WHEN TAXATION CHANGES THE COURSE OF THE YEAR
FISCAL YEAR ADJUSTMENTS AND THE GERMAN TAX REFORM 2000/2001

FRANK BLASCH
ALFONS J. WEICHENRIEDER

WHEN TAXATION CHANGES THE COURSE OF THE YEAR
FISCAL YEAR ADJUSTMENTS AND THE GERMAN TAX REFORM 2000/2001

Abstract

The paper examines 157 German listed corporations that had the option of changing their fiscal year to achieve a possible tax reduction in connection with the major tax reform of 2000/2001. The tax reduction from a change was larger, the larger the expected profits. However, with costs of changing the fiscal year, not all firms that expect a tax reduction from a change may do so. The paper presents empirical evidence that the propensity to change the fiscal year was significantly related to the amount of expected tax savings. This suggests that the corporate tax reduction – in combination with the special German transitory provisions – induced a deadweight loss: corporations incurred a non-tax cost to avoid a tax cost.

Frank Blasch
Johann Wolfgang Goethe University
Faculty of Economics and Business
Administration
60054 Frankfurt (Main)
Germany
blasch@em.uni-frankfurt.de

Alfons J. Weichenrieder
Johann Wolfgang Goethe University
Faculty of Economics and Business
Administration
60054 Frankfurt (Main)
Germany
a.weichenrieder@em.uni-frankfurt.de

1. Introduction

The major German tax reform of 2000/2001 has introduced many significant tax changes for corporations and may be used in many ways as a natural experiment to explore how tax sensitive firm decisions are. The reform reduced the federal corporate tax rate from 40 % for retained and 30 % for distributed earnings to a uniform rate of 25 % for all types of profits. It lowered depreciation allowances and abolished the full imputation system for taxing corporate profits.[1] These tax changes, of course, may have influenced the employment, investment and financing incentives of corporations.[2] This paper will concentrate on the special tax incentives for German corporations that, prior to the reform, had a fiscal year that was different from the calendar year. Due to special transition rules of the reform, corporations, under certain conditions, could save taxes by aligning their fiscal year with the calendar year and many firms indeed did take that option. Thirty-seven firms from a sample of 157 German listed firms (some 24 %) that had a fiscal year differing from the calendar year did in fact change in 2000.

In this paper we want to investigate whether the expected tax savings of a firm indeed can be used to systematically explain the observed changes. Our findings suggest that the probability of a change was significantly related to the expected tax savings. This implies that switches have only been undertaken when the benefits were sufficiently large to outweigh the costs of adjustment. The existence of those costs in turn suggests a non-negligible deadweight loss from *lowering* the tax rate that, of course, may be accompanied by a decrease in deadweight losses in other areas.

---

[1] For a more detailed account see Eggert and Weichenrieder (2002).
[2] For studies on these aspects see e.g. Homburg and Theisen (2000), Spengel (2000), Eggert and Weichenrieder (2002), or Keen (2002).

In the next section we will explain in more detail why firms could gain from an adjustment of their fiscal year. In Section 3 we set up an empirical model of this behavior before we interpret and conclude in Section 4.

2. Incentives for Changing the Fiscal Year

German corporations are not bound to the calendar year. While a corporation needs the consent of the fiscal authorities to depart from the calendar year once the fiscal year is aligned (Income tax code - EStG - § 4a), a newly set up corporation may retain such an uneven fiscal year forever. At the beginning of the year 2000, 157 of 989 listed German corporations had a fiscal year that differed from the calendar year. An alignment comes at a cost since it requires anticipating of future balance sheets and this additional accounting will not be cost free. There may also be a decision cost, as changing the fiscal year must be accepted by the shareholder meeting and has to be recorded in the companies' register (see Orth 2000).

If the income tax rate changes, then the incentives for changing the fiscal year depend on the specific transitory rules. The transitory rules used for the German corporate tax reform 2000/2001 were such that a corporation with a fiscal year starting in 2000 and ending in 2001 had to pay the old corporation tax of 40 % (or 30 % respectively) for profits generated during this fiscal year. That is, the transitory rules[3] implied that a corporation with a non-aligned fiscal year had to pay the 2000 tax rate on part of the profit generated in 2001. On the other hand, a corporation with an aligned fiscal year was also subject to the 40 % (30 %) rate in 2000, but could take advantage of the reduced rate of 25 % for the full fiscal year 2001.

