	7930	8424	−494	0.94
	2005	701	8142	8440	−298	0.94
	2006	718	8201	8720	−519	0.96
	2007	750	9179	9669	−490	0.94
	2008	760	4522	4877	−355	0.95
	2009	696	3177	4597	−1420	0.69

Source: Author work

^a The book income uses before tax and taxable income before corporation enterprise tax^b The sample selection started with 1350 and 1850 for Dutch and German listed companies enclosed on the 2000: (1) Company has listed on one of Dutch and German DataStream from 2002 to end 2009, (2) Company has not changed its fiscal year end during the sample period^c Mean difference is computed as mean BTRI less mean TI^d Ratio of BIBT/TI is the ratio book income before tax to taxable income

are managed by discretionary income. The modification is designed to eliminate the assumption tendency of the Jones model to measure discretionary accruals with error when discretion is used over revenues. The modified Jones model estimates non-discretionary accruals (NDAC) as:

$$NDAC_t = \alpha_1(1/A_{t-1}) + \alpha_2(DREV_t - DREC_t) + \alpha_3(PPE_t) \quad (2)$$

where REC_t = net receivables in year t less receivables in year $t-1$ scaled by total assets at year t_1 .

The only change in revenue is that in the time of systemic earnings management is hypothesized, the change in claims will be used to duplicate the change of receivables. The Jones modified model implied that the management of revenues is responsible for any change in credit sales over this period. According to Dechow, the use of discretion to recover revenues is easier to manage earnings than from cash sales.

Dechow and Sloan [2] relax the assumption, similar to the Jones model, that non-discretionary accruals remain constant with the times. They assume that differences in non-discretionary accrual determinants are common among companies in the same industry. There

are inherent differences between different industries, which influence the level of accruals. The company-specific parameters γ_1 and γ_2 are estimated using (OLS) on the observations in the valuation period from 2006 to 2009 as indicated in Table 3.

Discretionary accruals for company i in prediction year p are the prediction error u_{ip} computed as follows:

$$DA = ACC_{it}/A_{t-1} - (b_{1i}1/A_{t-1} + b_{2i}(DREV_t - DREC_t)/A_{t-1} + b_{3i}PPE_t/A_t) \quad (3)$$

where b_{1i} , b_{2i} and b_{3i} are OLS estimates of α_{1i} , α_{2i} , α_{3i} company-specific parameters.

To test the hypotheses, it used the following multiple regression model with the prediction error from Eq. 3 as the dependent variable:

$$da_{ip} = b_0 + b_1Size_{ip} + b_2Lev + b_3Mgt \quad (4)$$

where $Size_{ip}$ is an indicator variable, which is equal to 1 if company i 's sales for 2007 are the highest quartile and 0 otherwise, Lev_{ip} is equal to the book value of long-term debt divided by total assets for company I for each prediction year p , $Mgtip$ is the percentage of outstanding

Table 2 Sample selection

	Observations	
	Netherlands	Germany
Cash basis sample*		
List of cash basis companies from 2002–2017	9	96
Less:		
Companies with missing lagged market value of equity and	8	7
Companies with DataStream in only 1999 or 2004	12	10
Companies with missing earnings data for either year	4	5
Companies not on DS or with missing returns for either year	6	4
Companies that have no matching accrual basis companies in the same	7	6
Total cash basis sample—number of companies	54	64
Number of company-years available for the sample of 54 Dutch companies and 64 German companies for the years 2002–2006 and 2007–2009	200	200
Accrual basis sample		
Company-years in the DataStream file matching four-digit industries as the cash sample with 2002 sales > \$5 million, and observations in both years 2002 and 2004, for years 2000–2004 and 2006–2009	1350	1850
Less:		
Company-years with missing earnings or return data	400	200
Less cash basis company observations	200	200
Total accrual basis sample—company-years (65 companies)	750	1450
Total sample cash and accrual company-year observations	950	1650

Source: Author work

*Cash basis sample includes the companies required to switch from the cash basis method of accounting for tax purposes to the accrual basis method following Guenther [25] and Moghadam et al. [26] provides evidence with companies deferring more financial accounting income as a result of the increase in book-tax conformity after this change

