

Tax Policy, Corporations, and Capital Market Effects

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Zweitgutachter:

Tag der Promotion:

*“The art of taxation consists in so plucking
the goose as to obtain the largest possible
amount of feathers with the smallest
possible amount of hissing”.*

- Jean Baptiste Colbert (1619-1683)

Abstract

This dissertation analyzes tax policy, corporations, and capital market effects. First, the Savings Directive, which has left a loophole by providing grandfathering for some securities, is examined. It can be shown that investors are not willing to pay a premium for bonds that are exempt from the withholding rate, so it may be concluded that the supply of existing loopholes is large enough to allow tax evaders to continue evasion at no additional cost.

Second, tax neutrality towards alternative financing instruments for corporate investment is a ubiquitous demand in the political debate. However, the magnitude of possible efficiency costs of a departure from tax neutrality is hardly discussed. Against this background, this dissertation discusses the theory of capital structure and provides back-of-the-envelope calculations of the possible efficiency cost of a tax distortion of the debt-equity decision.

Third, the ex-dividend-day effect in relation to the German tax reform of 2000/2001 is discussed. The abolishment of the imputation system allows reexamining the size of the ex-dividend-day effect. I find no structural break in the size of the German ex-dividend-day effect and no evidence of an ex-dividend-day price drop that exceeds the dividend paid.

Fourth, an account of the quantitative development of tax legislation in post-war Germany is presented. It can be shown that the legislative output did not increase over the decades and is not affected by a split majority in the upper and lower houses. Finally, it turns out that an increasing fraction of this legislation is passed in December.

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List of Symbols

$III03_II05:$	dummy variable for quarterly observations between July 2003 and June 2005
$a:$	positive parameter of a cost function
$ANT_DEZ:$	absolute amount of passed laws/ regulations in December
$ANT_DEZ_ZUST:$	absolute amount of passed laws/ regulations in December that needed authorized approval by the upper house of the German parliament
$B:$	amount of debt
$\dot{B}:$	change in the debt ratio
$B^{\circ}:$	actual debt level
$B^*:$	optimal debt ratio
$b:$	net new indebtedness
$c:$	capital gains tax rate
$c_f:$	foreign capital gains tax rate
$\gamma:$	difference between the optimal debt ratio and the real debt ratio that is triggered by taxation
$D:$	dividend payment
$D_{credit}:$	dummy variable that is 1 if the dividend carried a credit and 0 otherwise
$G:$	tax credit
$f(K):$	cash flow (of real capital)
$i:$	interest rate on investment in the capital markets
$JAHR:$	year trend
$K:$	real capital
$\lambda_B:$	captures the (negative) shadow value of a marginal unit of debt
$Large:$	dummy variable for large dividends, which is 1 if the dividend belongs to the 5% largest dividends in the sample and 0 otherwise
$\Theta:$	characterizes the type of the corporate tax system
$OPPOSITION:$	dummy variable that is 1 if the opposition held the majority in the parliament in the corresponding year and 0 otherwise
$P_{i,t-1}:$	cum-dividend-day price of share i
$P_{i,t}:$	ex-dividend-day price of share i
$P_{i,t-T}:$	price of share i on day T at which it has been acquired
$postIII03:$	dummy variable that is 1 if the observation is from July 2003
$postIII05:$	return observations for July 2005 and thereafter
$Q:$	new investment of a shareholder in the company
$r_{t,t-1}^{CDAX}$	return of the CDAX
$r^{gf}:$	pre-tax return of a grandfather bond
$r^{tw}:$	pre-tax return of a grandfather's taxable twin
$r_diff:$	Pre-tax return of a twin divided by the pre-tax return of a grandfather bond
$REGIERUNG:$	dummy variable that is 1 if the federal government held the majority in the parliament in the corresponding year and 0 otherwise
$t:$	withholding tax rate
$t_d:$	shareholders' tax rate on dividend payments
$t_{div}:$	foreign tax rate on dividend payments

t_p :	shareholders' tax rate on personal interest income
t_u :	corporate tax rate
V :	going market value
\dot{V} :	change over time of the going market value
$Volume*d03$:	total emission of grandfathered bond in euro divided by the total emission of taxable bond in euro multiplied with the dummy variable post_II03
$WAHL$:	dummy variable that is 1 if there was a federal election in the corresponding year and 0 otherwise
Ψ :	cost function of nontax costs of a tax-distorted capital structure
$YEAR_{02-04}$:	dummy variable that is 1 if the dividend is paid out after the reform and 0 otherwise
$ZEITTREND$:	time trend
$ZUST_ANZAHL$:	absolute amount of passed laws/ regulations that needed authorized approval by the upper house of the German parliament
$ZUST_SEITEN$:	amount of passed laws/ regulations that needed authorized approval by the upper house of the German parliament measured by textual length

List of Original Papers

This dissertation is based on the following four papers:

Interest Income Tax Evasion, the EU Savings Directive, and Capital Market Effects

co-authored by Alfons J. Weichenrieder (2008), CESifo Working Paper Series No. 2300.

Taxes and the Efficiency Costs of Capital Distortions

co-authored by Alfons J. Weichenrieder (2008), CESifo Working Paper Series No. 2431.

The Ex-Dividend-Day Effect and the German Tax Reform of 2000/2001
(2007), working paper.

Das steuerpolitische Dezemberfieber: Steuergesetzgebung in Deutschland von 1951 bis 2004

co-authored by Frank Blasch and Alfons J. Weichenrieder (2007), *Perspektiven der Wirtschaftspolitik*, 8(3), 221-241.

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Überblick

Die Steuerpolitik ist eines der zentralen Forschungsgebiete im Bereich öffentlicher Finanzen. Diese Dissertation analysiert die Verknüpfungen zwischen Steuerpolitik, Unternehmen sowie deren Auswirkung auf den Kapitalmarkt. Steuern beeinflussen das Verhalten von Unternehmen und Privatpersonen. Änderungen in der Steuergesetzgebung können daher zu Ausweichreaktionen der Bürger bzw. der Unternehmen führen. Eine Folge dieser Ausweichreaktionen kann beispielsweise sein, dass eine Steuererhöhung zu Steuermindereinnahmen führt. Für den Staat ist es daher elementar zu wissen wie Unternehmen und Privatpersonen auf Änderungen der Steuerpolitik reagieren. Da Finanzierungsentscheidungen von Unternehmen, und somit die Auswahl der Anlagen, ebenfalls durch Steuern beeinflusst werden, ist es auch für die Prognose von Kapitalmarkteffekten erforderlich, die Reaktion der Wirtschaftssubjekte auf Änderungen der Gesetzgebungen abschätzen zu können.

Ein fundamentales empirisches Problem bei der Untersuchung des Steuereinflusses liegt darin, dass gewöhnlich alle Unternehmen in einer Volkswirtschaft dem gleichen Steuersatz unterliegen. Es gibt also keine analysierbare Varianz in den Daten. Daher muss die Untersuchung von Steuereffekten auf natürliche Experimente wie eine Steuerreform oder auf internationale Vergleiche zurückgreifen.

Das Forschungsziel dieser Dissertation ist eine detaillierte empirische Analyse der Steuerpolitik, Unternehmensbesteuerung und deren Kapitalmarkteffekte zu liefern. Dabei rücken in den ersten drei Kapiteln aktuelle Themen, die sich mit Kapitalmarkteffekten beschäftigen, in den Fokus. Im letzten Abschnitt wird das deutsche Steuersystem analysiert.

Zu Beginn wird die Zinsrichtlinie der Europäischen Union (EU) diskutiert, welche die Koordination von Zinseinkünften innerhalb der EU ermöglicht. Diese Richtlinie erlaubt Mitgliedsstaaten der EU, Zinserträge ihrer Einwohner die im Ausland erwirtschaftet wurden, zu besteuern. Ohne die Koordination der Besteuerung in Europa könnte ein großer Anteil, der im Ausland erwirtschafteten Zinserträge, vom Steuerzahler vor dem inländischen Fiskus verschleiert werden und die Zinsbesteuerung wäre nicht vollständig.

Seit dem 1. Juli 2005 müssen sich Mitgliedsstaaten Zinserträge ihrer Einwohner gegenseitig auf elektronischem Weg mitteilen. Jedoch sind Belgien, Luxemburg und

Österreich von diesem Informationsaustausch befreit, sofern ein ausländischer Investor diesem nicht zustimmt. Stattdessen müssen diese Länder eine Quellensteuer auf Zinserträge erheben, welche von Privatpersonen erwirtschaftet werden, die in anderen EU-Mitgliedsstaaten ansässig sind.

Vor diesem Hintergrund ist es ein Ziel der vorliegenden Dissertation zu evaluieren, ob die Richtlinie reale Effekte impliziert oder lediglich einen Papiertiger darstellt. Die Richtlinie lässt mehrere Schlupflöcher offen. Beispielsweise werden nicht alle Zinseinkünfte erfasst. Des Weiteren greift die Richtlinie nur für Privatpersonen und Artikel 15 befreit umlauffähige Schuldtitel, die vor dem 1. März 2001 ausgegeben wurden von der Quellensteuer, so lange Belgien, Luxemburg und Österreich den Informationsaustausch unterlassen. Durch dieses „grandfathering“ älterer Schuldtitel werden diese Wertpapiere für Steuerhinterzieher attraktiv. Da die Grandfather-Papiere im Heimatland nicht weiter besteuert werden, werden jene Investoren Papiere bevorzugen, die von der Quellensteuer befreit sind, gegenüber steuerpflichtigen Papieren oder Papieren, die in Depots von Banken in Länder liegen, welche den Informationsaustausch anbieten. Dies impliziert die Frage, ob Grandfather-Papiere einen geringeren vorsteuerlichen Ertrag zu verzeichnen haben, der die zusätzliche Nachfrage von Steuerhinterziehern widerspiegelt. Ob die Quellensteuer für Vermögensrenditen relevant ist, wird empirisch analysiert.

Aus diesem Grund werden alle umlauffähigen Schuldtitel, welche (im Juni 2007) über Sparkassen in Deutschland angefordert werden konnten, untersucht. Aus diesem Datensatz können 1.006 in Euro notierte Grandfather-Papiere identifiziert werden. In einem nächsten Schritt werden Zwillingspaare aus ähnlichen Papieren konstruiert. Diese Vorgehensweise ist teilweise durch U.S. Studien inspiriert, die den Renditeunterschied von steuerfreien Kommunalanleihen (municipal bond) und steuerpflichtigen Bundesanleihen analysieren.

In der ökonometrischen Analyse wird anhand des „Difference in Difference“ Ansatzes geklärt, ob es systematische Unterschiede der jeweiligen Renditen von Grandfather-Papieren und deren Zwillinge gibt. Wenn das Umgehen der Zinsrichtlinie für Steuerhinterzieher in Europa schwierig ist, dann sollten Investoren bereit sein, eine Prämie für Papiere, die von der Quellensteuer befreit sind, zu zahlen. Umgekehrt deutet das Fehlen einer solchen Prämie darauf hin, dass die existierenden Schlupflöcher (befreite Papiere eingeschlossen) groß genug sind, um Steuerhinterziehung weiterhin ohne zusätzliche Kosten zu ermöglichen. Die Ergebnisse stimmen mit letzterer Interpretation überein. Dies lässt vermuten, dass die Zinsrichtlinie nur ein kleines Hindernis für solche europäischen Sparer darstellt, die darauf aus sind, die Besteuerung der Zinserträge zu umgehen.

Im zweiten Kapitel wird die Kapitalstruktur von Unternehmen untersucht. Die steuerliche Neutralität gegenüber alternativen Finanzierungsmethoden von Unternehmensinvestitionen ist eine allgegenwärtige Forderung in der wirtschaftspolitischen Debatte. Eine nicht-neutrale Steuer verzerrt die relativen Kosten der Finanzierungsmethoden. Dadurch beeinflussen sie die Finanzierungsentscheidung der Unternehmen, was in letzter Konsequenz zu einer ineffizienten Kapitalallokation führt. Das Ausmaß der möglichen Effizienzkosten solcher Verzerrungen kommt in der Literatur kaum zur Sprache

Laut Modigliani und Miller (1958) ist der Unternehmenswert unabhängig von der Finanzierungsstruktur, sofern Steuern und Konkurskosten vernachlässigt werden und ein perfekter Kapitalmarkt unterstellt wird. In der Realität sind Steuern jedoch relevant. Es existieren drei große Theoriestränge, die zu erklären versuchen, warum Unternehmen trotz der Steuerbegünstigungen der Fremdkapitalfinanzierung nicht in die Randlösung der vollständigen Fremdkapitalfinanzierung flüchten.

Laut der „trade-off theory“ besteht die optimale Kapitalstruktur aus einem Ausgleich der Steuervorteile der Fremdkapitalfinanzierung und den Konkurskosten. Die „free cash-flow hypothesis“ stellt dagegen das Problem des subjektiven Risikos (moral hazard) in den Vordergrund. Das Interesse der Manager könnte vom Interesse der Aktionäre abweichen, da Manager überschüssige Kapitalbestände in Projekte mit negativem Kapitalwert (z.B. exzessives Firmenwachstum) investieren könnten. Dadurch sinkt der Aktienkurs. Im Gegensatz dazu, steigt der Aktienkurs, wenn freie Kapitalbestände in Form von Dividenden oder Aktienrückkäufen ausgezahlt werden. Die „pecking oder hypothesis“ stellt auf das Problem der adversen Selektion ab. Gemäß dieser dritten Theorie, wird die interne Finanzierung gegenüber der externen Finanzierung bevorzugt.

Ohne steuerliche Diskriminierung zwischen Fremd- und Eigenkapital könnte sich die optimale Fremdkapitalquote aus dem Zusammenwirken der oben angeführten Argumente ergeben. Da jedoch die steuerliche Diskriminierung gegeben ist, weicht die tatsächliche Fremdkapitalquote von der theoretisch optimalen Fremdkapitalquote ab.

Bislang zeigen empirische Studien, dass eine Unternehmensteuersatzerhöhung um 10 Prozentpunkte die Fremdkapitalquote um 1,4 bis 4,6 Prozentpunkte erhöht. Schätzungen über mögliche Effizienzkosten solcher Verzerrungen liegen bis zum heutigen Zeitpunkt noch nicht vor. Um eine Schätzung der Größenordnung der nicht-steuerlichen Kosten einer steuerlich verzerrten Kapitalstruktur zu liefern, muss die Differenz zwischen der optimalen und der tatsächlichen Fremdkapitalquote in Abhängigkeit von der Besteuerung geschätzt werden.

Annahme dieser Schätzung ist, dass alle Kosten innerhalb des Unternehmens anfallen, also keine externen Kosten der verzerrten Kapitalstruktur existieren, und dass die Höhe der Investitionen konstant ist. Außerdem wird auf lineare Schätzungen der Fremdkapitalquote als Funktion des Körperschaftsteuersatzes zurückgegriffen. Unter diesen Annahmen wird eine Überschlagskalkulation vorgestellt, die zeigt, dass eine Ausdifferenzierung des Körperschaftsteuersatzes und des persönlichen Einkommensteuersatzes um 10 Prozentpunkte zu jährlichen Effizienzkosten führt, die zwischen 1,3 und 3,3 Prozent des Nominalzinses liegen können.

