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THE RELATIONSHIP BETWEEN BOOK PROFIT AND TAXABLE INCOME FROM A RESEARCH PERSPECTIVE – EVIDENCE BASED ON CORPORATIONS IN POLAND

Abstract

One of the major obstacles faced by research into corporate taxation is connected with the lack of empirical data. Since tax returns are not publically available due to confidentiality requirements, firms' financial statements seem to be an alternative. The aim of the paper is to analyze whether financial statements are an adequate and useful source of information from the perspective of a researcher searching for data proper for a quantitative analyses of corporate taxation. The investigation is aimed at answering the following questions: In what way do corporations present their income tax liabilities and deferred taxes in profit and loss accounts? How can the amount of the tax due be derived from financial statements and what is the accuracy of the applied formula? To what extent do companies incurring book losses have also a zero tax base? The research is based on the financial statements of companies (4.059 observations within the period of four years), which were obliged to publish them in the official register *Monitor Polski B*, which is accessible in the database of Emerging Markets Information Services. The method applied in the paper is based on an analysis of particular items of firms' financial statements and their formula-based adjustment.

Keywords: *book tax differences, book tax conformity, corporate income tax, tax accounting.*
JEL classification: *H25, K34, M41, M48.*

Introduction

Numerous empirical analyses have been developed in the field of corporate taxation in recent years. In tax research, a particular focus is i.e. on aspects connected with an effective tax burden, international tax competition as well as the influence of taxation on firms' investment and financial decisions. In addition, identifying the initial tax burden is the starting point of the analysis when simulating the consequences of potential tax reforms. For these reasons, an access to tax relevant information such as taxable earnings, deductible costs, allowances, tax base etc. is crucial. However, the major obstacle faced by research into corporate taxation is connected with the lack of empirical data. Tax returns are, in Poland as well as in many other countries, not available due to confidentiality requirements. A reasonable alternative seems to be firms' financial statements despite the fact that they also have some drawbacks. First of all, there are considerable differences between the tax law and accounting regulations. As a consequence, the book profit presented in profit and loss accounts differs from the tax base calculated in tax returns. In Poland, the separation between book profit and tax base is particularly evident. Moreover, financial statements do not present directly items that influence the taxable base. Bearing in mind this context, the problem raised in this paper is connected with the relationship between book profit, tax base and the tax due. It is important both from a research and practical perspective.

The aim of the paper is to analyze whether financial statements are an adequate and useful source of information from the perspective of a researcher searching for information proper for a quantitative analyses of corporate taxation. The investigation is conducted in several steps and it is aimed at answering the following detailed research questions:

1. In what way do corporations present their income tax liabilities and deferred taxes in profit and loss accounts? Do all of them do this according to the same rules?
2. How can the amount of the tax due be derived from financial statements and what is the accuracy of the applied formula?
3. To what extent do companies incurring book losses have also a zero tax base?

The analysis is based on the financial statements of companies obliged to publish them in the official register "Monitor Polski B" which is accessible in the database of Emerging Markets Information Services (EMIS). Then, a formula is applied in order to derive the tax due from some more general information about the income tax.

Companies are divided into several groups according to their size and type of business activity. A period of four years was analyzed in order to mitigate the problem of some time specific factors. Due to the fact that some empirical data is used in the article to answer the above mentioned questions, a description of detailed book-tax discrepancies is of rather minor importance.

The paper contributes to the existing literature especially with the applied approach. Although the problem of book-tax conformity is a common subject of discussion, practice-oriented articles tend to dominate in Poland as well as books in the form of accounting guides. The discussion about the relevance of financial statements for tax research is still lacking. In this context, empirical evidence is also required. This paper attempts to fill this gap.

The structure of the paper is as follows. The first section deals with problems connected with corporate income tax presented in financial statements. The concept of deferred tax is addressed. Next two sections describe the method and data used. The fourth section presents the results concentrating on the following issues: practice of presenting corporate income tax in profit and loss accounts, accuracy of the correction for deferred tax as well as a comparison of book profit and tax base. In the last section conclusions are drawn up according to the research questions formulated in the introduction and results of the analysis are discussed.

1. Corporate income tax in financial statements

Tax law, according to which the tax base is calculated, and accounting law, which determines in turn the book (gross) profit present different sets of rules. This is understandable since both types of law follow different objectives. The major aim of the former is to secure the income side of the state's budget and to produce tax revenue. The objective of the latter is connected first and foremost with establishing a true and fair view of a business and requires conservative estimates of sales, assets, liabilities etc. As experiences from various jurisdictions show, the tax rules and the accounting rules are linked to each other to a diverse extent (Litwińczuk, 2013, p. 67).