Figure 1 illustrates the corresponding incentive to change the fiscal year. Corporations 1 and 2 are assumed to earn a constant profit over time. Profits are illustrated by the size of the rectangles. The fiscal year of corporation 1 starts in mid 2000 and ends in mid 2001. Hence, not only were the profits generated during the first part of the fiscal year (marked by

---

[3] Corporate tax code – KStG - § 34(2) as of 23. October 2000.

"A1") subject to the high rate $\tau = 40 \%$, so too were the profits in the second half ("B1"). Now consider corporation 2 that decides to align the fiscal year. This alignment requires one fiscal year with less than twelve months ending on 31st December 2000. During this period, labeled "A2", profits were taxed at 40 %, like in the case of corporation 1. However, unlike in the case of corporation 1, all profits that accrue in 2001 ("C2") are taxed at the lower rate of 25%. Hence, the transitory rule gave a firm like corporation 1 an incentive to align the fiscal year and to act like corporation 2. The incentive is increasing in the expected profitability of the firm during period B1 and, given a positive stream of profits during period B1, it was also increasing in the length of period B1.

Figure 1: The timing of tax rates
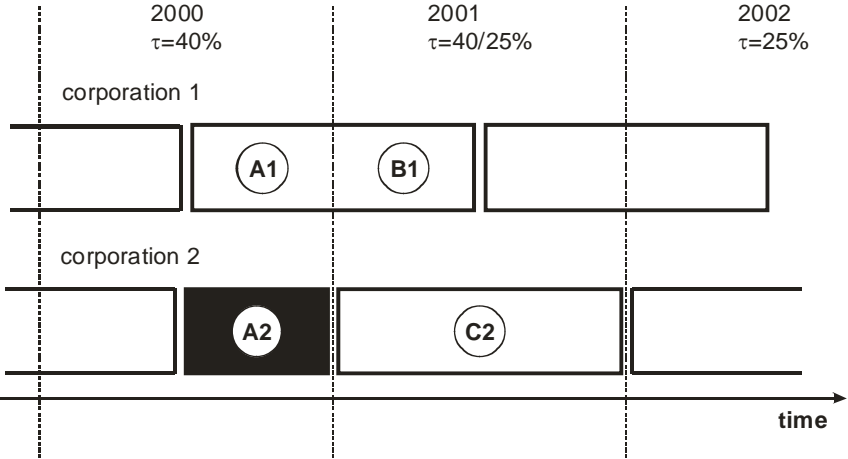
It should be noted, that the Bundesrat, the upper house of the German parliament, passed the tax reform law on 14th July 2000, while the Bundestag, the lower house, had already accepted it on 18th May 2000. Hence firms had to decide within half of a year to insert a shortened fiscal year and thus to align the fiscal to the calendar year. Nevertheless, this time period was sufficiently long to realize the adjustment.

Not all profits were treated according to the above description, however. A qualification applies if profits are based on the receipt of intra-company dividends. Since, effectively, prior to the reform intra-company dividends received by a German corporation

3

from a domestic or foreign corporation were exempted from corporate taxation, a change of the dividend-receiving corporation from an unaligned fiscal year to an aligned one could give no relief for this type of income. Dividends are but one method to transfer profits from a dependent corporation. Another instrument is to strike a profit transfer agreement[4]. For this type of income, applicability of the new corporate tax code could reduce the effective tax rate. Finally, it should be noted that new corporate tax code also introduced a new regime for capital gains from the sale of shares. Under the new code, those capital gains are exempt from the corporate tax of the selling corporation. This tax relief may have induced firms, which wanted urgently to sell off participations, to change their fiscal year.

3. Empirical Findings for Large German Corporations

In this section we will use publicly available data of German listed firms to evaluate whether the tax incentives have systematically influenced the decisions of German corporations to change their fiscal year. In total we identified 157 corporations that in 2000 had a non-aligned fiscal year and could potentially adapt to the incentives described above. Table 1 reports on the summary statistics of these firms.