Das dritte Kapitel befasst sich mit der empirischen Auswertung des Ex-Dividend-Day Effekts¹ im Rahmen der Steuerreform 2000/2001. Am 1. Januar 2001 trat die deutsche Unternehmensteuerreform in Kraft. Die zentrale Änderung war die Ablösung des Anrechnungssystems durch das Halbeinkünfteverfahren. Das alte Steuersystem bot eine Steuergutschrift für private Investoren an, die ihre Steuern in Deutschland zahlten. Unter dem Halbeinkünfteverfahren müssen lediglich die Hälfte der Dividendenzahlungen und die Hälfte der Veräußerungsgewinne versteuert werden. Möglicherweise hatte die Abschaffung des körperschaftsteuerlichen Anrechnungsverfahrens eine Veränderung des Ex-Dividend-Day Effekts am deutschen Aktienmarkt zur Folge. McDonald (2001) legt nahe, dass das Ex-Dividend-Day Verhalten im deutschen Anrechnungsverfahren größer eins ist, d.h. der Kurssturz am Ex-Dividend-Day ist größer als die Dividendenzahlung. Dieses Ergebnis wurde bislang als Indiz für Dividenden-Stripping, den Handel mit Steuergutschriften zwischen ausländischen oder steuerbefreiten deutschen Investoren und steuerpflichtigen deutschen Investoren, gewertet. Allerdings konnte in der vorliegenden Arbeit nachgewiesen werden, dass dieses Ergebnis lediglich auf einem einzigen Ausreißer beruht.

Dies lässt die Frage aufkommen, ob die Abschaffung der Körperschaftsteuergutschriften die Größenordnung des Ex-Dividend-Day Verhaltens reduziert hat. Da der marginale Investor den Preis um den Ex-Dividend-Day bestimmt, könnten empirische Resultate bezüglich des Ex-Dividend-Day Effekts eine Antwort auf die Frage geben, ob das Gewicht ausländischer „Dividenden-Stripper“ groß genug war, um einen Strukturbruch herbeizuführen.

Der Datensatz enthält tägliche, nicht bereinigte Schlusskurse von 308 börsennotierten Unternehmen, die an der Frankfurter Börse gehandelt werden oder wurden. Im empirischen Teil wird an Boyd und Jagannathan (1994) sowie an McDonald (2001) angeknüpft, welche

¹ Der Ex-Dividend-Day Effekt definiert sich als Beziehung zwischen dem Kurssturz am Ex-Dividend-Day und der Dividendenzahlung.

die Dividendenrendite nutzen, um den Kurssturz am Ex-Dividend-Day zu erklären. Die empirischen Ergebnisse der vorliegenden Arbeit zeigen auf, dass die Dividenden-Stripping Theorie bedenklich ist. Deshalb ist es sinnvoll, Kapitalbewegungen von ausländischen Aktionären zu betrachten, um zu untersuchen, ob sich die Käufe und Verkäufe von inländischen Aktien durch ausländische Aktionäre seit 2001 geändert haben. In Übereinstimmung mit den empirischen Resultaten, kann gezeigt werden, dass die Kapitalbewegungen ausländischer Aktionäre keinen Beweis für die Dividenden-Stripping Theorie liefern. Des Weiteren wurden ausländische Aktien verhältnismäßig attraktiver im Vergleich zu inländischen Aktien, da das Halbeinkünfteverfahren auch auf solche Aktien angewendet werden kann.

Zusammenfassend kann festgehalten werden, dass kein Strukturbruch des Ausmaßes des deutschen Ex-Dividend-Day Effekts festgestellt werden kann. Zusätzlich wird, im Gegensatz zu früheren Untersuchungen, kein Indiz für einen die Dividendenzahlung überwiegenden Kurssturz am Ex-Dividend-Day gefunden. Außerdem kann kein marginaler Investor identifiziert werden. Dies geht einher mit der Theorie von Chetty, Rosenberg und Saez (2007), die zeigt, dass „drop-off ratios“ im Allgemeinen sehr volatil sind und es daher, auch im Zusammenhang mit großen Steuerreformen, schwer ist Steuereffekte zu ermitteln.

Das abschließende vierte Kapitel der Arbeit untersucht die deutsche Steuergesetzgebung nach dem zweiten Weltkrieg. Vielfältige Klagen über die Komplexität, den Umfang und insbesondere die steigende Kurzlebigkeit der deutschen Steuergesetzgebung beruhen meist auf subjektiven Empfindungen der Betroffenen. Vor diesem Hintergrund wird der quantitative Output der deutschen Steuergesetzgebung untersucht. Aus den im Zeitverlauf verabschiedeten Änderungsgesetzen lässt sich per se nicht ablesen, ob diese das Steuerrecht vereinfachen oder verkomplizieren. Die Arbeitsintensität des Gesetzgebers wird analysiert, indem die absolute Zahl und der textliche Umfang der verabschiedeten Gesetze und Verordnungen gemessen werden. Als Datenquelle wird das Bundessteuerblatt (Teil I) verwendet, welches seit 1951 vom Bundesministerium der Finanzen herausgegeben wird. Die Information, ob eine Zustimmungspflicht des Bundesrats für das jeweilige Gesetz bzw. die jeweilige Verordnung bestand, wird auch in Betracht gezogen.

Die Anzahl und der Umfang der jährlich erlassenen neuen Gesetze und Verordnungen sind in den vergangenen Jahrzehnten nicht gestiegen. Bezüglich der Verordnungen konnte sogar ein leicht rückläufiger Trend ausgemacht werden. Im Allgemeinen war die Gesetzgebungsaktivität in den 12 Monaten vor einer Wahl größer als in den 12 Monaten

danach. Zudem zeigt die empirische Auswertung, dass die Gesetzgebungsaktivität nicht von gespaltenen Mehrheiten im Bundesrat und Bundestag abhängt. Allerdings wird der Anteil der Beschlüsse, die erst im Dezember eines Jahres erlassen werden, immer größer. Dieses steigende „Dezemberfieber“ reduziert die verfügbare Zeit der Steuerzahler, Steuerberater und Finanzbehörden, sich auf Steuerbeschlüsse einzustellen und ist eine plausible Erklärung für den zunehmenden Unmut über die Steuerpolitik.

Overview

Tax policy is one of the most researched areas in public finance. This dissertation analyzes the linkage between tax policy, corporations, and capital market effects. Taxes influence the decision making of corporations and private individuals. Changes in the legislation might lead to evasive actions of corporations and private individuals. One outcome of this evasive action might be that a tax increase might lead to less tax revenue. Thus, for the government it is essential to know how corporations and private individuals react to changes in taxation laws. Since corporate decisions and thus the choice of assets is influenced by taxes, it is necessary to evaluate reactions to changes in the legislation for the forecast of capital market effects.

A fundamental problem of empirically verifying that 'taxes matter' is that usually all corporations in an economy are subject to the same corporate tax rate. There is no analyzable variance in the data. However, natural experiments like a tax reform or international comparisons produce relief.

The research goal of this dissertation is to give a detailed empirical analysis of tax policy, corporate taxation and capital market effects. This dissertation proceeds as follows: The first three chapters concentrate on current topics that deal with capital market effects. The last chapter focuses on the German legislation.

First, the EU Savings Directive, that makes it possible to coordinate interest income within the EU, is discussed. This directive allows EU member states to tax interest income of resident individuals when it is earned abroad. Without coordinating taxation in Europe, a large fraction of interest income earned abroad may be concealed by taxpayers and the taxation of interest becomes highly incomplete.

As of 1st July 2005, member states are required to electronically report interest income of a resident of another member state to that member state. However, Austria, Belgium and Luxembourg are exempt from providing information exchange, unless the foreign investor agrees. In lieu thereof these countries have to levy a withholding tax on interest income paid to residents in other member states.

Against this background a goal of this dissertation is to evaluate whether the directive has real-world implications or is only a political symbol and fig leaf. The directive has several

loopholes, e.g. it applies to a narrow definition of interest income only, it is only applicable to private individuals and Article 15 of the directive exempts negotiable bonds that were issued before 1st March 2001 from the withholding tax as long as Austria, Belgium and Luxembourg do not provide information exchange. This *grandfathering* of older bonds makes these securities the preferred choice of tax dodgers. Since these grandfather bonds are not further taxed in the country of residence, these investors will prefer bonds that are exempt from the withholding tax over taxable bonds or bonds that are deposited at banks in countries that provide information exchange. Now the question arises whether grandfather bonds have experienced a decrease in pretax return that may reflect the additional demand of tax evaders. Whether the withholding tax is relevant for asset returns has to be empirically analyzed.

Therefore all negotiable securities that could be ordered (in mid-2007) via publicly owned banks (Sparkassen) in Germany are examined. Among this data set, 1,006 grandfather bonds denominated in euros could be identified. In a next step pairs of similar bonds (twins) were constructed. This work is partly inspired by U.S. studies that analyze the return differential of tax-exempt municipal bonds and taxable state and federal bonds.

In the econometric analysis a difference in difference approach is applied in order to see whether there are systematic differences in the relative return of grandfathered securities and their respective twins. If working around the Savings Directive is difficult for tax evaders in Europe, then investors should be willing to pay a premium for bonds that are exempt from the withholding rate. Conversely, if such a premium is absent, then it may be concluded that the supply of existing loopholes (exempt bonds included) is large enough to allow tax evaders to continue evasion at no additional cost. The findings of this study are in line with this latter interpretation. This suggests that, at least so far, the Savings Directive is only a minor hassle for European savers looking for ways to work around interest income taxation.

Chapter 2 analyzes the corporate capital structure. Tax neutrality towards alternative financing instruments for corporate investment is a ubiquitous demand in the political debate. A non-neutral tax distorts the relative costs of a financing instrument. Thus, they influence the financing decision, which might lead to an inefficient capital allocation. At the same time, the literature is surprisingly silent about the magnitude of possible efficiency costs of a departure from tax neutrality.

According to Modigliani and Miller (1958) the value of a corporation is independent of its debt-asset ratio, if there are no taxes, no costs of bankruptcy and if a perfect capital market is assumed. However, capital structure seems to be relevant in practice. There are

three main theories that try to explain why corporations do not only use debt financing – since it offers a tax shield – as a marginal solution.

In compliance with the trade-off theory the optimal capital structure is a trade-off between tax benefits of debt and bankruptcy costs. The free cash-flow hypothesis addresses a moral hazard problem. Managers' interest might diverge from shareholders' interest, since managers might invest excess cash-flow in negative net present value projects (e.g. empire building). Thus the share price will go down. Contrary, the share price will go up, if free cash-flow is paid out in the form of dividends or share repurchases. The pecking order hypothesis stresses an adverse selection problem. Corresponding to this third theory, internal finance is preferred over external finance.

Without tax discrimination of debt and equity, the optimal debt-asset ratio may arise from a combination of the theoretical arguments above. Since tax discrimination is present, the real debt ratio differs from the optimal debt ratio.

So far, empirical studies suggest that an increase of 10 percentage points in the corporate tax rate increases the debt-asset ratio by 1.4 to 4.6 percentage points. Empirical results of possible efficiency costs of capital distortions have not been reported yet. In order to provide an estimate of the magnitude of the nontax costs of a tax-distorted capital structure, the estimation of the difference between the optimal debt ratio and the actual debt ratio, conditional on taxation, has to be defined.

One has to abstract from external costs of a distorted capital structure and assume that all costs are internalized by corporations and the total amount of investment is kept constant. The empirical estimates of the marginal effects of the corporate tax rate on the debt-asset ratio have to be used by assuming that this marginal effect is constant. Taking these assumptions into account allows for a calculation that implies that a difference between the corporate tax and the personal income tax equal to 10 percentage points may lead to yearly efficiency costs per unit of total assets that lie between 1.3 and 3.3 percent of the nominal interest rate.

The third chapter discusses the ex-dividend-day effect² and the German tax reform of 2000/2001. On 1st January 2001, the German tax reform became effective. The half-income method replaced the imputation system. The old system provided a tax credit for private investors who declared their taxes in Germany. Under the half-income method only half of the dividend payment and half of the capital gain has to be taxed. The abolishment of the tax credit allows reinvestigating the alleged effect of the German imputation tax system on the

² The ex-dividend-day effect describes the relation between the ex-dividend-day price drop and the dividend payment.

size of the ex-dividend-day effect and to test whether there has been a structural break in the size of the German ex-dividend-day effect. A previous study by McDonald (2001) suggests that the German imputation system of corporate taxation has led to an ex-dividend-day effect larger than one, i.e., the ex-dividend-day price drop is larger than the dividend payment. So far, this result was taken as evidence for dividend stripping, the trade with tax credits between foreign shareholders or tax-exempt German investors and taxable German investors. However, examining McDonald's (2001) data set shows that his finding is based on a single outlier.

Now, the question arises, whether the abolishment of the tax credit reduced the ex-dividend-day effect. Since the marginal investor sets the price around the ex-dividend-day, empirical results on the ex-dividend-day effect may provide an answer to the question of whether the weight of foreign dividend strippers was large enough to lead to a structural break.

The data set contains daily, unadjusted closing prices of 308 listed corporations that are or were traded at the stock exchange in Frankfurt. The empirical part builds upon a model that was introduced by Boyd and Jagannathan (1994) and McDonald (2001), which uses the dividend yield in order to explain the ex-dividend-day price drop. Considering the empirical results, the dividend stripping story is precarious. Therefore it makes sense to look at capital transactions with foreign shareholders and see whether sales and acquisition of domestic shares by foreign investors changed from 2001 on. In line with the empirical results, it can be shown that capital transactions with foreign shareholders do not provide evidence for the dividend stripping story. Furthermore, the tax reform made foreign shares relatively more attractive to domestic investors, since the half-income method is also applicable to such shares.

To sum up, a structural break in the size of the German ex-dividend-day effect cannot be found. In addition, unlike previous research, there is no evidence of an ex-dividend-day price drop that exceeds the dividend paid. Finally, a marginal investor cannot be identified. This is in line with Chetty, Rosenberg and Saez (2007) who show that drop-off ratios are generally very volatile and it is difficult to identify tax effects even around major tax reforms.

The final fourth chapter examines the tax legislation in post-war Germany. Public complaints about the complexity, growth and volatility of tax legislation abound. Against this background, an account of the quantitative development of tax legislation in post-war Germany is given. However, it is unclear whether amending acts that have been passed

simplify tax legislation or make it even more complex. The legislator's intensity of labor is analyzed, by measuring the absolute amount of passed laws and regulations and the textual length. The "Bundessteuerblatt (Teil 1)", which is published by the German Ministry of Finance since 1951, is the source of this data set. The information whether the upper house of the German parliament had to accept the law or the regulation is also taken into account.

It turns out that the legislative output did not increase over the decades. In case of regulations, there is even a slightly decreasing trend. In general, the output is higher during the 12 month before a federal election than during the first 12 months after. Furthermore, the legislative output is not affected by a split majority in the upper and lower houses. Finally, an increasing fraction of this legislation is passed in December. This growing "December fever" reduces the available time to adapt for taxpayers, tax-lawyers, and tax authorities and is a plausible explanation of the growing discontent with tax policy.

1. Interest Income Tax Evasion, the EU Savings Directive, and Capital Market Effects³

1.1 Introduction

In the EU, coordinated action in the area of direct taxation is difficult to achieve, and few measures have been adopted in the past. A recent exception is the “Directive on taxation of savings income in the form of interest payments”, more commonly known as the *Savings Directive* (European Community 2003/48/EC). The ultimate aim of this directive is to allow member states of the EU to tax interest income of resident individuals if they earn interest income abroad. Without cross-border coordination between states, a large portion of interest income earned abroad may be concealed by taxpayers and the taxation of interest becomes highly incomplete.