One possible solution is that these connections are strong and the tax law entirely accepts the rules set by the accounting law. In a second type of jurisdiction both sets of rules have some elements in common, but at the same time they use terms, definitions and legal institutions which are typical just for them. With the separation of book and tax accounts as well as due to the fact that tax acts determine the taxable base independent from the accounting profit, Poland belongs to the third group of countries (Wencel, 2012, p. 54).

When someone searches for information about the income tax paid by corporations for research purposes he/she should bear it in mind that corporate tax returns are confidential. This makes it necessary to use firms' financial statements as a source of information. However, as Table 1 shows, there are four different types of financial records in Poland: account books, tax books of revenues and expenditures, revenue accounts and tax cards. Only the first one is regulated by the accounting act. The three remaining forms of records are simplified statements established to calculate the tax due on business income derived by a natural person.

Table 1. Types of tax evidence in Poland in 2012

Forms of business activity and tax evidence	Number	%
A. Companies (legal persons):	*151,655*	–
Account books	151,655	100
B. Natural persons:	*1,643,287*	–
Account books	25,877	1,6
Tax books of revenues and expenditures	1,195,181	72,7
Revenue accounts	337,648	20,6
Tax cards	84,581	5,1
C. Total number of firms (A+B)	*1,794,942*	–

Source: Own calculation based on Central Statistical Office of Poland (2014).

According to Table 1 it is evident that the vast majority of firms (nearly 92 %) have no legal entity. As a consequence, such firms are not taxpayers. Instead, the income from business activity is subject to personal taxation at the level of the firm's owner. When a natural person derives income from diverse sources it is difficult in practice to distinguish between these sources and to assign a part of the tax duty to business income.

Due to these limitations the focus of the paper is on entrepreneurs with legal entity such as joint-stock companies or limited liability companies which all are obliged to prepare financial statements (Article 2 of the Accounting Act). The financial statements encompass among others balance sheets and profit and loss accounts (cash flows are presented by largest entities which fall under the audit obligation) (Article 45 of the Accounting Act). However, only a part of the largest corporations are obliged to publish their financial statements in an official register. According to article 64 of the Accounting Act until the end of 2012 every firm fulfilling at least two of three conditions concerning sales, assets and employment was obliged to publish their financial statements in "Monitor Polski B"[*]. Currently, financial statements have to be reported only to the register of business activity held by the Ministry of Justice.

Bearing in mind the above context it is crucial to identify what kind of tax relevant information is available in financial statements. Due to the already mentioned separation of tax rules and accounting rules and their diverse objectives, there are numerous differences which affect the amount of book profit and taxable base. The tax law deals with occurrences influencing the amount of tax duty in a particular period whereas future expected tax payments are beyond its scope

[*] Average full time employment should be at least 50 persons, total assets not less than 2,500,000 Euro and total sales not less than 5,000,000 Euro.

of interest. In turn, the accounting rules take tax consequences which occur both in current and in future periods into account (Martyniuk, 2014, p. 245).

There are two sources of differences (Gabrusewicz and Kamieniecka, 2007, p. 29). The first one is connected with definitions of earnings and expenses: not all earnings are subject to taxation and not all expenses are deductible for tax purposes. This fact is a source of so called permanent differences. They arise e.g. when a firm pays interests on overly late tax payments; such interests cannot be deducted from the tax base (Martyniuk, 2014, p. 250). A second source of differences is connected with the time: some earnings and expenses are recognized in diverse points of time for tax and accounting purposes. This causes in turn temporary differences which influence the amount of future tax payments (Olchowicz, 2005, p. 217). They are recognized e.g. when different depreciation methods are applied according to tax and accounting rules or when a kind of earnings or expenses (as for instance interests payments) is recognized on a cash flow basis for tax purposes only.