Table 3 Prediction years and tax rate

Country	Predicted Year	Definition	Corporate tax (%)	Constant rate (%)	Standard rate ^a (%)	Integrated tax rate ^b (%)
The Netherlands	2006	Taxable income begins between 31/12/2005 and 1 January 2006	29.6	20	15	46.5
	2007	Taxable income begins between 31/12/2006 and 1 January 2007	25.5	20	10	38.7
	2008	Taxable income begins between 31/12/2007 and 1 January 2008	25.5	20	5.5	35.4
	2009	Taxable income begins between 31/12/2008 and 1 January 2009	25.5	20	5.5	35.2
Germany	2006	Taxable income begins between 31/12/2005 and 1 January 2006	38.9	25	10.6	60.0
	2007	Taxable income begins between 31/12/2006 and 1 January 2007	38.9	25	9.9	55.5
	2008	Taxable income begins between 31/12/2007 and 1 January 2008	30.2	25	9.4	49.5
	2009	Taxable income begins between 31/12/2008 and 1 January 2009	30.2	25	8.6	44.6

Source: Author work

^a Standard rate computed as a different among local government tax

^b integrated tax rate (T) is computed as follows: $T = (1 + t_2) t_1 + t_3 / 1 + t_3$

stock owned for company i for each prediction year p . Dechow et al. [1] provide evidence that the modified Jones model provide the most powerful test of detecting management of earnings. To test the hypotheses, it will analyze total accruals instead of current accruals [3].

Literature review

In order to observe the effects of adjustments in the rate of federal corporate income tax, the interaction between corporate tax rates and earnings management in U.S. corporations has been studied [4]. The literature suggests that companies manipulate the income tax to decline the costs. According to reports by many government departments and analysts, the gap between registered book revenue and taxable income increased significantly in the 1990s. However, earnings management has been explored before in terms of a reduction in the corporate tax rate [5, 6]. This paper adds new knowledge by focusing on samples of companies in the Netherlands and Germany. Under German commercial law, corporate company annual profit is calculated according to the accrual accounting method. Annual profit is recorded in the annual financial statement and forms the basis for determining taxable income. However, German tax law provides different accounting options and income correction rules, meaning that the taxable income usually differs from the annual profit determined in the financial statement under commercial law.

In this paper, the focus lies on the use of accruals in book-tax in the Netherlands and Germany, to explore taxable income deferral more directly than in previous studies. As far as the author is aware, no research has been conducted into the way in which Dutch and German listed companies react to changes in tax rates. Prior research has examined earnings management when managers make financial and tax reporting decisions [7, 8]. Clearly, when managers increase accounting reporting, they may incur tax costs if they report higher book income. Managers can disclose lower income to shareholders and thus incur financial reporting expenses in order to reduce the profits reported to tax authorities.

In this context, it examines the reduction of the tax rate for the years 2006/2007 and 2007/2008 for Dutch and German listed companies, respectively.

As can be seen in the statutory tax rates of EU Member States for the period 1995–2005, and as indicated by the Ministry of Finance in the Netherlands, the reduction in the tax rate in the late 1990s was much larger than in previous years. This may indicate that company managers have a great incentive to displace income taxation. This paper has identified negative discretionary accruals for the years before reduction of taxation.

The paper provides evidence that some companies have a tendency to have more negative discretionary accruals to displace income tax to the lower rate period.

It seems that corporate taxable income and reported book income to investors differ noticeably, potentially suggesting manipulation or creative accounting by companies. The discrepancy between these two incomes has become a main objective in research, especially in the USA, Japan and more lately in Europe, because uncertainty has often been expressed as to whether corporate taxable income and reported book income provide a factual representation of the activities of the company. Some authors have therefore suggested making the United U.S. a “one-book” country, in which the same income measure would be used for both purposes [9]. However, there are several reasons why the Netherlands, Germany and other European countries are moving in the direction of a two-book method, under which the two income methods are mainly independent. German tax law still requires corporations to determine corporate taxes based on their individual financial statements prepared under German GAAP. However, tax accounting is not and never has been necessarily the same as financial accounting.

What is meant by this is that the non-conformity between financial accounting standards and tax law allows companies to manage book income upward and taxable income downward in the same reporting period [10].

Although the fact that empirical investigations have found important relationships between book-tax discrepancies, e.g., by Blaylock et al. [11] and tax avoidance or tax sheltering by Wilson [12]) in the USA, there is limited knowledge about book-tax reporting in the Netherlands and Germany.