Against this background, the agreement on the Savings Directive has been celebrated as a major breakthrough.⁴ As of 1st July 2005, the directive requires a member state A to electronically report to the country of residence B when an individual resident in B is paid interest income by a bank in A. An exception applies for Austria, Belgium, and Luxembourg. For a (potentially indefinite) intermediate period, these member states are exempt from providing information exchange, unless the foreign investor consents. Instead, these countries have to levy a withholding tax on interest income paid to residents in other member states, 75% of which has to be forwarded to the relevant countries of residence, but without revealing the identity of the interest recipient. This agreement became effective only after equivalent arrangements have been negotiated with third countries (Andorra, Liechtenstein, Monaco, San Marino, and Switzerland) and overseas and associated territories, like the British Virgin Islands, the Turks and Caicos Islands, Guernsey, Jersey, the Isle of Man, and the Netherlands Antilles. From 1st July 2005, the relevant withholding rate is 15%. The directive 2003/48/EC (as revised by 2004/587/EC) provides for an increase to 20% in mid-2008 and to 35% in mid-2011.

An important question is whether the Savings Directive is only a political symbol and fig leaf or whether it has real-world implications for the amount of taxable interest income evaded. Doubts about the effectiveness of the directive may arise since several loopholes

³ This chapter is based on the following paper: Klautke, Tina; Weichenrieder, Alfons J. (2008), Interest Income Tax Evasion, the EU Savings Directive, and Capital Market Effects, CESifo Working Paper Series No. 2300.

⁴ See, e.g., Bundesministerium der Finanzen (2007, p. 51).

obviously exist. For example, the Savings Directive applies to a narrow definition of interest income only. Most returns from investment funds are exempt, as are dividends on shares, income from life insurance, and derivatives. Further, despite remarkable success in striking agreements, the list of third countries that have cooperated with the EU in striking comparable agreements is certainly incomplete and a considerable number of non-European tax havens are still available for tax evasion.⁵ Eventually, even within Europe withholding taxes only apply to interest paid to private individuals, so the use of legal intermediate entities, as for example the Liechtenstein family foundations, which recently have received quite some attention, free banks from the obligation of applying the withholding tax.

So far, there is only limited evidence about the effectiveness of the Savings Directive. In 2006, Germany for example has received a total of €144.5m in forwarded withholding taxes from cooperating countries (Austria, Belgium, Luxembourg, and several non-EU countries) and the information provided on cross-border interest income by Germans covers some €1.5bn.⁶ At the same time, it is unclear to what extent these figures indicate a reduction in interest income evasion. The reported income may simply refer to the portion of interest income that would have been filed by honest taxpayers even in the absence of the information exchange and similarly, the withholding taxes may apply to interest income that is reported in Germany, and where taxpayers take out a tax credit for withholding taxes paid abroad.

In this paper we study the availability of loopholes by measuring the cost that taxpayers are willing to incur to take advantage of a particular loophole provided by the Savings Directive. According to Article 15 of the directive, negotiable bonds that have been issued before 1st March 2001 are exempt from the withholding tax as long as Austria, Belgium and Luxembourg use withholding taxes instead of providing information exchange.⁷ The preamble of the directive justifies this exception by the objective to avoid possible “market disruptions.” This “grandfathering” of older bonds makes these securities the preferred choice for tax dodgers: in the absence of further taxation in the country of residence, these investors will prefer the bonds that are exempt from the withholding rates over bonds that are taxed or bonds that are deposited at banks in countries that provide information exchange.

⁵ At the time of writing, talks with Singapore, Hong Kong, and Macao have already been initiated. A detailed discussion on possible limitations of the directive provides the Expert Group on the Taxation of Savings (2007).

⁶ Bundesministerium der Finanzen (2007).

⁷ The exemption is limited to interest income before 31st December 2010. Another qualification for exemption from the withholding tax is that there were no further issues of the same security after 1st March 2002 (Article 15(1), 2003/48/EC).

The present paper investigates whether the securities that qualify for this grandfathering rule have experienced a decrease in pre-tax return that may reflect the additional demand of tax evaders. If other loopholes are costly, then dishonest taxpayers will be willing to accept a lower before tax return on grandfathered securities that allow avoidance of the withholding tax rate compared to securities that are subject to the withholding tax. Whether dishonest taxpayers who consider shifting towards grandfathered bonds indeed have to accept a gross return that falls short of bonds that do not qualify for grandfathering of course depends also on the magnitudes of supply and demand for the tax-favored bonds. In any case, absence of tax effects for the differential returns on grandfathered and non-grandfathered bonds should suggest that existing loopholes are wide enough to render the current version of the Savings Directive ineffective.

While there has been an extensive discussion of the Savings Directive among public finance economists, the question put forward in the present paper has to the best of our knowledge not been addressed in the literature. Previous discussions of the Savings Directive have focused on the question of whether it is better to have information exchange or a withholding tax (Huizinga and Nielsen 2003) and have discussed under what conditions voluntary information exchange may result (Eggert and Kolmar 2002).

The present paper is partly inspired by the studies that analyze the return differential of tax-exempt municipal bonds and taxable state and federal bonds in the U.S. (see for examples Grinblatt and Titman 2002, Poterba 1989, and Gordon and Malkiel 1981). Due to the fact that the returns of municipal bonds are not subject to tax for U.S. investors, the return of these bonds is empirically found to be smaller than the before tax return of other securities. In the present case, the tax effects may be less pronounced in that bonds that fall under the grandfathering rule create a tax benefit to an arguably smaller group of taxpayers, those that are tax dodgers. Unlike in the U.S. case, institutional investors are not affected, as the withholding tax (and the information exchange) is limited to the case of personal investors. Essentially, the question of whether the withholding tax is relevant for asset returns is therefore an empirical question.

1.2 The data set

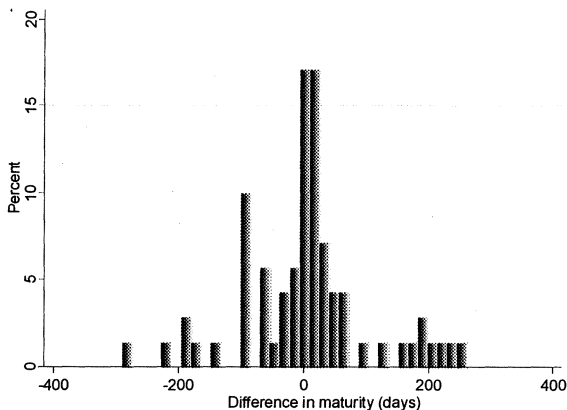
In collecting our data set we started by considering a huge set of interest-bearing securities that have been in circulation in mid-2007. The data set we started with contains all negotiable securities (in total 6,013) that at this date could be ordered via publicly owned

banks (Sparkassen) in Germany. This compares to a total of 18,387 securities that were traded in Germany according to Deutsche Börse (2006). Among the 6,013 securities in our data set we identified 1,006 grandfathered bonds denominated in euro. In a next step we constructed pairs of twin bonds that ideally differ only in the fact that one part of each pair is grandfathered (i.e., not subject to the 15% withholding tax rate that according to the Savings Directive must be retained by Austria, Belgium, and Luxembourg), while the other is not. While this necessarily implies that one part of each pair was issued earlier than the other one to receive preferential treatment under the grandfathering rule, we made sure that other characteristics of the pairs are comparable. In particular, we imposed the following restrictions. (i) Each pair must have been issued by the same institution or firm. (ii) To involve the same risk characteristics, both securities had to be denominated in the same currency. We decided to restrict our sample to pairs of twins issued in euro, as this is the denomination European tax dodgers should have a preference for. (iii) To avoid comparisons of securities with stark diverging time horizons, difference in the remaining time to maturity (as of 1st July 2007) was not allowed to exceed one year. (iv) Return information on both twins had to be available for at least two quarters prior to the introduction of the withholding rate. (v) Finally, price and return information for all twins had to be available from the Thompson Financial data base. A complete list of the securities in our sample is provided in the Appendix.

These restrictions produced a set of 70 twins with 1,246 pairs of quarterly return information. Since securities that qualify for grandfathering were issued prior to March 2001 and we imposed the restriction of similar maturity, we are dependent on issuers who subsequent to the issue of a grandfathered bond have also given out a comparable bond with shorter maturity.

Figure 1.1 reports the differences in the maturity within twins, by counting the days that the maturity of the grandfathered bond exceeds the maturity of the twin. As can be seen, most differences in maturities lie in a 50 days band and the distribution is rather symmetric. This suggests that any yield curve effects, which may produce a systematic higher or lower yield for securities with a longer maturity, should not systematically influence the return difference among our pairs of twins.

Figure 1.1: Differences in maturity



Annotation: The figure reports the difference in maturities. A negative difference implies that the remaining maturity of the grandfathered bond is longer.

1.3 Evidence on return differences

As mentioned in the introduction, if tax evaders happen to be the marginal traders of securities, then we would expect that tax exempt securities trade at a premium and pay a lower pre-tax return. More formally, let r^{gf} be the pre-tax return of a grandfathered bond and r^{tw} the return of its taxable twin. Then we would expect that a trader who cannot escape the withholding tax t , but can evade other taxes is indifferent if

$$(1.1) \quad (1 - t) r^{tw} = r^{gf}, \quad \text{or} \quad r^{tw} = r^{gf} / (1 - t).$$

With a withholding rate of 15% we would have that the return of the taxable twin could be $17.6\% = [1/(1 - 15\%)] - 1$ higher than that of the grandfathered bond. Clearly, forward looking investors will not only consider the actual withholding tax, but will anticipate future taxes, leading to possible tax capitalization effects well ahead of the actual introduction. This calls for an account of the path that led to the directive and the grandfathering rule.

The first concrete proposal towards a withholding tax on cross-border interest in Europe was formulated in 1989 in Commission proposal COM (89) 60 final, which suggested a minimum withholding rate of 15%, but without mentioning of grandfathering. Upon strong concerns about capital flight, the proposal was withdrawn in favor of COM (98) 295 final of 4th June 1998. This revised proposal provided for a choice for member states to either

introduce a withholding tax of 20% on cross-border interest paid to private individuals, or to introduce a system of information exchange with other member states. Again, the proposal contained no grandfathering rule for specific securities. In a next step the Commission formulated COM(2001) 400 final of 18th July 2001, based on a basic agreement of the Council of November 2000. It favored the system of information exchange but allowed Austria, Belgium, and Luxembourg a transition period of seven years during which they would not participate in information exchange but would levy a withholding tax on interest. This revised proposal introduced the idea of grandfathering (i.e., exempting from withholding tax) securities issued before 1st March 2001. In the aftermath of this proposal, the introduction of the withholding tax stayed very uncertain, as negotiations in the Council made clear that cooperation by third-countries outside the EU was crucial to buy the consent of several member states.⁸ The legislated directive of 3rd June 2003 (Council Directive 2003/48/EC) introduced 1st January 2005 as the date for the withholding tax of 15%, but had the same proviso as the previous proposal: without ratification of similar agreements with Switzerland, Liechtenstein, San Marino, Monaco, and Andorra, the introduction of the withholding tax in Austria, Belgium, and Luxembourg was not in sight. In principle, the same proviso continued to hold after directive 2004/587/EC had pushed back the introduction of the withholding tax to 1st July 2005, but in a press release of 19th July 2004 the Commission announced that an agreement with the required third-countries has been reached on all matters of substance.

From this historical account it is not entirely clear at what time the markets, if at all, should have priced in a differential between grandfathered and non-grandfathered bonds. In any case, if tax dishonest investors are marginal, then arbitrage considerations suggest that at least after July 2005 the pre-tax return of grandfathered bonds should have fallen below that of comparable other bonds.

Table 1.1 and Figure 1.2 give summary information on the empirical yield differences in our sample. As reported in Table 1.1, the overall mean return of grandfathered bonds, measured by the redemption yield, in our sample was 3.698%.⁹ The mean yield for the twin securities was only 2.5 basis points lower and the difference between yields did not change for the returns from July 2005 onwards, when the Savings Directive was fully effective. Figure 1.2 gives a more detailed picture over time by plotting the mean, the median, the 25th centile, and the 75th centile for the return difference between the twin and the grandfathered bond. The number of pairs that enter into the calculation at each quarter is plotted against the

⁸ See Rehm (2003) for a detailed account of the history of the Savings Directive.

⁹ Based on the security price in the respective quarter, the redemption yield calculates the return of an investor who buys the security and holds it until maturity.

right hand scale. A positive difference implies that the return was lower for the grandfathered security. Such a lower pre-tax return for the grandfathered security would be commensurate with a preference of investors for the tax advantage granted by the Savings Directive. However, if anything, the figure suggests that the difference in returns has decreased over time, which is the contrary of what we would expect if tax dodgers were the marginal investors driving the price differential between grandfathered and non-grandfathered bonds. The overall levels of return do not provide any evidence for capital market effects of the Savings Directive.

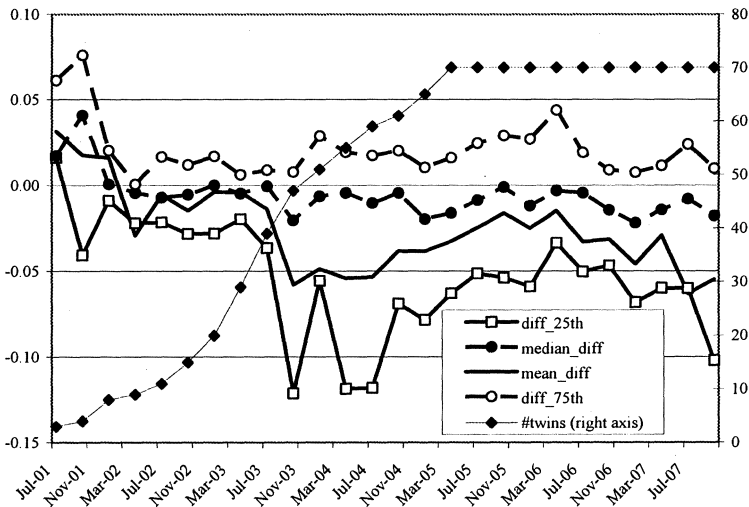
Something that has increased over time is the variation in the return spread as illustrated by Figure 1.3. While the standard deviation in the return spread was only 6 basis points for the period July 2001 through July 2003, it increased to 16 basis points for the period October 2003 through October 2007 and the increase is statistically significant. This seems to suggest that the legislation of the Savings Directive may have led to increased trade and thereby to an increased volatility in the return differences between grandfathered and non-grandfathered bonds. The increase in the standard deviation jumped up shortly after legislation of the Council Directive 2003/48/EC in summer 2003. In the following econometric analysis we will more closely look at whether there are systematic differences in the relative return of grandfathered securities and their respective twins before June 2003 and thereafter by essentially applying a difference in difference approach. But rather than using the difference in returns for pairs of twins as the left hand variable, we use the ratio of returns, which reflects equation (1.1) above.