Table 1: Sample statistics for key variables

Variable	Mean	Median	Standard Deviation	Min	Max
CHANGE	0.2357	0	0.4258	0	1
PROFITS2001	107142.1	2245.3	647717.5	-2004726	5335504
ASSETS2001	3245287	160528.7	16200000	758.8621	176000000
DAYS	217.5	273	76.1	58	334
SAVE 2001	65117.5	637.1	418136.4	-1499425	3917522
HOLDING	0.1274	0	0.3345	0	1

Annotation: PROFITS2001, ASSETS2001 and SAVE2001 are measured in thousands of Deutsche Mark.

---

[4] A "profit transfer agreement" is a contract, which determines that a firm has to transfer all of its profits to a controlling company.

CHANGE is a dummy that takes on the value 1 if a firm did adapt and changed from a non-aligned fiscal year in 2000 to an aligned fiscal year in 2001. This was the case for 37 companies (23.57 %) in our sample. PROFITS2001 measures the reported profits (in thousands of DM) of companies in the 12-month fiscal year that ended in 2001.[5] The variable shows a huge standard deviation and the median firm in 2001 made a quite modest profit. ASSETS2001 measures total assets (in thousands of DM) of a company reported in the balance sheet of the fiscal year that ended in 2001. We expect this variable to capture the cost of changing the fiscal year that should be higher for larger companies. One determinant of the possible tax savings that may result from a change of the fiscal year is the fraction of the fiscal year 2000/2001 that falls in 2001. If a firm has a positive, constant profit stream, then the tax savings from a change are larger, the larger the fraction of the fiscal year that falls in 2001. It is only for this part that a reduced tax rate was available. To capture this effect, DAYS measures the number of calendar days of the fiscal year (if unaltered) that fall into 2001. SAVE2001 is defined as PROFITS2001 times DAYS divided by 365. Assuming a constant profit stream over time, this gives a good proxy for the profits that could be subjected to the lower tax rate by changing the fiscal year. Table 2 shows the distribution of the firms in our sample over the timing of their fiscal year 1999/2000 and thus the variable DAYS. Most of the firms have had a fiscal year that ended at the end of one of the quarters within the year 2000 with a peak at September 30.

Table 2: End of the fiscal year 1999/2000 and the decision to align

	29.02.	31.03.	30.04.	31.05.	30.06.	31.07.	31.08.	30.09.	31.10.	30.11.	Sum
DAYS	59	90	120	151	181	212	243	273	304	334	
CHANGE=0	5	18	3	2	21	6	5	47	9	4	120
	100%	81.8%	100%	66.7%	72.4%	75.0%	83.3%	70.1%	90.0%	100%	76.4%
CHANGE=1	0	4	0	1	8	2	1	20	1	0	37
	0.0%	18.2%	0.0%	33.3%	27.6%	25.0%	16.7%	29.9%	10.0%	0.0%	23.6%
Total	5	22	3	3	29	8	6	67	10	4	157

---

[5] Information on profits and assets was taken from the CD version of the Hoppenstedt Aktienführer. Figures refer to the consolidated group accounts.

Finally, the variable HOLDING is a dummy that takes on the value 1 if the company under consideration is classified as a holding company. As mentioned above, the tax reform exempted the capital gains of a corporation that derive from selling shares. For this reason, holding companies, whose main line of business is to hold participations, may have been especially attracted by the new tax code. We therefore expect this dummy to have a positive effect. On a descriptive basis, only 19 % of the non-holding companies aligned their fiscal year, while 55 % of the holding companies did so.

On the other hand, there were no tax savings available on profits from inter-company dividends and this form of income should be also very important for holding companies, which account for some 13 % of our sample firms (20 companies). In the empirical models presented below we will therefore construct additional interactive variables using this dummy for holding companies.

If there is a cost of changing the fiscal year and this cost differs across firms, then we should expect that the propensity of firms to react is positively correlated with the possible tax savings and negatively with the non-tax cost of a change. We will now test this hypothesis empirically.