Hypotheses development

Prior researches are focusing on detecting management of earnings on discretionary accrual models. The Jones cross-sectional variation model was used to test the hypotheses. It has been assumed that the Jones model correctly splits total accruals into discretionary and non-discretionary components.

Managers use accruals, which are the difference between net earnings and cash flow from operations. Accruals are also an attractive way for managers to manage earnings because they are used to convey book income from one period to another without requiring disclosing, and often, they will not be questioned by an auditor. Determining management of earnings requires a study of whether managers are intentionally decreasing the total assets in order to defer the revenue or increase total liabilities. In case that management conducts tax

planning to manage taxable income, it will lead to a negative accrual in the year before the year of decreasing tax rate. Therefore, the first hypothesis is as follows:

H1 Dutch and German listed companies' accruals tend to be negative in the year before corporate tax rate reduction.

Watts and Zimmerman [13] believe that managers make accounting choices to avoid the high costs of violation of debt covenants. They hypothesize that "ceteris paribus the larger a company's debt/equity ratio the more likely the company's manager is to select accounting procedures that shift reported earnings from future period to current period." These arguments lead to the following hypothesis:

H2 Dutch and German listed companies' accruals tend to be positive to company's magnitude in the year before corporate tax rate reduction.

It is to be expected that larger companies will postpone income to save taxes, whereas smaller companies, receiving lower capital costs, might have more negative accruals to move income to the subsequent year companies with bonus compensation system based on reported income, differing revenue and accruing expenses aren't likely being conducted because it is not in line with management wealth increase, although this is beneficial for stockholders. It is expected that managerial ownership will ease this problem. Therefore, the next hypothesis is managerial ownership tends to manage taxable income.

H3 Dutch and German listed companies' accruals tend to be negative in the year before decreasing corporate tax rate with the managerial share ownership.

DeFond and Jambalvo [14] conclude that managers make accounting choices that increase book income when their companies are close to breaching the debt agreement. They continue that there is substantial evidence that this is consistent with positive manipulation in the year prior to violation. However, both in the year of violation and in the year prior to violation earnings are managed upwards to meet the limits of the debt covenant. Other researches, e.g., Baber et al. [15] and Bushee [16], find evidence to these assumptions, by concluding that managers tend to decrease R&D expenditures and instead capitalize the costs in order to meet earning benchmarks. Schilit [17] points to a problem of R&D accounting operations to be a very misused habit, whereby management incorrectly reports costs on the balance. Based on these arguments, the following hypothesis will be tested:

H4 Dutch and German listed companies' accruals in the year before decreasing corporate tax rate tend to be positive with the debt convent.

Sample and data description

Table 1 and Figs. 1, 2, 3 show the average book income before tax and taxable income of Dutch and German listed companies from 2002 to 2009. The results show significant discrepancies if comparing these two European countries with the USA [9, 12, 18]. Managers have





Fig. 2 German corporate tax rate



Fig. 3 The Netherlands and German corporate tax rate

to report as much of expenses opposite as little revenues as they can in attempting to maximize tax saving in financial statements, but the tax authorities do not unlimitedly allow them to secure tax revenue in the governmental department. In this case, it can be expected that taxable income will be greater than book income. Moreover, the discrepancy between two incomes is exceedingly unchanged except for 2009. Table 1 illustrates no

significant differences if cases compared within the two countries.

From the comparison between the two incomes, it can be noticed that taxable income will be higher than book income. The discrepancy between two incomes is rather unchanged except for 2009. There can also be indications that the discrepancies are temporary and that mean book-tax discrepancies after 2009 have remained

unchanged. Specifically, Wilson [12] finds that five of eight tax shelters generate permanent discrepancies. Hence it is realistic to state that the Netherlands and Germany are still places where book-tax and taxable income associated are relatively higher than other European countries.

In the Netherlands, the corporate income tax rate is a tax collected from companies. Its amount is based on the net income that companies obtain while exercising their business activity, normally during one business year. The benchmark used refers to the highest rate for corporate income. Revenues from the corporate tax rate are an important source of income for the government of the Netherlands.

In Germany, the corporate income tax rate is a tax collected from companies. Its amount is based on the net income that companies obtain while exercising their business activity, normally during one business year. The benchmark used refers to the highest rate for corporate income. Revenues from the corporate tax rate are an important source of income for the government of Germany (Fig. 2).