Table 1.1: Summary returns statistics for 70 pairs in percent

Variable	Observations	Mean	Median	Min	Max
Quarterly return, grandfathered bonds	1246	3.698	3.742	2.121	10.093
Quarterly return, taxable twin	1246	3.663	3.699	1.903	10.073
r^{tw} / r^{gf}	1246	0.991	0.998	0.583	1.395
Return, grandfathered bonds, after II/05	700	3.763	3.859	2.121	5.066
Quarterly return, taxable twin, after II/05	700	3.730	3.826	1.903	5.077
r^{tw} / r^{gf} , after II/05	700	0.992	0.998	0.583	1.395

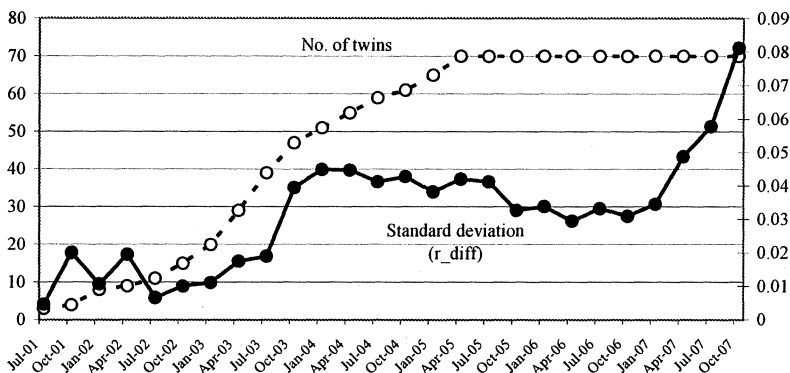
Annotation: The table reports the summary statistics on quarterly data of the redemption yield, which equals the internal rate of return if a bond is purchased at the going price and all future cash flows are taken into account.

Figure 1.2: Return differences between grandfathered bonds and their twins



Annotation: For each pair of twins, the variable diff is defined as the pre-tax return (redemption yield) of the non-grandfathered security minus the pre-tax return of the grandfathered security. These differences in returns are plotted against the left scale for the 25th centile, the median, the mean, and the 75th centile for each quarter. The total number of pairs in each quarter is plotted on the right hand scale.

Figure 1.3: Standard deviation of return ratio r^{tw} / r^{gf}



Annotation: The number of twins is plotted against the left scale and the standard deviation ($r_diff = r^{tw} / r^{gf}$) is plotted against the right hand scale.

For the empirical analysis we define three time windows. The dummy *postII05* is marking return observations for July 2005 and thereafter (III/2005–IV/2007). Since the announced withholding tax may have triggered anticipation effects we also created a dummy *III03_II05* for quarterly observations between July 2003 (III/2003) and June 2005 (II/2005). The base periods, for which we presume that there was no anticipation of the withholding tax, are quarters before July 2003, i.e., III/2001 through II/2003.

Column (1) reports results from a simple OLS. While both time dummies for the post legislation periods are significant, they both have the wrong sign and are small in economic terms. The results are very similar in column (2), which reports results that have been derived by using fixed effects for each pair of twins. In both cases, the error terms show a high degree of serial correlation. Therefore, columns (3)–(7) report regressions with inclusion of two lags of the dependent variable.¹⁰ Inclusion of two lagged dependent variables makes the estimated effect of the time window dummies smaller and insignificant. At the same time, it resolves the problem of first order autocorrelation in the errors. We also tried to include a third lag of the endogenous variable, but found this third lag to be insignificant. When we include lagged endogenous variables the *F*-test also allows us to drop the dummies for each pair. The last three regressions therefore drop these dummies and we also use the acceptable restriction that

¹⁰ While lagged dependent variables call for instrumental variable approaches, under rather mild assumptions, the bias in the estimates tends to be small with a long time horizon (see Green, 2002). Arellano–Bond-type estimators have not been used because of the insufficient time variation of the exogenous variables, i.e. the dummies for the time windows.

the coefficients for III03_II05 and post_II05 are the same. Equations (1.5)–(1.7) use the dummy post_II03, which takes on the value one for observations from July 2003. Equation (1.6) tests whether the return ratio reacts differently for pairs of twins, depending on whether the emission volume of the grandfathered security is small compared to its taxable twin. If tax evaders are indeed looking for perfect substitutes for taxable securities, then the price reaction may be more pronounced if the supply of grandfathered bonds is small. The relevant variable is constructed as $\text{Volume}^*d03 = (\text{Total emission of grandfathered bond in euro} / \text{total emission of taxable bond in euro}) * \text{post_II03}$. If after legislation of the directive, tax evaders demanded close substitutes, then we should expect that the estimated coefficient of Volume^*d03 is negative. As reported in equation (1.6), there is no support for this. Finally, as Figure 1.2 has shown that our endogenous variable shows some outliers with extreme values up to 1.395 and as low as 0.583, we also tested a robust estimation. Equation (1.7) reports the results derived by using least absolute values (LAV), a robust regression method which minimizes the sum of the absolute values of the residuals. This method estimates the effects of the explanatory variables on the conditional median of the dependent variable rather than the conditional mean. The results confirm the OLS results and suggest no capital market reactions to the Savings Directive.

Taken together, neither the observed return differences of taxable vs. exempt bonds as reported in Table 1.1, nor the difference in difference estimates reported in Table 1.2 are commensurate with an effect of the Savings Directive on bond returns.

Table 1.2: Estimation results

Variable	(1.1) OLS	(1.2) OLS	(1.3) OLS	(1.4) OLS	(1.5) OLS	(1.6) OLS	(1.7) LAV
III03_II05	-0.011 (0.00)***	-0.003 (0.26)	-0.002 (0.34)	-0.002 (0.29)	—	—	—
post_II05	-0.007 (0.00)***	-0.001 (0.65)	-0.002 (0.32)	-0.002 (0.19)	—	—	—
post_II03	—	—	—	—	-0.002 (0.30)	-0.002 (0.21)	-0.001 (0.33)
R_diff_lag1	—	—	0.493 (0.00)***	0.430 (0.00)***	0.493 (0.00)***	0.490 (0.00)***	0.588 (0.00)***
R_diff_lag2	—	—	0.497 (0.00)***	0.508 (0.01)***	0.498 (0.00)***	0.492 (0.00)***	0.332 (0.00)***
Volume*d03	—	—	—	—	—	3.4E-04 (0.28)	2.8E-04 (0.19)
Constant	0.999 (0.00)***	0.984 (0.00)***	0.012 (0.82)	0.061 (0.59)	0.012 (0.82)	0.019 (0.73)	0.081 (0.00)***
Fixed effects	No	Yes	No	Yes	No	No	No
F-test FE	—	(0.00)***	—	(0.52)	—	—	—
Linear restriction III03_II05 = post_II05	(0.17)	(0.39)	(0.86)	(0.72)	—	—	—
Observations	1246	1246	1106	1106	1106	1106	1106
R ² /pseudo-R ²	0.5%	54%	72%	74%	72%	72%	49%

Annotation: Endogenous variable: $r_diff = r^{tw} / r^{bf}$. *P*-values in brackets are calculated from robust standard errors in the case of OLS regressions, from bootstrap standard errors with 200 repetitions in the case of LAV. ***, **, * indicate significance at the 1, 5, and 10 percent levels, respectively.

1.4 Conclusions

The Savings Directive has been celebrated as a major break-through in coordinating taxation in Europe. Against this background, the present paper has evaluated the real-world effects of this directive. The directive has left one explicit loophole by providing grandfathering (exemption from withholding tax) for some securities. In this paper we have compared the pre-tax returns of these exempt bonds and comparable taxable bonds. If working around the Savings Directive is difficult for tax evaders in Europe, then investors should be willing to pay a premium for bonds that are exempt from the withholding rate. Conversely, if such a premium is absent, then we may conclude that the supply of existing loopholes (exempt bonds included) is large enough to allow tax evaders to continue evasion at negligible additional cost. The findings of our study are in line with this latter interpretation. This suggests that, at least so far, the Savings Directive is only a minor hassle for European savers looking for ways to work around interest income taxation. This stands in striking contrast to the considerable bureaucratic and political efforts that have been exerted to introduce the measures taken. As a caveat, it should be noted that grandfathering will end at December 31st, 2010. At least, this will close the loophole that has acted as a litmus test in the present study.

Appendix: Sample of pairs of negotiable securities

ISIN: Grandfathered	ISIN: Twin	Country	Issuer	Expire date: Grandfathered	Expire date: Twin
ES0413211006	ES0413211063	Argentina	Bank	1-Oct-09	3-Dec-09
DE0002298502	DE0005517700	Germany	Bank	8-Aug-08	11-Jun-08
DE0002131042	DE0001614584	Germany	Bank	2-Jun-10	18-Jun-10
BE0000262684	BE0000298076	Belgium	Government	24-Dec-12	28-Sep-12
BE0000268749	BE0000302118	Belgium	Government	29-Jul-08	28-Sep-08
BE0000282880	BE0000306150	Belgium	Government	28-Mar-15	28-Sep-15
DE0002278058	DE0002278538	Germany	Bank	16-Oct-08	20-Nov-08
DE0001240042	DE0001240174	Germany	Government	28-May-10	2-Jun-10
DE0001240059	DE0001240166	Germany	Government	16-Mar-09	10-Feb-09
DE0001240075	DE0001240182	Germany	Government	24-Jan-11	7-Sep-11
DE0001135168	DE0001135184	Germany	Government	4-Jan-11	4-Jul-11
XS0118237188	XS0168860509	USA	Bank	1-Oct-10	21-May-10
DE0002330677	DE0002738218	Germany	Bank	7-Apr-09	1-Dec-09
DE0002330826	DE0003257135	Germany	Bank	30-Apr-08	1-Apr-08
DE0002330842	DE0003118121	Germany	Bank	12-Mar-10	19-Mar-10
DE0002738200	DE0002738226	Germany	Bank	1-Feb-11	6-Jun-11
DE0002474798	DE000A0A2788	Germany	Bank	4-Mar-09	8-Sep-09
DE0002321155	DE0001196442	Germany	Bank	19-Jun-08	17-Sep-08
DE0002596384	DE000A0DRUN7	Germany	Bank	5-Aug-08	18-Aug-08
FR0000570780	FR0000188690	France	Government	26-Dec-12	25-Oct-12
XS0118728756	XS0173290148	USA	Bank	6-Oct-10	4-Aug-10
XS0124047431	XS0156924051	UK	Bank	5-Feb-13	29-Oct-12
DE0001381531	DE0001381770	Germany	Government	4-Jan-11	10-Jun-11
XS0098738056	XS0147372949	UK	Bank	24-Jun-09	5-May-09
DE0002574142	DE0001697134	Germany	Bank	11-Aug-08	26-Sep-08
DE0002574027	DE000HBE0BQ8	Germany	Bank	22-Jan-08	11-Mar-08
DE0002574241	DE000HBE0BA2	Germany	Bank	19-Jan-09	27-Feb-09
IT0001224309	IT0003804850	Italy	Government	1-May-08	1-Feb-08
IT0001273363	IT0003652077	Italy	Government	1-May-09	15-Apr-09
IT0001448619	IT0003799597	Italy	Government	1-Nov-10	15-Jan-10
DE0002760790	DE0002760915	Germany	Bank	17-Jun-13	4-Jul-13
DE0005881635	DE0001609097	Germany	Bank	18-Oct-07	16-Oct-07
DE0007550857	DE0007627044	Germany	Bank	12-Nov-07	12-Nov-07
DE0003412987	DE0001261386	Germany	Bank	11-Dec-07	15-Dec-07
DE0003036380	DE000A0A3RC8	Germany	Bank	7-Jan-08	17-Dec-07
DE0003892477	DE0003116497	Germany	Bank	14-Jan-08	14-Jan-08
DE0003458998	DE0008087933	Germany	Bank	13-Feb-08	4-Feb-08
DE0003454815	DE000LBWINL4	Germany	Bank	21-Apr-08	29-Apr-08
DE0003454971	DE0003250882	Germany	Bank	13-May-08	8-May-08
DE0001237758	DE0007153017	Germany	Bank	15-Sep-08	5-Sep-08
DE0003036091	DE0001474351	Germany	Bank	27-Nov-08	28-Nov-08
DE0003035945	DE0002912292	Germany	Bank	27-Nov-08	15-Dec-08
DE0003036604	DE0007627093	Germany	Bank	15-Dec-08	15-Dec-08
DE0001023927	DE0001618809	Germany	Bank	9-Jan-09	21-Jan-09

DE0003037214	DE0006943582	Germany	Bank	4-Mar-09	30-Jan-09
DE0003517132	DE000LBW1PS4	Germany	Bank	14-May-09	3-Jun-09
DE0003519922	DE0007627051	Germany	Bank	4-Dec-09	14-Dec-09
DE0001162691	DE0007935769	Germany	Bank	21-Jan-10	22-Jan-10
DE0001023810	DE0007266793	Germany	Bank	6-Jul-10	30-Jul-10
DE0006276306	DE000A0A24C6	Germany	Bank	14-Feb-11	10-Mar-11
DE0002268778	DE0001663656	Germany	Bank	30-Oct-08	1-Sep-08
DE0002984622	DE0002984895	Germany	Bank	2-Oct-08	7-Jul-08
DE0002985884	DE0002983194	Germany	Bank	6-Oct-08	3-Mar-08
DE0002987575	DE0002983301	Germany	Bank	1-Jul-08	17-Jan-08
DE0002989563	DE0003115689	Germany	Bank	16-May-08	23-May-08
DE0002989753	DE0007266264	Germany	Bank	1-Sep-08	28-Feb-08
DE0002674686	DE0007691503	Germany	Bank	26-Nov-08	22-Dec-08
NL0000102192	NL0000102309	Netherlands	Government	15-Apr-10	15-Jan-10
DE0001590818	DE0001590867	Germany	Government	19-Jan-09	8-Oct-09
DE0003097077	DE0007243750	Germany	Government	6-Dec-10	15-Feb-11
DE0001595585	DE0001469104	Germany	Government	18-Jun-10	30-Jun-10
DE0001595668	DE0001691764	Germany	Government	19-Jan-10	13-Aug-10
DE0001735918	DE0007169963	Germany	Government	22-Jan-08	15-Feb-08
DE0003074589	DE0005520407	Germany	Bank	9-Apr-08	30-Apr-08
DE0003074787	DE0008317629	Germany	Bank	1-Sep-08	30-Sep-08
DE0003071312	DE0001114072	Germany	Bank	22-Dec-08	22-Dec-08
DE0003071916	DE0003077137	Germany	Bank	7-Sep-09	2-Nov-09
DE0001788974	DE0001789030	Germany	Government	22-Nov-10	25-Aug-10
DE0001785640	DE0001786481	Germany	Government	6-Mar-08	16-Apr-08
ES0000012064	ES0000012882	Spain	Government	30-Jul-09	31-Jan-09

2. Taxes and the Efficiency Costs of Capital Distortions¹¹

2.1 Introduction

“Financial policy decisions often amount to choosing the optimal trade-off between distortions to financial policy and the tax benefits such distortions generate” (Auerbach 2002, p. 1254). Indeed, in countries with a progressive personal income tax rate on capital income, full financial neutrality may be next to impossible. At the same time, tax neutrality with respect to the debt-equity choice is one of the most frequent demands in discussions about corporate tax reforms.

A part of the economic literature strongly discounts the efficiency cost of tax-induced financial distortions. Proponents of the new view of capital taxation often regard financing flexibility as a buffer that prevents tax discrimination from producing harmful real economic distortions (Sinn 1987, pp. 140 et seq.). This idea corresponds with the result by Modigliani and Miller (1958) that – in the absence of taxes and costs of bankruptcy and with perfect markets – investors are indifferent to the capital structure.