Companies obliged to have their financial statements audited and to make them publically available are also required to present the accounting position "deferred tax" in their balance sheets as well as in profit and loss accounts (Article 37 of the Accounting Act). For that reason, such firms have to calculate deferred tax assets and reserves for deferred tax. The former present the amount by which the future income tax payment is going to be lower, the latter in turn shows the amount by which the future income tax payment is expected to be higher. Both positions are responsible for the temporary differences between the gross profit and the tax base. For this crucial reason it has to be noted that the "income tax" position in profit and loss accounts presents the corporate income tax relevant for accounting purposes. It is not necessary the amount of tax which is actually due to the tax authorities for a particular period (Martyniuk, 2014, p. 246). Instead, it consists rather of two elements: income tax liability (the tax due) and the deferred income tax (Article 37 of the Accounting Act). It is also worth noticing that some items contained in deferred tax assets or reserves for deferred tax influence either a company's capital or a firm's value, not profit (Gabrusewicz and Kamieniecka, 2007, p. 133). However, such cases are rather rare. The vast majority of items contained in the assets or reserves increase or lower the profit, so they are included in profit and loss accounts.

2. Method

The method applied in the paper is based on an analysis of particular items of firms' financial statements and their formula-based adjustment aimed at deriving tax relevant information. Particular focus is on positions containing information about corporate income tax: income tax, deferred tax, deferred tax assets and reserves for deferred tax. Additionally, a formula which allows deriving the tax due from the items presented in financial records is developed and applied. The research procedure consists of three consecutive steps.

In the first step the corporations which present current tax due separate from the deferred tax in their profit and loss accounts were identified.

In the second step it was checked whether the information contained in financial statements allows deriving indirectly the amount of the income tax paid by corporations. The tax due is derived by correcting the position "income tax" from profit and loss accounts by the overall deferred tax. It is calculated according to the following formula:

$$ITD_n = IT_n - (R_n - R_{n-1}) + (A_n - A_{n-1}),$$

where:
ITD_n – income tax due, year *n*,
IT_n – income tax in profit and loss accounts, year *n*,
R_n – reserve for deferred tax, end of year *n*,
R_{n-1} – reserve for deferred tax, end of year *n-1*,
A_n – deferred tax assets, end of year *n*,
A_{n-1} – deferred tax assets, end of year *n-1*.

It is assumed that in the analyzed enterprises all business operations creating deferred tax assets or reserves for deferred tax do not influence firms' capital or firms' value, but exclusively their profits. As it has already been mentioned, occurrences relevant for the capital or firm's value are very uncommon (Gabrusewicz and Kamieniecka, 2007, pp. 108-109; Winiarska, 2009, p. 104; Olchowicz, 2005, p. 327), so this assumption is justified.

Then it has to be checked how good the results are when obtained with the formula. This part of the analysis was carried out for companies which present both the tax due and the deferred tax in their financial statements. The share of firms for which the formula-based results are the same as in financial records was calculated.

Book profit and tax base can vary from each other to a considerable extent. It is even possible that a company is not profitable from an accounting point of view, but it has a positive tax base, or the opposite: stating book profits, it has simultaneously a negative tax base. In the third step of the analysis firms' book profits and tax bases are compared.

Every stage of the investigation was conducted with reference to firms' size (small, medium, large) and type of business (industry, construction, trade, services).

3. Data

The data used in the analysis was derived from the financial statements of companies that were obliged to publish them in the official register "Monitor Polski B" before it was removed in 2013. It is accessible via the database of Emerging Markets Information Services (EMIS). The data had to be adapted to the requirements of the survey. First, due to a considerable delay in the publishing process every single observation of a company has to be assigned to an appropriate business year. Second, the information has to be assigned to proper legal forms. Third, general records of the financial statements of every single company need to be supplemented with particular items relevant for the deferred tax. In that way, an original set of information is drawn up[*].

Moreover, when constructing the data set capital groups are excluded and, in turn, the financial statements of related branches (Maksymiuk, 2008) are included[**]. In cases when business year and calendar year are not identical a financial statement is assigned to the year more months fall to. All corporations are grouped according to two following criteria:

[*] Since it is a laborious process, the time frame of the analysis is limited to four years. The data from period 2004 to 2006 was used since the original set of information was drawn up for an investigation presented in Flotyńska (2011). The data from this period was supplemented by the newest available data collected for 2011. The overall number of companies available for 2011 is smaller than that for the earlier years due to the fact that the financial statements for 2011were published exclusively in 2012 – the last year in which the register "Monitor Polski B" existed. There was a slight change in the way particular branches are classified in the EMIS database, which should not, however, affect the results. Since no considerable changes took place in the shape of financial statements, the analyzed years can be good examples.

[**] This approach is in line with article 51 of the Accounting Act.

1. Type of business – industry (on the example of manufacture of chemicals, chemical products and man-made fibres), construction, trade (retail trade except for repair of motor vehicles, motorcycles and personal and household goods), services (IT sector).
2. Size of the company measured by the net sales – small (8 million złoty or less), medium (from over 8 to 50 million złoty) and large (over 50 million złoty).