Since the variable to be explained, CHANGE, is a dummy, we employ PROBIT estimations rather than OLS. Before we set up the empirical model we define several additional variables. While the variable SAVE2001 is a plausible proxy for the tax savings if expected profits are positive, this is not the case for companies with negative profits. For those firms the advantage of changing the fiscal year should be independent of the size of the losses. As laid out above, another possible difference arises with holding and non-holding companies. The impact of SAVE2001 may be smaller for holding companies that usually receive a large part of their income as a dividend from other corporations. As mentioned above, for this type of income, changing the fiscal year brought no tax relief. Therefore we use SAVE2001 to construct four different variables:

- SAVE2001_POS = $\begin{cases} \text{SAVE2001 if SAVE2001} > 0 \wedge \text{HOLDING} = 0 \\ 0 \ \textit{otherwise} \end{cases}$

- SAVE2001_NEG = $\begin{cases} \text{SAVE2001 if SAVE2001} < 0 \wedge \text{HOLDING} = 0 \\ 0 \ \textit{otherwise} \end{cases}$

- SAVE2001_POS_HDG = $\begin{cases} \text{SAVE2001 if SAVE2001} > 0 \wedge \text{HOLDING} = 1 \\ 0 \ \textit{otherwise} \end{cases}$

- SAVE2001_NEG_HDG = $\begin{cases} \text{SAVE2001 if SAVE2001} < 0 \wedge \text{HOLDING} = 1 \\ 0 \ \textit{otherwise} \end{cases}$

These four variables allow the estimation of econometric models in which the effect of SAVE2001 is different depending on whether profits are positive or negative and depending on whether the firm under consideration is a holding company or not.

Tax savings may simply be large because the corporation is large. At the same time, we should expect that the cost of changing the fiscal year is more sizeable in bigger corporations. To separately identify the cost and benefit sides, we therefore have to include a proxy for the cost side. We chose total assets (ASSETS 2001) as such a proxy on the grounds that setting up an additional balance sheet to align the fiscal year will be more costly in a large corporation. Thus, we expect a negative influence of this variable on the probability to align the fiscal year in the empirical analysis.

The first two columns of Table 3 report our results for two simple PROBIT models. The model in column (1) includes the full set of right hand side variables. As expected, for profitable non-holding companies, the variable SAVE2001 affects the switching probability positively. The variable is significant at the five percent level. The holding company dummy is also positive and significant. This implies that on average holdings did change more often than non-holding companies. This should reflect the benefit of holding companies for sales of participations under the new tax code. On the other hand, the variable SAVE2001_POS_HDG is not significant at conventional levels. As mentioned above, this is not surprising, given a predominance of inter-company dividends in the income of holding companies. Thus holdings are relatively insensitive to the variable SAVE2001.

7

If the profitability is negative and therefore no taxes are due we should expect no influence of the size of the profitability. Indeed, this is indicated by the insignificance of SAVE2001_NEG and SAVE2001_NEG_HDG.

As expected, our proxy for the cost of changing the fiscal year, ASSETS2001 is negative and significant at the five percent level.

Column (2) presents a more parsimonious model. A test performed on model (1) showed that the assumption that the excluded variables are jointly different from zero could not be rejected at conventional levels. The comparison of models (1) and (2) shows that the results are robust against exclusion of these insignificant variables. Both models correctly predict the decision to align the fiscal year in about 78 percent of cases.

Table 3: Determinants of Fiscal Year Adjustment Probability

	PROBIT		IV-PROBIT
	(1)	(2)	(3)
SAVE2001_POS	1.18E-06	1.24E-06	1.78E-06
	[0.017]**	[0.014]**	[0.008]***
SAVE2001_NEG	7.27E-07		
	[0.561]		
SAVE2001_ POS _HDG	4.27E-05		
	[0.369]		
SAVE2001_NEG_HDG	-1.24E-05		
	[0.362]		
HOLDING	0.87031	1.1026	1.0951
	[0.026]**	[0.000]***	[0.000]***
ASSETS2001	-2.53E-08	-2.69E-08	-3.99E-08
	[0.040]**	[0.030]**	[0.011]**
Observations	157	157	157
Percent correctly predicted	0.7771	0.7898	0.7834
Pseudo R-squared	0.0948	0.0893	

Annotations: *** significant at 1%-level; ** significant at 5%-level; * significant at 10%-level. Dependent variable: WECHSEL. P-values in brackets are based on robust t-statistics. All regressions contained a constant, coefficients are not reported.