While the interpretation above considers a corporation’s financing flexibility as a buffer for real economic distortions, the finance literature for a long time has contested the idea of financial flexibility. This has led Stewart Myers (1984), in his presidential address to the American Finance Association, to say, “I know of no study clearly demonstrating that a firm’s tax status has predictable, material effects on its debt policy. I think the wait for such a study will be protracted.”¹²

Uncertainty about the empirical elasticity of the capital structure with regard to fiscal distortions might explain why public-finance scholars have more often scrutinized the consequences of the sensitivity than the possible amount of efficiency loss that results from a fiscal distortion.¹³ In this paper we will make some efforts at presenting estimates of tax distortions as they may be calculated from recent empirical studies.

¹¹ This chapter is based on the following paper: Weichenrieder, Alfons J.; Klautke, Tina (2008), Taxes and the Efficiency Costs of Capital Distortions, CESifo Working Paper No. 2431.

¹² Similar doubts about fiscal distortion with regard to corporate financing strategies were raised before by the Nobel laureate Merton Miller (1977, p. 264): “...the debt/asset ratio of the typical nonfinancial corporation in the 1950’s was little different from that of the 1920’s despite the fact that tax rates had quintupled – from 10 and 11 percent in the 1920’s to 52 percent in the 1950’s.”

¹³ The question of the amount of potential efficiency costs remains open in a new voluminous handbook (Auerbach, 2002) and an extensive survey by Graham (2003).

The remainder of this paper is organized as follows. Section 2.2 offers a discussion of the standard theories on the capital structure. Section 2.3 elaborates on the tax advantages of different sources of finance. Section 2.4 reports on the growing literature that provides empirical estimates of tax effects on debt financing. In Section 2.5, we use the theoretical model of Section 2.3 and the empirical results contained in Section 2.4 to attach numbers to the welfare costs of tax-distorted financing decisions. Section 2.6 concludes.

2.2 Theories of capital structure: a brief outline

2.2.1 The irrelevance hypothesis

The starting point of the modern theory of corporate finance is Modigliani and Miller (1958). Their insight is as simple as it was surprising at its time: in the absence of taxes and costs of bankruptcy and with perfect capital markets, the value of a corporation will be independent of the debt-asset ratio. The intuition of this result is that the value of a corporation depends on the cash flow produced and what total risk this cash flow implies, and not on how this cash flow is split into dividends versus interest.

Capital structure seems not to be irrelevant in practice. If in a world without taxes the capital structure were irrelevant, then a small tax preference for debt over equity would yield a departure from Modigliani and Miller's irrelevance and would provide for a corner solution of capital structure with full debt financing, which is hardly observed in reality. Certainly, nontax factors of capital structure must come into play.

2.2.2 The trade-off theory

If indeed the tax system provides a preference for debt, other violations of the assumption by Modigliani and Miller may avoid a corner solution.¹⁴ A straightforward possibility is that the assumption of zero bankruptcy cost is too heroic. Since a high debt-asset ratio increases the probability of a bankruptcy, a corporation that internalizes part of this cost may forgo some of the benefit of interest deductibility by also using equity to avoid the cost of bankruptcy and also the cost of financial distress.

Asymmetric information on capital markets may add to the problems of excessive debt. Equity holders carry the whole investment costs, but, because of the increased repayment probability for debt, they do not receive the whole expected profits if they extend

¹⁴ It should be noted that the sole consideration of corporate tax and tax deductibility of interest is not sufficient for a tax preference for debt financing. See Section 2.3.

their investment. This leads to potential efficiency costs, which could be avoided by a reduction of debt. The problems that arise from a conflict of interest between equity and debt holders should be comparatively small if a corporation has sufficient suitable collateral that limits the risk of creditors in case of a default (Scott, 1977), and empirical support for this has been provided for example by Dhaliwal, Trezevant, and Wang (1992).

2.2.3 The free-cash-flow hypothesis

The problem of managerial entrenchment is pervasive in the literature of corporate governance. If managers have better information about the real cost of business and the profit opportunities than shareholders, then managers may fail to maximize shareholder value but follow their own goals. Shareholder monitoring to curb managers may be inefficiently low if highly diversified ownership leads to free riding by owners. In such a situation, debt may have a nontax advantage over equity (Jensen, 1986). This advantage results because debt is a disciplining device for management. Projects or corporations that are debt-financed must at least yield a return that covers the fixed interest to stay solvent. The need to serve the interest on debt reduces the free cash flow and reduces the discretion of managers to pursue projects that foster their own interest (e.g., empire building) but not those of the shareholders.

One potential problem with the disciplinary role of a high debt-equity ratio is its implementation: in the absence of shareholders' monitoring, the disciplinary effect of debt may indeed be an argument for managers to avoid debt and prefer retention policies (Myers, 2001). Conversely, Zwiebel (1996) and Grossman and Hart (1982) emphasize the role of potential takeovers as a mechanism that may urge managers to issue debt even in the absence of powerful shareholders.

2.2.4 The pecking-order hypothesis

While the free-cash-flow hypothesis addresses a moral hazard problem, the pecking-order theory by Myers and Majluf (1984) is based on an adverse-selection model. It assumes a corporation that acts in the best interest of existing shareholders and therefore will find it optimal (from the point of view of existing shareholders) to issue shares if the market valuation is too high in the light of private management information. Hence, in the case of information asymmetries, the share market will tend to interpret new share issues as a signal of overvaluation, and new share issues will lead to a price decrease, which is to be avoided in the interest of existing shareholders.

Given that valuation problems of debt are less severe than those of equity, the share price decrease following an issue is less pronounced for debt than for equity. Therefore the pecking-order theory predicts that firms will use internal financing sources first and revert to external debt and, even more reluctantly, to new equity only after internal sources of finance have been exhausted.

While there are several empirical studies that find some evidence in favor of the pecking-order hypothesis,¹⁵ we will in the following abstract from it. The main reason is that it rather is a theory of financing tactics than a theory of the overall debt-equity choice, but the latter is required to arrive at welfare implications of a distorted debt-equity ratio.

2.3 Trade-off theory and taxes: a basic synthesis

This section extends the theory of tax preferences, as developed by King (1977), King and Fullerton (1984), and Sinn (1987), by imposing a well-defined optimal debt-asset ratio in the absence of tax considerations. This optimal debt-asset ratio may arise from a combination of the theoretical arguments above. According to the *trade-off theory* bankruptcy costs are an argument for a low debt ratio. The *free-cash-flow hypothesis* finds it optimal (from the point of view of existing shareholders) to have a high debt ratio to reduce the free cash flow and the discretion of managers to pursue non-profit-maximizing behavior.

To describe the tax system, let t_p denote the shareholders' tax rate on personal interest income, t_d their tax rate on dividend payments, and c their effective capital gains tax rate.¹⁶ Θ characterizes the type of the corporate tax system: $\Theta = 1$ represents a classical system without imputation of corporate tax on the personal level, and $\Theta > 1$ if an imputation credit is available. More precisely, Θ captures the amount of the dividend payment before personal income tax, if a corporation wants to distribute a profit of one euro after corporate taxation.

Now, consider an investor who has to decide between holding and selling her shares.¹⁷ She is indifferent if the net-of-tax dividends and the capital gains compensate her for the opportunity costs, which arise because she could sell the shares at the going market value. Omitting time subscripts, we obtain

$$(2.1) \quad D\Theta(1 - t_d) + (V - Q)(1 - c) = i(1 - t_p)V$$

¹⁵ See Dierkens (1991), D'Mello and Ferris (2000), Eckbo (1986), or Shyam-Sunder (1991).

¹⁶ Since usually tax systems tax realized rather than accrued capital gains, the longer the holding period, the larger the difference between effective and nominal rates. Typical effective tax rates on capital gains may be in the range of half the nominal rates (cf. King, 1977, chapter 3).

¹⁷ See Sinn (1987, chapter 3).

$$\Leftrightarrow \dot{V} = \frac{i(1-t_p)}{(1-c)} - D \frac{\Theta(1-t_d)}{(1-c)} + Q$$

V captures the going market value, \dot{V} represents its change over time, i is the interest rate on investment in the capital markets, and D represents corporate dividend payments that are paid from after-tax profits. Following the new view of capital income taxation, we assume a mature, dividend-paying corporation. Let Q be the new investment of a shareholder in the company. Integrating \dot{V} forward over time, setting the integration constant to zero, and assuming a constant market rate of interest yields the current market value as follows:¹⁸

$$(2.2) \quad V_0 = \int_0^{\infty} (D \frac{\Theta(1-t_d)}{1-c} - Q) \exp[-\frac{i(1-t_p)s}{1-c}] ds$$

Since we are interested in the cost of financial distortions rather than in the distortion of overall investment, there is no loss in assuming that capital does not depreciate, net investment is zero, and the capital stock is constant and standardized to unity. Thus dividends paid out by the corporation may be financed by the current earnings net of interest and tax, by a change in debt, or by new issues:

$$(2.3) \quad D = (1-t_u)[f(K) - iB - \Psi] + B + Q.$$

In equation (2.3), the corporate tax rate is denoted by t_u , the function Ψ captures the nontax costs of a tax-distorted capital structure, and $f(K)$ is the cash flow of real capital K . Since the capital stock is unity, B captures not only the amount of debt but also the debt-asset ratio. The costs of capital-structure distortions arise when the actual real debt-asset ratio B departs from the optimal ratio B^* :

$$(2.4) \quad \Psi = \Psi(B - B^*), \Psi(0) = 0, \Psi' < 0, \Psi'' > 0 \text{ for } B < B^*, \\ \Psi' > 0, \Psi'' > 0 \text{ for } B > B^*.$$

In the following, it is assumed that the convex costs of the distorted debt-asset ratio provide an inner solution for the debt ratio.

Given a fixed amount of total assets, the only flow of motion is given by changes in debt:

$$(2.5) \quad \dot{B} = b.$$

Ignoring the nonnegativity constraints, the current value Hamiltonian is given by

¹⁸ To simplify matters, the market rate of interest i is assumed to be constant. The integration constant is set to zero.

$$(2.6) \quad H = -Q + \frac{\Theta(1-t_d)}{1-c} \{(1-t_u)[\pi - iB - \Psi(B - B^*)] + b + Q\} + \lambda_B b,$$

where $\pi = f(1)$. From the shareholder's point of view, λ_B captures the (negative) shadow value of a marginal unit of debt that a corporation owes to its creditors. On the basis of the Hamiltonian, the influence of restructuring corporate finance on the corporate value can be shown. An increase in new issues and a simultaneous increase in dividend payments that does not touch the basis of financing are given by

$$(2.7) \quad \partial H / \partial Q = \frac{\Theta(1-t_d)}{1-c} - 1.$$

Since realistically $c < t_d$, dividend payments and the repatriation through new issues are only attractive if an imputation system provides a Θ that is sufficiently high. If a full imputation system is implemented with $\Theta = 1/(1-t_u)$, $c > 0$ and $t_u = t_d$ distribution of company profits combined with an issue of new shares will be tax efficient.

As derived in equation (2.7), one should notice that, depending on the sign of $\Theta(1-t_d)(1-t_u) - (1-c)(1-t_u)$, one of the two kinds of equity strictly dominates the other, thus leading to corner solutions in the choice of equity type (even as an interior debt-asset ratio prevails). If the tax burden on distributed profits, as measured by $1 - \Theta(1-t_d)(1-t_u)$, is higher than the tax burden on retained profits, as measured by $1 - (1-c)(1-t_u)$, then $\partial H / \partial Q < 0$ applies and new issues of shares will decrease the value of the corporation. In the reversed situation it is optimal to distribute all the profits as dividends and to compensate by issuing new equity. We will treat these cases in turn.

Case A: Equity vs. debt if retentions dominate new issues

First, consider the influence of taxes on the leverage in case equity is obtained through retentions. The advantage of a marginal increase in debt can be derived from the Hamiltonian:

$$(2.8) \quad \partial H / \partial b = \frac{\Theta(1-t_d)}{1-c} + \lambda_B.$$

If the convex costs of a deviation from the optimal debt level B^* lead to an inner solution of the optimal debt level, we obtain

$$(2.9) \quad \partial H / \partial b = 0 \Rightarrow \lambda_B = -\frac{\Theta(1-t_d)}{1-c}.$$

Another optimality constraint is given by the canonical equation of the Hamiltonian (2.6):

$$(2.10) \quad \partial H / \partial B + \lambda_B = \lambda_B i \frac{(1-t_p)}{(1-c)},$$

which can be rewritten using equations (2.6), (2.9) and the steady-state condition $\dot{\lambda}_B = 0$:

$$(2.11) \quad \Psi'(B - B^*) = i \left(\frac{(1 - t_p)}{(1 - c)(1 - t_u)} - 1 \right).$$

The sign on the left-hand side indicates the direction of the deviation from the debt level B^* , which would be optimal in the absence of taxes. In consideration of (2.4) we get

$$(2.12) \quad B \begin{cases} > \\ < \end{cases} B^* \text{ for } (1 - t_p) \begin{cases} > \\ < \end{cases} (1 - c)(1 - t_u).$$

Whether taxation favors retained profits or debt depends on whether the effective tax rate on household savings is higher or lower than the effective tax rate on corporate returns. If a corporation distributes its profits and the shareholder saves these funds privately, she will receive $i(1 - t_p)$ as an interest payment after personal tax. If a corporation saves, then the cumulated tax burden is received from the shareholders' capital gains taxes and the corporate tax, and the net-of-tax return equals $i(1 - t_u)(1 - c)$. The tax burden on dividend payment, which is captured by the variables Θ and t_d , turns out to be irrelevant in the arbitrage calculation, because, with constant tax rates, it is independent of whether a dividend is paid today or tomorrow and cannot be avoided.¹⁹ *Ceteris paribus*, a higher corporate tax rate will tend to shift the financial preference towards debt.

Case B: Equity vs. debt if new issues dominate retained earnings

Although empirically, retained earnings seem to be quantitatively more important than new issues for mature firms, it is conceivable to have a tax system in which new shares are tax-favored over retentions (see equation (2.7)). In this case, a marginal financial redeployment from equity to debt leads to a zero effect on the company value in an inner financing solution:

$$(2.13) \quad \partial H / \partial b - \partial H / \partial Q = \lambda_B + 1 = 0 \Rightarrow \lambda_B = -1.$$

Given the canonical equation (2.10) and the steady-state condition $\lambda_B = 0$, we obtain

$$(2.14) \quad \Psi'(B - B^*) = i \left(\frac{(1 - t_p)}{\Theta(1 - t_d)(1 - t_u)} - 1 \right).$$

Hence, from the assumption (2.4) the following condition holds:

$$(2.15) \quad B \begin{cases} > \\ < \end{cases} B^* \text{ for } (1 - t_p) \begin{cases} > \\ < \end{cases} \Theta(1 - t_d)(1 - t_u).$$

Again, the effective tax rate on private savings and corporate tax returns is decisive. The former is simply given by t_p , while the latter equals $1 - \Theta(1 - t_d)(1 - t_u)$. Unlike in the case

¹⁹ See King (1977), King and Fullerton (1984), Sinn (1987).

of comparing retentions with debt, the taxation of dividends, as captured by $\Theta(1 - t_d)$, is relevant for the financial preferences, as the tax burden on distributed profits can now be omitted by reducing new equity and increasing the use of debt. As in case A, a higher corporate tax rate on retentions, t_u , tends to shift the financial preference towards debt.