However, although the rules are the same throughout the EU, the interpretation and/or application may differ in the various EU countries. As a result of the long tradition as a trading country with its open and business-friendly environment, the Dutch Customs (Fig. 3) Authorities are well known for their versatile customs surveillance solutions. This does not mean that lower

duties are levied or no controls are performed, but that the Dutch Customs Authorities typically try to perform their controls and supervision in such a manner that it has less impact on the company's operations.

During the years 1995–2020, the corporate tax rate was 37.87% in the Netherlands and Germany and reached the all-time high of 56.85% in 1995. Netherlands and Germany's current reporting value plus previous releases, historically high and low long-term estimates, economic calendar, survey consensus and news) Fig. 4).

Accruals are the discrepancy among reported earnings and operations of cash flow. It is assumed that a higher degree of subjectivity makes accruals more open to discretion, and it subjects the net income figure to more distortion than the cash flow from operations.

As explained in section, accruals are to alter the timing of cash flows recognition in earnings. Total accruals are further divided into discretionary and non-discretionary accruals. Also, it is explained that it is difficult to divide total accruals into discretionary and non-discretionary accruals.

A company's use of discretionary accruals is under the control of its senior management, particularly the company's CEO. Jones [19] relaxed previous hypothesis that the difference from current years to preceding years was solely because changes in discretionary accruals had been assumed to be constant from time to time.

There are intrinsic variations across various industries, which impact the degree of accruals. The

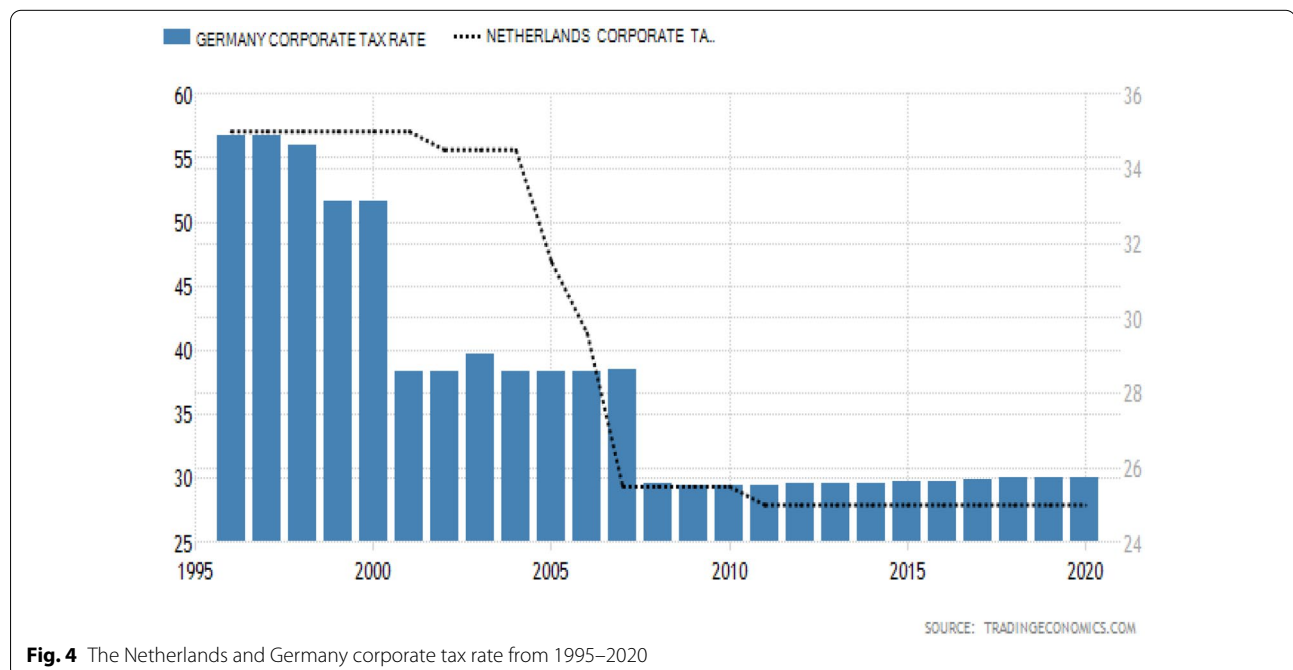


Table 4 Earnings and its components/Dutch companies ACC
 $it/A_{t-1} = a_{1i} 1/A_{t-1} + a_{2i} (REV_t - REC_t)/A_{t-1} + a_{3i} PPE_t/A_{t-1} + \varepsilon_{it}$