A possible problem that may arise in the simple PROBIT models (1) and (2) is endogeneity. A firm that decides to keep its fiscal year unchanged and that therefore in 2001

is subject to a higher tax rate may try to invoke other tax saving instruments. The availability of these instruments may, in turn, affect the fiscal year decision. For example, a corporation may try to shift part of its profits into the fiscal year ending in 2002 to make sure that these shifted profits benefit from the tax reduction. If it can do so, it may be less reluctant to stick to the old fiscal year. Thus, there is not only an influence of profits in 2001 on the probability to change the fiscal year but also a possible reverse impact of the alignment decision on profits in 2001 and thus on the variable SAVE2001. Since this possible endogeneity may bias our results, we present an additional estimation where SAVE2001_POS has been instrumented using profits and profits squared of the fiscal year ending in 2000. These variables are highly correlated with the possible endogenous regressor SAVE2001 but they are not influenced by the decision to align the fiscal year. We also decided to include in the first stage regression a dummy for Infineon, a microchip producer that incurred an exceptionally huge loss in 2001, preceded by sizeable profits in 2000. Details are presented in the appendix.[6]

Results from the IV-PROBIT model that uses the instrumented values of SAVE2001_POS are presented in column (3). The signs of the variables are the same as in model (2) but they are more significant than those for the simple PROBIT model. For example, the variable of prime interest, SAVE2001_POS, is now significant at the 1 per cent level rather than at the 5 per cent level. Similarly, p-value for ASSETS2001 has also decreased. A possible reason for these improved results is that corporations had to decide on their fiscal year policy on the basis of predicted profits rather than actual profits. Given the partial knowledge about actual tax savings from a change, the instrumented variable may not only correct for a possible bias but may also model firm decisions in a more appropriate way. Indeed this seems to be the driving force here, as a Hausman test performed on models (3) and (2) found no systematic differences in the coefficients and therefore does not suggest a bias.[7]

---

[6] A Sargan test for the validity of instruments was only possible when dropping the Infineon dummy in the instrument list, but it confirmed the validity of the other instruments.

[7] The Hausman test was performed under the assumption that (3) is the unbiased but inefficient model.

4. Conclusion

In this paper we examined the decision of 157 German listed corporations to change their fiscal year in 2000. Theoretically, the gains from such a behavior were larger, the larger the expected profits that could be shifted from a fiscal year with a 40 % tax rate to a changed fiscal year with a lower rate of 25 %. However, if there are costs of changing, then not all firms that expect a gain may do so. The empirical analysis presented in Section 3 indeed provides clear evidence that the propensity to change the fiscal year was significantly related to the amount of expected tax savings. This strongly suggests that the corporate tax reduction in combination with the special German transitory provisions induced a deadweight loss: corporations incurred non-tax costs to avoid a tax cost.

Appendix

Table 4: First stage regression

	SAVE2001_POS
PROFITS2000	0.8761
	[0.001]***
(PROFITS2000)^2	-4.14E-08
	[0.025]**
INFINEON	-2425071
	[0.000]***
ASSETS2001	-.0039
	[0.395]
HOLDING	5947.512
	[0.728]
Constant	-9162.802
	[0.267]
Observations	157

Annotations: dependent variable: SAVE2001_POS; *** significant at 1%-level; ** significant at 5%-level; * significant at 10%-level.

Bibliography

Eggert, Wolfgang and Alfons J. Weichenrieder (2002), Steuerreform und Unternehmensfinanzierung, *Journal of Economics and Statistics (Jahrbücher für Nationalökonomie und Statistik)* 222 (5), 531-555.

Homburg, Stefan and Manuel R. Theisen (2000), Steuersenkungsgesetz: Das gefangene Eigenkapital, *Der Betrieb* 53 (39), 1930–1931.

Keen, Michael (2002), The German Tax Reform 2000, *International Tax and Public Finance* 9 (5), 603-621

Orth, Manfred (2000), Steuersenkungsgesetz: Umstellung des Wirtschaftsjahres als Gestaltungsmöglichkeit, *Der Betrieb* 53 (43), 2136-2140.

Spengel, Christoph (2000), „Effektive Steuerbelastung der grenzüberschreitenden Geschäftstätigkeit nach den Vorschlägen zur Reform der Unternehmensbesteuerung". Zentrum für Europäische Wirtschaftsforschung und Universität Mannheim, Arbeitspapier, März 2000.

CESifo Working Paper Series

(for full list see www.cesifo-group.de)

_____