2.4 Taxes and the debt-equity ratio: empirical results

2.4.1 Exploiting differences in nondebt tax shields

As shown in Section 2.3, an increased corporate tax rate should increase the advantage of debt and lead to larger leverage. A fundamental problem in empirically identifying this effect is that often all corporations in an economy are subject to the same corporate tax rate t_u . Usually, the nominal corporate tax rate is the same for all corporations in the same country, and the variation over time is often very small.²⁰

A possible way out was suggested by DeAngelo and Masulis (1980). They argued that tax advantage of debt should be highest for firms that, because of other deductions like loss carryforwards or investment tax credits, may have difficulties in using all debt shields. Thus, one should expect a substitution effect between investment-related tax relief and the use of debt. This hypothesis has been empirically confirmed by MacKie-Mason (1990). In contrast to earlier empirical work on the DeAngelo-Masulis hypothesis that largely failed to identify tax effects,²¹ MacKie-Mason does not use the debt-asset ratio as the endogenous variable, but explains the propensity of U.S. firms to issue bonds or new equity on the basis of a probit analysis. While this approach, together with other modifications, led to significant effects that are in line with theoretical expectations, the empirical results fail to provide evidence on the effect of taxation on the optimum debt-equity ratio.²²

2.4.2 Studies with cross-section variation in national nominal tax rates

A natural approach to identify tax effects is to use the debt-asset ratio as an endogenous variable and explain it by variations in the nominal corporate tax rate. To

²⁰ Along with corporate taxes, personal taxes are often changed as well, so that the variation of the corporate tax rate only leads to limited effects on the financing incentives.

²¹ See, e.g., Ang and Peterson (1986), Bradley, Jarrell, and Kim (1984), Fischer, Heinkel, and Zechner (1989), Long and Malitz (1985), Marsh (1982), and Titman and Wessels (1988).

²² In a similar vein, Alworth and Arachi (2001, p. 375) conclude, when interpreting their own results on MacKie-Mason-type regressions, "...since the estimates relate to changes in company indebtedness [...] the results do not provide a guidance to the impact of taxes on the debt/equity ratio. If one is to assess alternative tax policies on both company decisions and tax revenues it is important to be able to arrive at a quantitative estimate on stock variables."

overcome the obvious problem that in a given year all corporations may be subject to the same tax rate, Gordon and Lee (2001) exploit the fact that small firms in the U.S. enjoy a lower corporate tax rate. They find a significant influence of the instrumented tax rate on financial policy, using a difference-in-difference approach. The results show that large firms generally have a lower debt ratio than small firms. At the same time, this debt difference is smaller in years in which large firms are subject to a higher corporate tax rate. They conclude that a 10-percentage-point increase in the corporate tax rate may increase the debt-asset ratio by some 3.5 percentage points.

A further study by Graham (1999) also tries to explain the debt-asset ratio, but uses market values for debt and equity (instead of book values). The influence of the corporate tax on the debt-asset ratio is identified by using tax rate variations across U.S. states as well as firm-specific loss carryforwards and other firm characteristics. The pooled cross-section analysis from 1980 to 1994 (65,429 firm-years) yields the expected positive effects of the tax rate on the debt-asset ratio. The estimates imply that an increase of 10 percentage points in the national corporate tax rate causes an increase of 1 to 2 percentage points of corporate debt. Besides the statutory tax rate, Graham also uses federal tax rates. In a pooled estimation, a marginal coefficient of 0.24 results, while a fixed-effects estimation produces a coefficient of 0.46. According to this latter figure, an increase of 10 percentage points in the tax rate would cause a relatively large increase in the debt-asset ratio, by 4.6 percentage points.²³

2.4.3 Studies with variations in international tax rates

The limited cross-section variation in corporate taxes has also been overcome by building on samples of subsidiaries operating in different host countries. Altshuler and Grubert (2003) estimate the host country's corporate tax rate for some 6,000 U.S. subsidiaries abroad. The statistics of income from the IRS, which include industries in all sectors (including the financial sector), are used as the database. Affiliates in high-tax countries are significantly more financed with debt than affiliates in low-tax countries. The estimated coefficients suggest that an increase of 10 percentage points in the corporate tax rate in the host country, depending on the empirical model, increases the debt/asset ratio by an amount in the range of 1.3 to 3.9 percentage points. Desai, Foley, and Hines (2004) also look into corporate financing of U.S. affiliates abroad. They use inquiries of the Bureau of Economic Analysis that enable the authors to run panel regressions (fixed effects). According to their

²³ The paper provides no information on whether the F -statistic is significant for the firm fixed effects.

results, a 10-percentage-point increase of the corporate tax rate leads to a 2.5-percentage-point increase of the debt ratio. One-fourth of this effect arises from the increase of intrafirm debt, and three-fourths comes from the increase of debt from third parties (outside debt holders). Similar magnitudes of the tax effects on borrowing have been found by Huizinga, Laeven, and Nicodème (2008).

The capital structure of German affiliates abroad is analyzed by Mintz and Weichenrieder (2005) using panel data and fixed-effects models. For a sample of corporations that are wholly owned by their respective German parents, a linear regression of the host country's tax rate on the debt ratio of German affiliates yields a marginal effect of 0.44: a 10-percentage-point increase in the foreign tax rate causes an increase in the debt ratio of 4.4 percentage points. Allowing for a nonlinear relation, the marginal effect increases to 0.57. Including partly owned subsidiaries in the sample reduces the coefficients. In this case, the estimated marginal effect of the linear specification is 0.3, and that of the nonlinear specification 0.41. In contrast to U.S. studies, a large fraction of the financing flexibility of German affiliates results from the change of intrafirm credits.²⁴

2.5 Calculating the efficiency costs of the distorted capital structure

While for quite some time tax effects on corporate financing decisions have been disputed, from today's point of view, empirical studies reveal a measurable, albeit moderate, effect on the capital structure. Studies that measure a linear effect on the debt ratio suggest that an increase of 10 percentage points in the corporate tax rate increases the debt-asset ratio by 1.4 to 4.6 percentage points. So what efficiency costs can be expected on the basis of these estimates? So far, the literature has been silent on this, and we should emphasize that quite heroic assumptions are needed to arrive at the specific values provided below.

- We assume that all costs of a distorted financing structure accrue to the corporation, meaning that these costs cannot be shifted to creditors or third parties.
- Corporations are identical, so that it is adequate to look at one representative corporation.
- The representative corporation maximizes its value according to the fiscal and nonfiscal costs, as described in Section 2.3.

²⁴ Ramb and Weichenrieder (2005) failed to find evidence for the influence of the home country of the parent firm on the debt ratio of German subsidiaries. Very small home-country effects have been identified by Huizinga, Laeven, and Nicodème (2008).

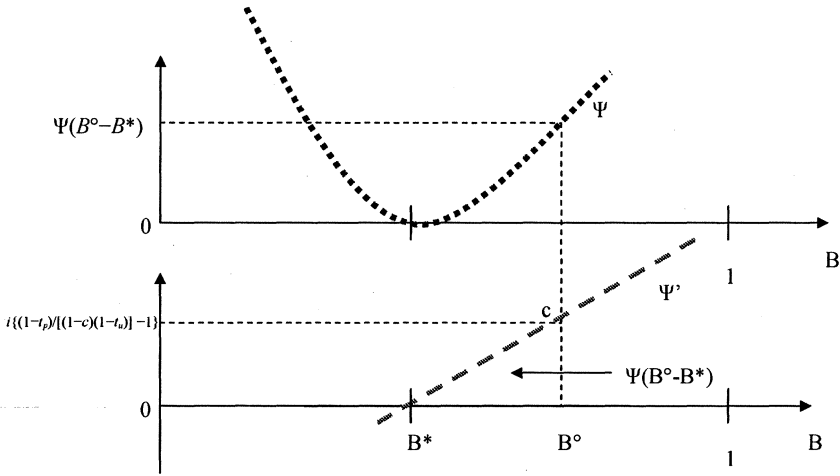
- Corporate investment decisions are assumed to be fixed, and only the question of the financing of the capital stock is yet to be decided on. It is only this distortion that is singled out.
- The costs of a distorted capital structure are supposed to be quadratic and increasing in the deviation of the optimal debt-asset ratio B^* in the absence of taxes from the actual ratio B° with taxation. The costs only depend on the absolute value of the deviation, not on its sign.
- All costs of a distorted capital structure that are realized by the corporation are real costs. That is, there are no corresponding rents accruing to outsiders, which might compensate for the cost to the corporation.

Given these assumptions, we can take equation (2.11) as a starting point to derive the size of the marginal (nontax) cost Ψ' if a corporation deviates from the optimal debt ratio because of tax considerations.²⁵ Figure 2.1 illustrates the information that is necessary to evaluate the efficiency costs if debt is tax-preferred. In the top part of the diagram the quadratic cost function $\Psi(B^\circ - B^*)$ is depicted, leading to a linear marginal-cost curve in the bottom part. Since the capital stock is normalized to one, the actual debt level B° also identifies the debt ratio. According to equation (2.11) these marginal costs equal $i((1 - t_p)/[(1 - c)(1 - t_u)] - 1)$ in an inner financial equilibrium. The efficiency costs (Ψ) are given by the triangle B^*cB° and can be calculated as

$$(2.16) \quad \Psi(B^\circ - B^*) = \frac{1}{2} i \left(\frac{1 - t_p}{(1 - c)(1 - t_u)} - 1 \right) |B^* - B^\circ|.$$

²⁵ Here, we concentrate on the constellation of case A in Section 2.3. Empirically, it is much more common that retained earnings are tax-preferred over new issues than vice versa.

Figure 2.1: Efficiency costs of capital distortion



To arrive at the cost Ψ , we obviously need the difference $B^* - B^\circ$ that is triggered by taxation. If we define

$$(2.17) \quad \gamma \equiv dB / dt_u \quad ,$$

then the empirical estimations presented in Section 2.4 suggest $0.14 \leq \gamma \leq 0.46$. This allows for a calculation of the costs Ψ using the formula:

$$(2.18) \quad \Psi(B^\circ - B^*) = \frac{1}{2} i \gamma \Delta t_u \left(\frac{1 - t_p}{(1 - c)(1 - t_u)} - 1 \right).$$

It should be noted that a change in the corporate tax rate according to equation (2.11) has a marginal effect on the debt ratio B° that depends on the level of the personal income taxes. However, only unconditional estimations of γ are available, which do not consider the levels of t_p or c . In a similar vein, the assumption of a linear relation between B° and t_u is not necessarily plausible and is due to the limitations of the empirical results. Indeed, the quadratic cost function $\Psi = (1/2) \cdot a \cdot (B^\circ - B^*)^2$, $a > 0$, yields a convex relation between B° and t_u .

Allowing for these simplifications, Table 2.1a illustrates for several values of γ how a negative value of Δt_u would influence the cost Ψ when we start from financial neutrality with $t_p = t_u$, $c = 0$, and go to $t_u = t_p + \Delta t_u$, keeping tax rates other than the corporate rate constant. This corresponds with the situation in many important industrial countries where the corporate tax rate falls short of the top personal income tax rate (Fuest, Huber, and Nielsen, 2002). More precisely, the table presents the current efficiency cost as a fraction of the nominal interest rate. If we think in terms of an infinite-lived investment and use the interest rate for discounting, this also reflects the total present value of the excess burden associated with one unit of investment.

Table 2.1a: Illustrative values for Ψ/i ; $\Delta t_u < 0$

<i>Starting point $t_p, t_u = 40\%$</i>					
γ	0.3	0.3	0.3	0.3	0.3
Δt_u	-0.02	-0.05	-0.1	-0.2	-0.3
Ψ/i	0.005	0.012	0.021	0.038	0.050
<i>Starting point $t_p, t_u = 30\%$</i>					
γ	0.3	0.3	0.3	0.3	0.3
Δt_u	-0.02	-0.05	-0.1	-0.2	-0.3
Ψ/i	0.004	0.010	0.019	0.033	0.045
<i>Starting point $t_p, t_u = 30\%$</i>					
γ	0.2	0.2	0.2	0.2	0.2
Δt_u	-0.02	-0.05	-0.1	-0.2	-0.3
Ψ/i	0.003	0.007	0.013	0.022	0.030
<i>Starting point $t_p, t_u = 30\%$</i>					
γ	0.4	0.4	0.4	0.4	0.4
Δt_u	-0.02	-0.05	-0.1	-0.2	-0.3
Ψ/i	0.006	0.013	0.025	0.044	0.060

It is striking that the deadweight loss in Table 2.1a is not a quadratic function of Δt_u . This is due to the fact that Δt_u does not equal the height of the Harberger triangle B^*cB^0 . This is rather given by $i((1 - t_p) / [(1 - c)(1 - t_u)] - 1)$. Because of the bracket term, the calculated size of the Harberger triangle is a convex function of t_u . For $\Delta t_u < 0$ this leads to a depressant effect on the size of the deadweight loss. The reverse effect results in the case $\Delta t_u > 0$. This case is consistent with the standard assumption in the U.S. literature that the tax system favors leverage, and it is presented in Table 2.1b. While the calculated efficiency losses are comparable to those of Table 1a for moderate distortions and $|\Delta t_u| \leq 0.1$, much larger magnitudes are calculated if $|\Delta t_u|$ is large.

Taking the intermediate assumption that $|\Delta t_u| = 0.1$ and picking an interest rate of 5%, then our calculations indicate that in current values the excess burden amounts to some 5 to 15 basis points or 0.05% to 0.15% of the invested capital.

Table 2.1b: Illustrative values for Ψ/i ; $\Delta t_u > 0$

	<i>Starting point $t_p, t_u = 40\%$</i>				
γ	0.3	0.3	0.3	0.3	0.3
Δt_u	0.02	0.05	0.1	0.2	0.3
Ψ/i	0.005	0.014	0.030	0.075	0.150
	<i>Starting point $t_p, t_u = 30\%$</i>				
γ	0.3	0.3	0.3	0.3	0.3
Δt_u	0.02	0.05	0.1	0.2	0.3
Ψ/i	0.004	0.012	0.025	0.060	0.113
	<i>Starting point $t_p, t_u = 30\%$</i>				
γ	0.2	0.2	0.2	0.2	0.2
Δt_u	0.02	0.05	0.1	0.2	0.3
Ψ/i	0.003	0.008	0.017	0.040	0.075
	<i>Starting point $t_p, t_u = 30\%$</i>				
γ	0.4	0.4	0.4	0.4	0.4
Δt_u	0.02	0.05	0.1	0.2	0.3
Ψ/i	0.006	0.015	0.033	0.080	0.150

To reiterate, the above calculations imply some stark simplifications, and it is worthwhile to discuss possible modifications. One possibility is that a distorted financial structure induces external costs that are not borne by the corporation. For example, higher corporate debt ratios may induce a higher macroeconomic volatility, the cost of which is not priced in a corporation's individual financial cost. This may lead to a situation in which the overall cost of a tax preference for debt is higher than indicated by the value of Ψ .

On the other hand, externalities may lead to distortions in the financial structure even in the absence of taxation. In this case tax distortions may even improve welfare. Fuest, Huber, and Nielsen (2002) argue that if the market treats issuance of new equity as a signal for low profitability, then it may be desirable to reduce the managers' preference for debt by making debt tax-disadvantaged.