	Coefficient	Mean	25%	Median	75%
NI Estimated	a_{1i}	0.0698	-0.6190	0.0699	0.4260
t-statistic		0.1051	-0.6160	0.1091	0.9290
Estimated	a_{2i}	-0.0376	-0.8770	-0.0449	0.7560
t-statistic		-0.0096	-0.8010	-0.0074	0.5759
Estimated	a_{3i}	-0.0280	-0.2800	-0.0307	0.2001
t-statistic		0.0795	-0.4600	0.0752	0.8500
Adjusted R ²		0.2888	0.0888	0.287	0.3199
Durbin-Watson stat		2.1206	1.1206	2.1206	2.9206

Source: Author work

Total accrual (ACCR) is computed as follows: $ACCR = \Delta \text{current assets} - \Delta \text{current liabilities} - \Delta \text{cash and equivalent} + \Delta \text{short term debt and current portion of long-term debt} + \Delta \text{Income taxes payable depreciations, depletion and amortization}$

company-specific parameters γ_1 and γ_2 are calculated**Table 5** Earnings and its components/German companies ACC
 $ip/A_{t-1} = a_{1i} 1/A_{t-1} + a_{2i} (REV_t - REC_t)/A_{t-1} + a_{3i} PPE_t/A_{t-1} + \varepsilon_{it}$

	Coefficient	Mean	25%	Median	75%
Estimated	a_{1i}	0.052	-0.196	0.042	0.295
t-statistic		0.095	-0.303	0.095	0.485
Estimated	a_{2i}	-0.042	-0.394	-0.046	0.325
t-statistic		-0.003	-0.361	-0.003	0.359
Estimated	a_{3i}	-0.039	-0.158	-0.037	0.091
t-statistic		0.056	-0.310	0.050	0.450
Adjusted R ²		0.336	-0.088	0.334	0.606
Durbin-Watson stat		2.588	2.458	2.568	2.623

Source: Author work

Total accrual (ACCR) is computed as follows: $ACCR = \Delta \text{current assets} - \Delta \text{current liabilities} - \Delta \text{cash \& equivalent} + \Delta \text{current portion of long-term debt} + \Delta \text{Income taxes payable depreciations, depletion \& amortization}$. Discretionary accruals (DAC) are determined

using (OLS) on the data in the valuation period from 2006 to 2009 as stated in Table 3.

Result and discussion

The role of accruals proposed in Dechow [20] is working capital accruals, while the dependent variable in my regressions is total accruals. However, the Dichev et al. [21] model was developed to explain working capital accruals, and their empirical results are based on working capital accruals. As McNichols and Wilson [22] points out, their model may offer a noisy specification for total accruals. For each sample, company data are presented in Tables 4 and 5. The modified Jones model has a moderate explanatory power. This section will first look at the mean, median, minimum,

maximum and standard deviation of the total accruals and its components and then to the earnings and its components.

Summary statistics from estimating Eq. 3 for each sample company are presented in Tables 4 and 5. The modified Jones model has moderate explanatory power; the mean (median) adjusted R² is 0.288 (0.287), 0.336 (0.334) for the Netherlands and Germany, respectively, based on Durbin-Watson statistics. It appears that the residual does not form a serious problem [23, 24].

Tables 6 and 7 provide descriptive statistics and correlation of each variable by prediction year. Mean (median) discretionary accruals (da_{ip}) are -0.029 (-0.029), -0.021 (-0.020) in 2007 and -0.017 (0.016), -0.027 (-0.026) in 2008 for the Netherlands and Germany, respectively.