By the end, 4.059 observations within four years were subject to analysis. This is not a representative sample, however, it provides a good illustration for the investigated issues. Table 2 presents companies according to the type of business and size.

Table 2. Number of companies subject to analysis

Year	Industry			Construction		
	S	M	L	S	M	L
2004	11	90	115	92	314	146
2005	9	93	122	79	355	171
2006	11	96	122	73	344	289
2011	1	31	54	20	40	50
Year	Trade			Services		
	S	M	L	S	M	L
2004	25	81	111	50	69	29
2005	16	104	109	43	63	36
2006	19	109	132	41	63	37
2011	4	56	65	19	35	15

Note: S – small, M – medium, L – large enterprises.

4. Results

In this part of the paper results are presented according to three questions posed in the introduction. First, the analysis shows that there are several inconsistent ways of presenting the income tax in profit and loss accounts. Second, it is proved whether an application of a formula derived in the paper helps to overcome this shortcoming. Third, gross profit and tax base are compared for different types of firms.

4.1. The practice of presenting corporate income tax in profit and loss accounts

From the point of view of a researcher searching for information about the income tax actually paid by particular companies, it is of great importance that

Polish Accounting Act does not oblige enterprises to specify which amount of the entire "income tax" position can be assigned to the tax due and which amount – to the deferred tax (Gabrusewicz and Kamieniecka, 2007, p. 116). The clearest solution – and the most useful one from a research perspective as well – is to present the tax due and the deferred tax separately (Winiarska, 2009, p. 102). According to the latter it would be, additionally, advisable to distinguish between deferred tax assets and reserves for the deferred tax. However, there are several different ways in practice in which companies present corporate income tax in their financial statements.

Table 3. Share of companies presenting the tax due in profit and loss accounts – according to a firm's size (%)

Year	Small	Medium	Large
2004	71	44	36
2005	67	44	36
2006	60	44	36
2011	16	20	12

Table 4. Share of companies presenting the tax due in profit and loss accounts – according to branches (%)

Year	Industry	Construction	Trade	Services
2004	34	47	52	49
2005	32	46	49	46
2006	34	46	39	45
2011	13	13	15	25

The evidence collected in Tables 3 and 4 show to what extent enterprises state their tax due separate from the accounting "income tax" position. The majority of companies show exclusively an overall position "income tax". Some of them concentrate also on more details showing either one or two of the "income tax" components (the tax due and the deferred tax). Table 3 shows a clear tendency for the years 2004-2006 that smaller companies by far more often than larger enterprises show the tax due as a separate position. This is observed for ca. 60%-70% of small companies, 44% of medium and only 36% of large companies. This conclusion holds only for three years of the analysis. However, it is also common that in contrast with larger enterprises the tax due of the smallest companies is zero*. The results for 2011 are different. They show that the prac-

* Moreover, for small companies there occur some disproportionately high values caused by several entities with a particularly high tax base. However, their exclusion could not be done according to clear criteria and it would by far limit the number of enterprises in each group.

tice to include very precise information about the components of the "income tax" in the financial statements became worse. However, the results can be influenced by the limited number of companies compared to the previous years so they have to be interpreted with caution.

As presented in Table 4, the results can be slightly different for various branches. For instance, a direct presentation of income tax duty can be observed in one third of industry companies and in more than 45% of firms in construction and services in some years. The results for trade are the most differentiated within the analyzed period.

It can be also observed that many enterprises present the deferred tax not in the position "income tax", but as "other items lowering the profit". The position "income tax", in turn, states the amount of the tax actually paid. This practice is incorrect (Winiarska, 2009, p. 102). It makes it hardly possible to distinguish between the current tax payment (the tax due) and the income tax calculated according to the accounting rules. As a consequence, it leads to confusion about the exact content of particular items of the profit and loss accounts.

4.2. Accuracy of the correction for deferred tax

The way the amount of the tax due can be derived from financial statements was discussed in Section 2. Now it can be the subject of analysis whether the tax due derived with the presented formula from the information about the deferred tax provides a reliable alternative for using "income tax" data without correction. The results are presented in Table 5.

Table 5. Conformity of the amount of tax due after correction for the deferred tax with the amount of tax due stated in profit and loss accounts (%)

Year	Industry		Construction	
	Group of reference *	Conformity	*Group of reference* *	Conformity
2004	*34*	96	*47*	97
2005	*32*	100	*46*	96
2006	*34*	95	*46*	95
2011	*13*	91	*13*	86
Year	Trade		Services	
	Group of reference *	Conformity	*Group of reference* *	Conformity
2004	*52*	96	*49*	96
2005	*49*	98	*46*	92
2006	*39*	94	*45*	94
2011	*15*	89	*25*	100

* Percentage of companies presenting the tax due in profit and loss accounts.