Another issue that has been abstracted from is firm heterogeneity. If corporations have different flexibilities in reacting to tax incentives with their financial structure, then applying the average marginal effects to all firms may underestimate the total welfare loss. This firm heterogeneity may also imply that different firms may have different cost of capital. For

example, a tax preference for debt may be most valuable for companies that are able to use a large amount of debt. This in turn has implications for the investment incentives that have been kept out of the picture above.

2.6 Conclusions and outlook

The search for the determinants of corporate capital structure is central to finance research, and scholarly articles abound. The present paper has analyzed capital structure choice from a public finance perspective. In particular, it has attempted to evaluate the efficiency costs of a distorted financial structure. Knowledge about these costs is economically relevant, because the aim of financial neutrality may conflict with other political objectives, like implementing a progressive tax system. International tax competition with its moderating effect on corporate tax rates may also raise the question of the costs of differentiating personal and corporate taxes.

The calculations that have been suggested in this paper imply that a difference between the corporate tax and the personal income tax equal to 10 percentage points may lead to yearly efficiency costs per unit of total assets that lie between 1.3 and 3.3 percent of the nominal interest rate.

While this is a first attempt to attach numbers to the cost of financial distortions, it should be emphasized that strong assumptions had to be employed to do so. Among other things, we abstracted from external costs of a distorted capital structure and assumed that all costs are internalized by corporations and the total amount of investment is kept constant. We made use of empirical estimates of the marginal effects of the corporate tax rate on the debt-asset ratio by assuming that this marginal effect is constant, although a constant marginal effect is not necessarily plausible. Even if one ignores these problems, as done in this article, there are only a limited number of empirical studies that analyze the correlation between the corporate tax rate and the debt ratio, and the spread in results is considerable. Finally, many studies depend on a comparison of international corporations that operate among different national corporate taxes. Whether the parameter values that have been derived from these studies are representative for national corporations deserves further investigation.

3. The Ex-Dividend-Day Effect and the German Tax Reform of 2000/2001²⁶

3.1 Introduction

The ex-dividend-day effect describes the relation between the ex-dividend-day price drop and the dividend payment. The valuation of ex-dividend-day effects is fundamental for finance scholars, investment analysts, and all kinds of investors. Most theories use tax, arbitrage or microstructure effects to explain the ex-dividend-day effect.²⁷ Analysts and investors want to know how the tax rate on distributed earnings of corporations influences economic behavior. For this, it is important whether the cash flows of a corporation come in the form of dividends or capital gains.

While many studies show that the ex-dividend-day effect is equal to one (e.g., see empirical studies by Barclay, 1987, Bailey, 1988, Hayashi and Jagannathan, 1990, Michaely, 1991, and Boyd and Jagannathan, 1994) or less than one (e.g., see empirical studies by Elton and Gruber, 1970, Litzenberger and Ramaswamy, 1979, Kalay, 1982, Auerbach, 1983, Poterba and Summers, 1984 and Frank and Jagannathan, 1998), a previous empirical result for the German stock market by McDonald (2001) suggests that the ex-dividend-day effect is larger than one under the imputation system²⁸, meaning the ex-dividend-day price drop is larger than the dividend payment. This result was taken as evidence for dividend stripping, the trade with tax credits between foreign shareholders or tax-exempt German investors and taxable German investors. However, examining McDonald's (2001) data set shows that his finding is based on a single outlier.²⁹

²⁶ This chapter is based on the following paper: Klautke, Tina (2007), The Ex-Dividend-Day Effect and the German Tax Reform of 2000/2001, working paper.

²⁷ Tax effects are considered in empirical studies by Elton and Gruber (1970) and by Poterba and Summers (1984). Kalay (1982) and Boyd and Jagannathan (1994) use arbitrage theories whereas Dubofsky (1992) and Graham et al. (2003) use microstructure effects (e.g. the bid-ask spread and transaction costs) to explain the ex-dividend-day effect.

²⁸ Walker and Partington (1999) find an ex-dividend-day effect above one under the imputation system in Australia. Bell and Jenkinson (2002) analyze UK stocks that also carry a tax credit and find an ex-day effect larger than one. Rantapuska (2008) finds an ex-dividend-day effect larger than one for Finland, which also provides imputation-tax credits. However, Skinner and Gilster (1990) also find an ex-day effect greater than one for public utilities in the US from 1980 until 1985.

²⁹ I especially like to thank Robert L. McDonald for providing me his data set. I could reproduce his results with his data set, but I found that his data set contains one outlier with an extremely high dividend yield and an extremely high price drop which distorts the whole result. McDonald (2001) shows that the average ex-dividend-day price drop is DM 1.26 for a DM 1 dividend payment. His data set contains 2195 observations. If he would have left out one outlier with an extremely high dividend yield (38,84%), the average ex-dividend-day price drop

On 1st January 2001, the German tax reform became effective. The half-income method, where only half of the dividend payment and half of the capital gain are taxed, whereas the other half is tax-free, replaced the imputation system. The imputation system provided a tax credit for private investors who declared their taxes in Germany. The abolishment of the tax credit provides the opportunity to reexamine the ex-dividend-day effect and to test whether there has been a structural change in the size of the German ex-dividend-day effect. The present paper analyzes the ex-dividend-day effects before and after the tax reform of 2000/2001 in Germany and finds no change in the effect.

It is unclear whether personal tax rates influence the ex-dividend-day effect. Whereas Michaely (1991) shows that the 1986 Tax Reform Act in the US did not lead to changes in the ex-dividend-day effect, a study by Bell and Jenkinson (2002) shows that the abolishment of the imputation credit for tax-exempt pension funds changed the ex-dividend-day effect in the UK.³⁰

This paper proceeds as follows: Section 3.2 explains dividend stripping, illustrates the taxation of capital gains and dividend payments and shows implications of the tax reform of 2000/2001 for different types of investors in Germany. Summary statistics, the empirical proceedings and the empirical results are discussed in Section 3.3. Section 3.4 concludes.

3.2 The ex-dividend-day effect

3.2.1 Dividend stripping

Under the German imputation system, a dividend payment carried a tax credit (42.86%). Thus, a DM 1 dividend was worth DM 1.4286 before personal income tax to the investor, since the corporate tax on distributed earnings reimbursed domestic investors. However, the holder of the asset had to declare her taxes in Germany. All else equal, dividends were more valuable than capital gains to many taxable German stockholders. Those investors had an incentive to receive the dividend plus the tax credit. Foreign investors were tax-penalized in that they were not granted the tax credit; they had an incentive to sell their shares cum-dividend with adjacent buybacks after the deduction of the dividend, assuming

would be DM 1.09 (which is statistically significant) for a DM 1 dividend payment. Thus his dividend stripping story would be precarious.

³⁰ From 1973 until 1997 tax-exempt investors could use their tax credits to offset their personal tax liabilities. Tax-exempt investors obtained the full cash refund from the tax authorities. The major change in the UK tax reform of 1997 was that it eliminated imputation credits (i.e. cash refunds) for pension funds.

that the price decline between the cum-dividend dates and the ex-dividend dates is larger than the dividend.

In a study of the German stock market under the imputation system, McDonald (2001) argues that the ex-dividend-day price drop is significantly bigger than the dividend payment. In his sample, a DM 1 dividend payment caused an average price drop of DM 1.26, whereas the dividend plus the tax credit had a pretax value of DM 1.4286 to a taxable German investor. His explanation for this difference implies that foreign investors, who could not benefit from the German tax credit, did collect part of this advantage through cross-border dividend stripping. Cross-border dividend stripping implies that shares held by foreign investors are transferred to domestic investors before they go ex-dividend. German investors were entitled to the dividend plus the tax credit and foreign investors received the realized capital gains. Foreign dividend strippers assumed that the dividend payment was less than the price decline from the cum-dividend-day to the ex-dividend-day. Transaction costs reduce the benefits for both the foreign investor and the domestic investor.

Dividend stripping aims at saving taxes, and it is legal in Germany. Investors can sell their stocks shortly before the ex-dividend-day with adjacent buybacks after the deduction of the dividend. However, under the imputation system, domestic dividend strippers were tax-penalized in that they could not deduct losses from the cum-dividend day to the ex-dividend-day from their tax bill. Until 31st December, 2000, § 50c of the German Income Tax Law regularized the “Depreciation of shares by the use of reduction of profit”. This section was introduced on 20th August 1980.³¹ In its initial version § 50c could not be utilized for purchases of shares through the stock exchange. In 1994, § 50c was revised: § 50c, passage 10 modified the stock exchange clause. The tax reform eliminated § 50c effective from 1st January 2001. Consequently, losses from the cum-dividend-day to the ex-dividend-day were deductible after the tax reform.

3.2.2 Taxation of capital gains and dividend payments in Germany

Many studies show that the ex-dividend-day effect is equal to one (e.g., see empirical studies by Barclay, 1987, Bailey, 1988, Hayashi and Jagannathan, 1990, Michaely, 1991, and Boyd and Jagannathan, 1994). On the other hand, starting with Elton and Gruber (1970), a lot of empirical studies find an ex-dividend-day effect less than one (e.g., see empirical studies by Litzenberger and Ramaswamy, 1979, Kalay, 1982, Auerbach, 1983, Poterba and Summers,

³¹ See Bundesgesetzblatt (Teil I), 1980, “Gesetz zur Änderung des Einkommensteuergesetzes, des Körperschaftsteuergesetzes und anderer Gesetze”, p. 1548.

1984 and Frank and Jagannathan, 1998). According to the latter studies, investors prefer capital gains over dividends, since dividends are tax-disadvantaged under a classical tax system³², thus reducing the value of the company. Therefore some stockholders may have an incentive to invest in companies with a low payout ratio.

An investor who sells shares before the ex-dividend-day has no right to receive the dividend. In contrast, a shareholder who sells shares on the ex-dividend-day or afterwards retains the dividend right. However, those investors should expect to receive a lower (stock) price. In the following model, which was introduced by Elton and Gruber (1970), it is assumed that an investor wants to maximize her end-of period wealth and there is a classical tax system in which no imputation credit is attached to dividends. The variables are defined as follows:

$P_{i,t-1}$:	cum-dividend-day price of share i
$P_{i,t}$:	ex-dividend-day price of share i
$P_{i,t-T}$:	price of share i on day T at which it has been acquired
t_d :	personal tax rate on dividends
c :	capital gains tax
$D_{i,t-1}$:	dividend payment

If an investor sells her stock before the ex-dividend-day, she will receive $P_{i,t-1}$ less the tax payment on capital gains that she realized from holding the stock $[-c(P_{i,t-1} - P_{i,t-T})]$. An investor who gets the dividend payment less dividend tax plus the taxed capital gains of the ex-dividend-day price minus the purchase price ends up with $[P_{i,t} - c(P_{i,t} - P_{i,t-T})] + D_{i,t-1}(1 - t_d)$. For an indifferent investor, the following condition should hold:

$$(3.1) \quad P_{i,t-1} - c(P_{i,t-1} - P_{i,t-T}) = [P_{i,t} - c(P_{i,t} - P_{i,t-T})] + D_{i,t-1}(1 - t_d).$$

Equation (1) can be simplified:

$$(3.1') \quad (P_{i,t-1} - P_{i,t}) = D_{i,t-1} \left(\frac{1-t_d}{1-c} \right).$$

The ratio of the ex-dividend-day price drop (capital gains) to the dividend payment equals the ex-dividend-day effect.³³ Equation (3.1') shows that private investors would be indifferent between capital gains and dividends if $(P_{i,t-1} - P_{i,t}) = D_{i,t-1}$, i.e., if the tax rates on capital gains and on dividends were the same. If the tax on dividends is larger than the personal tax on capital gains, then the arbitrage condition suggests a price drop smaller than unity. Only in the case that the tax on capital gains is higher than on dividends is the ex-dividend-day effect expected to be larger than one.

³² Under a classical tax system dividends are double-taxed. The company pays tax on its profits and the dividend income is subject to tax, too.

³³ The left-hand side could also picture a short position. On the cum-dividend day, the shareholder goes short, meaning he borrows shares that he will give back on the ex-dividend-day.

There are several types of investors – domestic private investors, domestic corporate investors, domestic tax-exempt investors and foreign investors – who could be marginal. Marginal investors determine the share price around the ex-dividend-day. A priori it is not known what group the marginal investor belongs to. In the following, I describe the indifference conditions for each group. Each indifference condition that is shown here determines the share price around the ex-dividend-day if the particular group sets the marginal investor.

However, it has to be noted that the indifference condition in equation (3.1) is limited because multiple income tax rates across shareholders are not considered and thus heterogeneity in the tax preference of shareholders cannot be observed (e.g. Brennan, 1970, Miller and Scholes, 1982 and Chetty, Rosenbery and Saez, 2007). Michaely and Vila (1995) show that the equilibrium ex-day price drop depends on the weight of each tax clientele. The weight increases with the number of investors in the clientele, their risk tolerance and wealth.

McDonald (2001) analyzes the German stock market under the imputation system and notes that a DM 1 dividend payment plus the tax credit had a pretax value of DM 1.4286 to a taxable German investor.³⁴ To express this in a more technical way, the simple model by Elton and Gruber (1970) is adjusted to the German tax system (before and after the tax reform). First, consider the imputation system that provided a tax credit $(G = \frac{t_u}{1-t_u})$ for personal shareholders in order to avoid double taxation. The corporate tax rate is t_u . For private investors, indifference between capital gains and dividend payments is given by

$$(3.2) \quad (1 - c)(P_{i,t-1} - P_{i,t}) = [D_{i,t-1} + D_{i,t-1}(\frac{t_u}{1-t_u})](1 - t_d)$$

$$(3.2') \quad (P_{i,t-1} - P_{i,t}) = D_{i,t-1} \left(1 + \frac{0.3}{1-0.3}\right) \frac{1-t_d}{1-c}$$

Capital gains are tax-exempt if the investor holds the stock longer than one year or if the investor holds a small fraction of the stocks of a company, i.e., $c = 0$.³⁵ Within the speculative period, both dividend payments and capital gains are subject to the personal

³⁴The investor is reimbursed by the amount of corporate tax that has already been paid. From 1994 until 2000 the German corporate tax rate on distributed earnings was 30%. In 2001, this rate and the corporate tax rate on retained earnings decreased to 25%. The tax credit rate is 42.86%, i.e., 30%/(100%-30%). This amount could be used to offset the personal tax on dividends if the personal income tax rate was higher than the 42.86%. If the tax credit was higher than the personal tax burden on dividends, the investor received the remaining amount.

³⁵ See EStG 2004, § 23 (1) 2. Before 1999 the stock had to be held for at least 6 month in order to receive tax-free capital gains. Short sales are never tax-exempt. If an investor holds the stock longer than 6 months (12 months after 1999), the tax rate at which an investor will be indifferent between dividend payments and capital gains is 30% under the imputation system. From 2001 on, an investor who holds his stocks longer than 12 months should always prefer capital gains (from a tax perspective). Capital gains are also tax-exempt if the investor holds a small fraction of the stocks of a company (i.e., equity stock smaller than 1% since 2001, smaller than 10% from 1999 until 2001 and smaller than 25% before 1999).

income tax rate ($c = t_d$).³⁶ Therefore it does not matter in which tax bracket an investor is. Thus, multiple tax rates across shareholders only play a role for long-term investors.