As seen in Figs. 3 and 4, before controlling for the outcome of non-tax costs, these accruals in the years before tax rate decreasing (2007 and 2008) are negative to those in other years (2006 and 2009). This result is confirmed with hypothesis H1. As expected, the measurements on company's magnitude are positive and significant in 2007. Moreover, the companies with less capacity have more total accruals' decreasing in the year before tax rate decreasing. Then again, this measurement is positive in 2008 but not significant. The outcomes are ineffectively fixed with hypothesis H2. The effect on company's magnitude has been measured; the measurements indicate that the intercept for operation leverage, and management ownership, in 2007 and 2008 are not positive, but significant. These results are in line with hypothesis H3; Dutch and German listed companies' accruals tend to be negative at the year before decreasing corporate tax rate with the managerial share ownership. This confirms with Desai [9] and Frank et al. [8] which showed that company's managers manage their book income tax to minimize tax costs although the decrease in the tax rate is smaller than the tax reform Act of 1986 in the USA.

The measurement on *Lev* is positive and significant in 2008 as expected, proposing if the company has a minimal level of debt covenant; the more companies' managers choose income-decreasing accruals. Despite that, this measurement is positive but not significant in 2007. This result is ineffectively confirmed with hypothesis H4. The measurement on *Mgt* is positive and significant in 2008 which is not in line with expectation of hypothesis H3. In summary, these results support the hypothesis that managers in the Netherlands and Germany are trying to defer their income through the decrease of corporate tax rate to meet changes in the corporate tax compliance rate.

Given that the income-cutting expenditures for financial statements are discretionary deductions, the findings indicate a significant incentive impact on corporate

Table 6 Correlation coefficient between variables-Dutch Co

Year	N	Variables	Mean	Median	Std. deviation	Minimum	Maximum
2006	739	size	−0.002	0.079	0.114	−0.379	0.711
Tax rate		lev	0.082	0.063	0.079	0	0.511
		mgt	0	0.079	0.143	0.038	0.221
		da	0.055	0.087	0.003	−0.021	0.247
		size	−0.002	0.011	0.104	−0.325	0.34
2007	739	lev	0.075	0.057	0.071	0.000	0.340
Tax rate		mgt	0	0.001	0.002	0	0.054
		da	−0.029	−0.029	0.001	0	0.324
2008	739	size	0.003	0.013	0.1	−0.32	0.312
Tax rate		lev	0.001	0	0.002	0.008	0.008
		mgt	0.054	0.028	0.077	0.839	0.039
		da	−0.017	−0.016	0.159	0.002	0.002
2009	739	size	0	0.012	0.097	−0.317	0.302
Tax rate		lev	0.068	0.038	0.068	0.01	0.32
		mgt	0.002	0.081	0.226	0.163	0.221
		da	0.003	0.036	0.301	−0.072	0.15

Table 7 Correlation coefficient between variables-German Co

Year	N	Variables	Mean	Median	Std. deviation	Minimum	Maximum
2006	993	size	0.008	0.031	0.008	−0.480	0.325
Total tax rate		lev	0.709	0.079	0.947	−0.440	1.440
		mgt	0.53	0.278	0.000	−0.480	0.770
		da	0.055	0.087	0.075	−0.490	1.300
		size	0.008	0.013	0.008	−0.869	0.520
2007	993	lev	0.564	0.065	0.839	−0.370	0.340
Total tax rate		mgt	0.53	0.278	0.000	0.100	0.054
		da	−0.021	−0.020	0.188	0.020	0.324
2008	993	size	0.008	0.001	0.008	−0.32	1.649
Total tax rate		lev	0.564	0.065	0.000	0	0.514
		mgt	0.53	0.278	0.000	0.839	0.039
		da	−0.027	−0.026	0.550	0.002	0.122
2009	993	size	0.008	0.001	0.008	−0.100	0.010
Total tax rate		lev	0.564	0.065	0.000	0.020	1.268
		mgt	0.53	0.278	0.000	0.163	0.231
		da	0.037	0.036	0.301	−0.072	0.251

Source: Author work

income taxation. The results may also have policy implications. If the two countries raise statutory rates in a year, companies may react by accelerating expenses into that year. Moreover, in Dutch and German taxation systems one finds different treatments for companies due to various issues, such as company's magnitude, capital structure or business sector. In this last one, for example it mentioned in this paper in Sect. 3 the elevation of the EBIT rate to non-financial companies that occurred in 2007, when the rate decreased from 29.9% to 25.5% and

of EBIT for those companies. It is reasonable to believe that this situation enhanced Dutch and German companies to compute lower costs, trying to postpone their income through the decrease of corporate tax rate to meet changes in the corporate tax compliance rate.