The group of reference consists of firms which present, apart from the overall position "income tax", also its particular components (first of all the tax due). The quality of the data obtained with the formula is very high. The results for 2011 confirm this outcome. In at least 86% of companies the amounts of the calculated tax due are identical with those stated by firms. This holds for every year of the analysis. These results lead to the following conclusions. First, the assumption is justified that the deferred tax influencing the capital or firm's value can be neglected and this assumption does not deteriorate the results. Second, it can be assumed that the high conformity of the formula-based results holds also for companies not included in the reference group.

4.3. Book profit versus tax base

The aim of this part of the investigation is to check a general tendency in the direction of the relationship between book profits and the tax bases of companies. For instance, it can be calculated to what extent firms incurring loss according to the accounting rules (negative book profit) do also have a zero (negative)[*] tax base and pay no corporate income tax. Tables 6 and 7 present the results.

Table 6. Share of companies with zero tax bases and negative book profits in the total amount of companies with negative book profits – according to a firm's size (%)

Year	Small	Medium	Large
2004	85	80	72
2005	89	77	74
2006	82	63	59
2011	83	73	80

Table 7. Share of companies with zero tax bases and negative book profits in the total amount of companies with negative book profits – according to branches (%)

Year	Industry	Construction	Trade	Services
2004	70	71	90	91
2005	68	79	87	82
2006	53	71	55	90
2011	75	73	85	75

[*] In the case of a negative tax base tax loss occurs which can be carried forward within a period of up to five years. In every year no more than 50 per cent of the loss can be deducted against income. Formally, for a period with a loss a zero tax base is stated in the tax return and there is neither tax liability nor tax refund.

It is relatively more common among small entities compared to medium and large enterprises to have a zero tax base and to not pay income tax. In the vast majority of small companies (in over 80 % of them for all analyzed years) negative gross profit occurs jointly with a zero (negative) tax base. It shows that the items influencing earnings and costs for both accounting and tax purposes work, when combined, rather in the same direction. In turn, for large enterprises the relationship is about 60%-80% which means that more than one fifth of companies with negative book profits pay income tax. Interestingly, for the third year subject to analysis there is a clear decrease of the share which means that the book-tax discrepancies became larger. Again, for 2011 the results show greater compatibility. However, due to data limitations they have to be interpreted with caution.

There is no clear relationship between book profit and tax base in different types of companies. It is worth noticing that, generally, the average tax base is higher than the book profit especially in medium sized companies in construction, trade and services sectors. A situation that the tax base is by average lower than the gross profit occurs far more seldom. However, the obtained results show that it is not possible to generalize because the book-tax differences vary strongly across firms.

Conclusions

The results obtained in the previous sections allow drawing up conclusions with reference to the questions formulated in the introduction.

Corporations present income tax liabilities and the deferred tax in profit and loss accounts in a very different way, since Polish law does not oblige a firm to distinguish between income tax from an accounting and from a fiscal perspective. Due to the fact that less than a half of companies present the relevant positions separately and that the deferred tax cannot be neglected, it is advisable to adjust the information provided in the profit and loss accounts before using it in any kind of analyses.

The amount of the actual tax due can be derived indirectly from financial statements using the correction for changes in deferred tax assets and reserves for deferred tax between two points of time. The accuracy of the results obtained in that way is very high. It proves that there predominate occurrences for which the deferred tax influences companies' profits.

The discrepancies between book profit and tax base are quite strong and this can be observed especially in medium and large companies. However, it is rather difficult to point out any tendencies since the direction and the scale of the differences vary considerably across firms.

The obtained results have an illustrative character. It was not the aim of the paper to conduct an analysis on a representative group of corporations. However, it allows concluding that financial statements are a reasonable substitute for tax returns in case the latter are unavailable for research purposes. However, problems connected with book-tax differences are inherent to such a substitution. Especially in such jurisdictions as Poland, with a strong separation between accounting and tax records, the differences might be so far-reaching that they should not be neglected. As a consequence, the amounts of income tax stated in the financial statements should be adjusted by taking into account deferred tax. Although it can be a laborious procedure which requires making a quasi-new dataset, it ensures that the outcomes are adequate.

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