Companies may decrease their tax costs through converting income tax in 2006 or 2007 to a subsequent year. The aim of this action is to decrease the costs of tax; from here it can be seen that manager has an advantage to postpone income tax to the less tax tariff cycle.

This paper indicates that the one-book method does not remove tax-caused management of earnings. These indications suggest that the non-conformity of book income and taxable income is unconscious and would have an impact on both incomes.

Conclusions

This study broadens the literature to the European setting and examine the effects of corporate tax on earnings management decisions for listed Dutch and German companies. The corporate tax situation is expected to have a compensating effect on earnings management. Consistent with this expectation, the study found that Dutch and German listed companies operating in higher tax rate years are more likely to apply real earnings management to accelerate discretionary accruals.

Empirical results of this study show that companies have a tendency to manage their earnings through lowering their total accrual in anticipating 2007. Most of companies have negative difference total accruals (actual current accrual earnings minus actual current cash earnings) in 2006, 2007 and 2008. Further analysis was conducted to investigate whether company characteristics, namely size, long-term debt and manager ownership influence the total accruals. The results show that individually such company characteristics do not have significant influence towards earnings management, as proxies by current accruals. However, altogether those variables significantly influence current accruals. These findings provide evidence to support hypotheses of this study. Thus, managers of companies in the sample of this study anticipated reduction of corporate income tax rate as stated in 2007 by lowering its actual current accruals.

The study revealed that firms with a higher perspective on tax savings seem to manage earnings to accelerate discretionary benefits. Given the low impact of these discretionary deductions on the financial statements, the results suggest that corporate income taxes are a great incentive. Since businesses are able to reduce their tax expenditures by delaying income tax for a later year and reducing the tax rate cycle, this tax reform in theory incentivizes management to manage its resources to reduce tax payments. This paper contributes a final opportunity to meet earnings targets through decreasing of corporate income tax rate which is a powerful setting to examine earnings management among a wide range of companies. Furthermore, because the extent of corporate income tax rates has not been fully recorded, the findings of this research give broad evidence that reported taxes are used to control earnings, which is beneficial to financial statement readers and policymakers.

From the results of this study, the following recommendation has been made in order to better guarantee as a suggestion, considering the effect of taxes on earnings management. Some first posts have already occurred; however, it appears to researcher that one may offer an interesting new contribution on the following proposal:

- The impact of taxes on earnings management with taxes paid as a percentage of net cash flow between 0 and 30% and that this variable is ideally suited to changing (manipulating) earnings into the millions. Tax compliance certainly plays a role, but with all of the many tax treaties, taking a tax stance is still common. It is of course also a form of risk management, because you never know how it will turn out. Again, it is an extension of the literature and does not get much attention.

Abbreviations

CEO: Chief executive officer; DA: Discretionary accruals; ACCR: Change in discretionary accruals; REV_{*t*}: Revenue in year *t* less revenue in year *t*−1 scaled by total asset at *t*−1; A_{*t*−1}: Total asset at *t*−1 and $\alpha_{1i}, \alpha_{2i}, \alpha_{3i}$ = company-specific parameters; v_i : The error term; PPE_{*t*}: Gross property plant and equipment in year scaled by total asset at *t*−1; NDAC: Non-discretionary accruals; Lev_{*it*}: The book value of long-term debt divided by total assets for company *i* for; EBIT: Earnings before interest and tax; REC_{*t*}: Net receivables in year *t* less receivables in year *t*−1 scaled by total assets at year *t*₁; b_1, b_2, b_3 i: Are OLS estimates of $\alpha_{1i}, \alpha_{2i}, \alpha_{3i}$ company-specific parameters; *Mgtip*: The percentage of outstanding stock owned for company *i*.

Acknowledgements

Author would like to thank all those who helped to improve the overall quality of manuscript, particularly Dr. Alfred Thussenbroek.

Authors' contributions

The study was solely carried out by the corresponding author.

Funding

Author did not receive any funding for this work.

Availability of data and material

The data used in the study are available in Details of European Commission Taxes and Customs Union Taxes in Database Europe version 3 for the Dutch and German listed companies. Taxes in Europe Database v3 (europa.eu).

Declarations

Competing interests

The authors declare that they have no competing interests.

Received: 30 March 2021 Accepted: 12 July 2021

Published: 6 November 2021

References

1. Dechow PM, Hutton AP, Kim JH (2012) Detecting earnings management: a new approach. <https://doi.org/10.1111/j.1475-679X.2012.00449.x>

2. Dechow PM, Sloan RG (1995) Detecting earnings management. *Account Rev* 70:193–225
3. Wali K (2017) The influence of Dutch firm's performance on discretionary Accrual Models: Evidence from the Netherlands. *Zanco J Hum Sci* 21(2):374–401. <http://doi.org/https://doi.org/10.21271/zjhs>
4. Hanlon M, Heitzman S (2009) Tax research: real effects, earnings management, and governance. *J Account Econ*
5. Chung DY (1998) Income management in response to corporate tax rate reductions: Canadian evidence. *Int Tax J*
6. Scholes MS, Wilson GP, Wolfson MA (1992) Company's response to anticipated reductions in tax rates: The Tax Reform Act of 1986. *J Account Res*
7. Shackelford DA, Slemrod J, Sallee JM (2011) Financial reporting, tax, and real decisions: toward a unifying framework. *Int Tax Public Finance* 461–494
8. Wali K, Saleh S, Van Paridon K (2019) The causes and effects of earnings management on stock prices. *J Econ Admin Sci* 25(116):93–110. <https://doi.org/10.33095/jeas.v25i116.1789>
9. Desai MA (2005) The degradation of corporation profits. *J Econ Perspect* 171–192
10. Frank MM, Lynch LJ, Rego SO (2009) Tax reporting aggressiveness and its relation to aggressive financial reporting. *Account Rev* 467–496
11. Blaylock B, Shevlin T, Wilson R (2012) Tax avoidance, large positive temporary book-tax differences, and earnings persistence. *Account Rev* 87(1):91–120. <http://www.jstor.org/stable/41408062>
12. Wilson JR (2009) An examination of corporate tax shelter participants. *Account Rev*
13. Watts RL, Zimmerman J (1986) *Positive accounting theory*. Prentice-Hall, Englewood Cliff
14. DeFond M, Jambalvo J (1994) Debt covenant violation and manipulation of accruals. *J Account Econ* 17
15. Baber W, Fairfield P, Haggard J (1991) The effect of concern about reported income on discretionary spending decisions: the case of research and development. *Account Rev* 66(4):818–829. <http://www.jstor.org/stable/248158>
16. Bushee B (1998) Institutional investors and myopic R&D behavior. *Account Rev*
17. Schilit HM (2010) *Financial Shenanigans: how to detect accounting gimmicks & fraud in financial reports*. McGraw-Hill, Cambridge
18. Muhamad Ali KW, Saleh SM, van Paridon K (2020) The impact of changes in accounting standards on earnings management: applied research from 2003–2014. *Koya Univ J Hum Soc Sci* 2(2):166–175. <https://doi.org/10.14500/kujhss.v2n2y2019>
19. Jones J (1991) Earnings management during import relief investigations. *J Account Res* 193–228
20. Dechow PM (1994) Accounting earnings and cash flows as measures of company performance: the rule of accounting accruals. *J Account Econ* 18:3–42
21. Dichev I, Graham J, Rajgopal S (2012) Earnings quality: evidence from the field
22. McNichols M, Wilson P (1988) Evidence of earnings management from the provision for bad debts. *J Account Res* 26(Supplement):1–31
23. Beheiri LA, Ahmed ES, Aboul-Ela GM (2018) Analyzing the effect of organization cynicism on intention to leave: a case study on Nola Cupcakes
24. ElDin Aboul-Ela GMB (2014) Analyzing the relationships between organization justice dimensions and selected organizational outcomes-empirical research study
25. Guenther DA (1994) Earnings management in response to corporate tax rate changes. *Account Rev* 230–234
26. Moghadam A, Rounaghi M, Hafezi M, Ayyoubi M, Gholami M, Danaei A (2014) Governmental accounting developments in Iran, obstacles, strategies and opportunities. *J Middle East Appl Sci Technol*

Publisher's note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Submit your manuscript to a SpringerOpen[®] journal and benefit from:

- Convenient online submission
- Rigorous peer review
- Open access: articles freely available online
- High visibility within the field
- Retaining the copyright to your article

Submit your next manuscript at ► [springeropen.com](https://www.springeropen.com)