Dividends that are paid out in 2001 belong to the time before the reform because the dividend payment refers to the fiscal year 2000 and tax credits (42.86%) were still granted then.³⁷

If capital gains and dividends are subject to the personal income tax then a personal shareholder will prefer to keep her shares (instead of selling them before the dividend day) if

$$(3.3) \quad (P_{i,t-1} - P_{i,t}) < 1.4286 D_{i,t-1}.$$

As illustrated by McDonald (2001), a DM 1 dividend payment plus the tax credit had a pretax value of DM 1.4286 to a taxable German investor. In order to equilibrate this equation, a dividend payment of DM 1 should have caused an ex-dividend-day price drop of DM 1.4286 before the tax reform of 2000/2001. Thus, capital gains would have been worth more than the pure dividend payment.

Now, consider alternative types of shareholders. Basically, corporate shareholders received a tax credit under the imputation system as well, but corporate shareholders had to pay corporate tax on those intracompany dividends, so that the tax credit was canceled out.³⁸

The following condition applies to an indifferent corporate shareholder:

$$(3.4) \quad (1 - t_u)(P_{i,t-1} - P_{i,t}) = (D_{i,t-1} + G)(1 - t_u).$$

A corporate shareholder will prefer to sell ex-dividend if

$$(3.3) \quad (P_{i,t-1} - P_{i,t}) < 1.4286 D_{i,t-1}.$$

This resembles the case for personal investors. A DM 1 dividend payment should have caused an ex-dividend-day price drop of DM 1.4286 in order to equilibrate this equation.

As mentioned earlier, foreign investors did not receive a tax credit. They were penalized compared to domestic investors. McDonald (2001) takes this as the reason behind dividend stripping. For foreign investors the indifference condition without dividend stripping³⁹ is

$$(3.5) \quad (1 - c_f)(P_{i,t-1} - P_{i,t}) = D_{i,t-1}(1 - t_{div}),$$

³⁶ From 1996 until 1999 the top personal income tax rate amounted to 53%; it declined to 51% in 2000.

³⁷ Dividends that were paid from profits of the fiscal year 2001 or later no longer received a tax credit.

³⁸ Tax-exempt institutions did not have to pay corporate tax. Since they received the tax credit, they might have had a preference for dividends under the imputation system. However, their valuation of capital gains did not change in relation to the tax reform of 2000/2001.

³⁹ McDonald (2001) considers the indifference condition for foreign dividend strippers, whereas equation (3.5) looks at the indifference condition for foreign investors without considering cross-border dividend stripping.

where c_f is the foreign tax rate on capital gains and t_{div} is the foreign tax rate on dividends.⁴⁰ Since both tax rates vary from country to country, one cannot specify equation (3.5) further and cannot make a statement about the relation between dividend payments and capital gains.

These three conditions are now displayed with regard to the half-income method. For private investors, the following equation holds:

$$(3.6) \quad \frac{1}{2}(P_{i,t-1} - P_{i,t}) + \frac{1}{2}(1-c)(P_{i,t-1} - P_{i,t}) = \frac{1}{2}D_{i,t-1} + \frac{1}{2}D_{i,t-1}(1-t_d)$$

$$(3.7) \quad \leftrightarrow (1 - \frac{1}{2}c)(P_{i,t-1} - P_{i,t}) = D_{i,t-1}(1 - \frac{1}{2}t_d).$$

Equation (3.6) shows that only half of the dividend payment and half of the capital gain are taxed, whereas the other half is tax-free. Just as before the reform, dividend payments and capital gains are subject to the personal income tax for private investors. Therefore, the tax rates cancel out in equation (3.7) and should not influence the investors' decision between capital gains and dividend payments, i.e., equation (3.8) simplifies to

$$(3.8) \quad (P_{i,t-1} - P_{i,t}) = D_{i,t-1},$$

and capital gains are worth as much as dividend payments. If the marginal investor is a domestic individual, then a DM 1 dividend payment should cause a DM 1 ex-dividend-day price drop.

The tax reform of 2000/2001 exempts capital gains and dividend payments for corporate shareholders, so that equation (3.8) also applies in the case of these shareholders.⁴¹

Since the tax credit no longer exists under the half-income method, foreign investors are no longer disadvantaged by not receiving an imputation credit. Equation (3.5) still applies if there is no dividend stripping. The valuation of dividend payments in relation to capital gains was not influenced by the German tax reform for foreign investors.

The arbitrage possibilities that are pointed out here show that there should have been an ex-dividend-day effect larger than one under the imputation system if domestic investors (corporate shareholders or private shareholders) who did not hold their shares beyond the speculative period were the marginal investors. If those investors were the marginal investors, one should expect an ex-dividend-day price drop equal to one under the half-income method. In contrast, if domestic shareholders who held their stocks longer than the speculative period or tax-exempt investors were the marginal investors, one should expect that the ex-dividend-day effect will not be influenced by the tax reform, because those investors do not have to pay capital gains tax ($c=0$). If foreign dividend strippers were the marginal investors, an ex-

⁴⁰ Before (since) 2001 the withholding tax rate was (has been) usually 25% (20%) but most double-taxation treaties lower this rate.

⁴¹ § 8 b, German Corporate Tax Law. From 2003 on, 5% of the dividend payment is subject to corporate tax.

dividend-day price drop larger than one should be expected under the imputation system, too. This had been the observation in McDonald's (2001) study. The abolishment of the tax credit should then have been the death blow for cross-border dividend stripping, since cross-border tax arbitrage possibilities do not exist any more. In contrast, if foreign investors (not dividend strippers) were the marginal investors, one should expect that there is no structural break in the size of the German ex-dividend-day effect.

Now, the question arises whether the tax reform of 2000/2001 did influence the ex-dividend-day effect. Since the marginal investor sets the price around the ex-dividend-day, empirical results on the ex-dividend-day effect may provide an answer to the question of whether the weight of foreign dividend strippers was large enough to lead to a structural break.

3.3 The ex-dividend-day behavior before and after the tax reform

3.3.1 The data set

Using *Datastream* and the *Hoppenstedt Aktienführer I* collected a sample of firms that covers the period from 1996 until 2004. The sample includes 1018 observations from all industries. The sample has daily, unadjusted⁴² closing prices of 308 listed corporations⁴³ that are or were traded at the stock exchange in Frankfurt. Dividend payments are also not adjusted. The sample is subdivided into the DAX and non-DAX corporations.⁴⁴ Daily closing prices of the CDAX⁴⁵ are obtained from *Datastream*. Information regarding the tax credit is given by the *Hoppenstedt Aktienführer*. The ownership structure can be obtained from Commerzbank "Wer gehört zu wem".

McDonald (2001) analyzes a different sample. Firstly, he uses a different time period (1989 until 1998), and he and I do not consider exactly the same companies (he analyzes 356 German companies). Secondly, and most important, the present sample can be subdivided into the time period before and after the tax reform of 2000/2001, thus allowing me to

⁴² "Unadjusted prices" means that share prices are not adjusted for (share) splits. They represent the daily closing prices that were stated on a given day.

⁴³ Each corporation had to pay out dividends at least one time during the observed period (and had to be represented in *Datastream* and the *Hoppenstedt Aktienführer*). There were 905 quoted companies on the Frankfurt Stock Exchange in 2000 (2001: 912; 2002: 867; 2003: 829; 2004: 815) (see Deutsche Börse Group, *Factbook*, various years, Section 1.1.2).

⁴⁴ The DAX (German stock index = *Deutscher Aktienindex*) contains the 30 biggest German incorporated companies. Those 30 companies are chosen according to their market capitalization and their volume of stocks traded. The sample is subdivided into DAX and non-DAX corporations, since some non-DAX corporations are not traded every day. If stocks are not traded on the ex-dividend-day, there is no ex-dividend-day effect.

⁴⁵ The Composite DAX (CDAX) is another index. In contrast to the DAX, the CDAX contains all German stocks that are quoted in the General Standard and Prime Standard at the Frankfurt Stock Exchange.

reinvestigate the alleged effect of the German imputation tax system on the size of the ex-dividend-day effect.

3.3.2 Summary statistics

As in McDonald's (2001) analysis, it can be observed that dividends are seasonal: about 70% of the dividends are paid from May to July (see Figure 3.1). The distribution of dividend payments does not seem to be related to the tax reform. Most companies seemed to have stuck to their dividend payment day.

Figure 3.1: Distribution of dividend payments by month

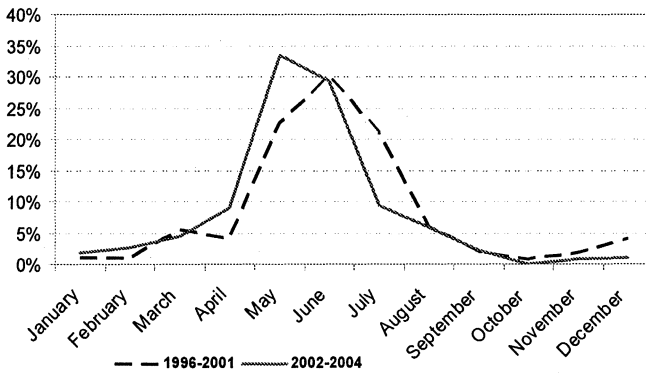


Figure 3.2: Percentage of firms with a given dividend yield

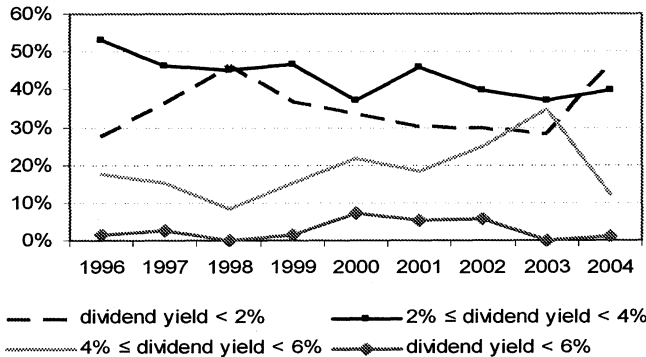


Figure 3.3: Dividend yield

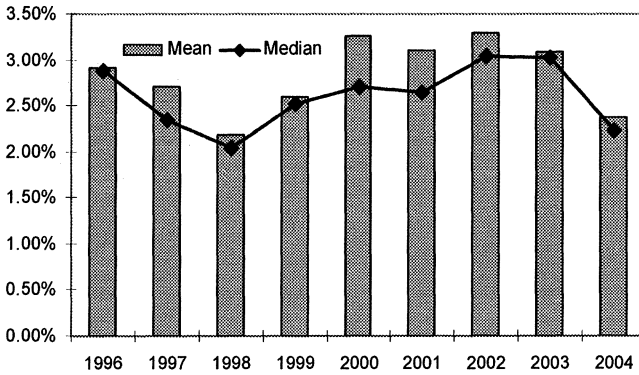
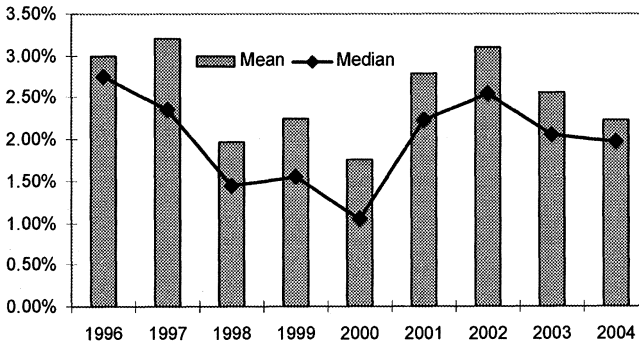


Figure 3.4: Ex-dividend-day price drop



Most corporations have a dividend yield⁴⁶ below 4% (see Figure 3.2). A dividend yield above 6% is uncommon. As Figure 3.3 shows, the median dividend yield lies between 2.04% in 1998 and 3.03% in 2002 and 2003. The mean of the dividend yield has a peak in 2002 (3.29%) and a trough in 1998 (2.19%). Figure 3.2 and Figure 3.3 do not suggest a change in the dividend yield in relation to the tax reform of 2000/2001. The ex-dividend-day

⁴⁶ The dividend yield of share i is defined as the dividend of share i divided by the cum-dividend-day price of share i .

price drop⁴⁷, i.e., the ex-dividend-day return of share i , has a peak in 1997, when the mean is 3.21% and reaches a trough in 2000, when the average ex-dividend-day price drop is 1.76% (see Figure 3.4). Again, this figure does not indicate a relation to the tax reform.

3.3.3 Empirical proceedings and results

As a starting point, I take McDonald's (2001) model in order to test whether the present sample confirms similar results for the imputation system and whether the abolishment of the imputation system changes results. McDonald (2001) builds upon a model that was introduced by Boyd and Jagannathan (1994), which uses the dividend yield in order to explain the ex-dividend-day price drop⁴⁸:

$$(3.9) \quad \frac{P_{i,t-1} - P_{i,t}}{P_{i,t-1}} = \alpha + \beta \frac{D_{i,t-1}}{P_{i,t-1}} + u_{i,t-1} .$$

To remove the seasonality from ordinary days, McDonald (2001) adds the return of the CDAX ($r_{i,t-1}^{CDAX}$) to the ex-dividend-day price drop. The return of the CDAX is defined as the value of the CDAX on firm i 's cum-dividend-day minus the value of the CDAX on firm i 's ex-dividend-day, divided by the CDAX value on the cum-dividend-day of firm i . Inserting the return of the CDAX into equation (3.9) amounts to deducting the market returns, so that market effects are removed. Price drops due to dividend payments are corrected for in the CDAX. Controlling for the market return is necessary to essentially construct an accurate counterfactual of what the price change would have been had a firm not gone ex-dividend on that day. In other words, the CDAX helps to remove the noise caused by general fluctuations of the market.⁴⁹ Then we have

$$(3.9') \quad \frac{P_{i,t-1} - P_{i,t}}{P_{i,t-1}} + r_{i,t-1}^{CDAX} = \alpha + \beta \frac{D_{i,t-1}}{P_{i,t-1}} + u_{i,t-1} .$$

In order to test whether there has been a structural break in the ex-dividend-day price drop in relation to the tax reform, the sample is subdivided into the period before and after the tax reform, so that the estimated price drop ratios before and after the reform can be compared. If domestic shareholders (private or corporate) who did not hold their stocks longer than the speculative period or foreign dividend strippers are the marginal investors, one should expect a decline in the ex-dividend-day price drop, and the slope coefficients (β)

⁴⁷ The ex-dividend-day price drop of share i is the difference between the cum-dividend-day price of share i and the ex-dividend-day price of share i , divided by the cum-dividend-day price of share i .

⁴⁸ The variables are defined as in Section 3.2.2.

⁴⁹ It should be noted that using the CDAX in equation (3.9') leads to a small imprecision since a corporation that goes ex-dividend is also included in the observation on its ex-dividend-day. With 673 firms in the CDAX, the problem should be minor.

should be significantly different. On the other hand, if domestic investors who hold their shares longer than six (or twelve) months, tax-exempt investors or foreign non-dividend-strippers are the marginal investors, one should expect that the slope coefficients are not significantly different.

The equation

$$(3.10) \frac{P_{i,t-1} - P_{i,t}}{P_{i,t-1}} + r_{i,t-1}^{CDAX} = \alpha + \beta_1 \frac{D_{i,t-1}}{P_{i,t-1}} + \gamma \frac{D_{i,t-1}}{P_{i,t-1}} YEAR_{02-04} + \delta YEAR_{02-04} + u_{i,t-1}$$

estimates the slope coefficient before the reform (β_1) and the difference between the slope coefficient after the reform and the slope coefficient before the reform $\gamma = (\beta_2 - \beta_1)$. If β_1 and β_2 are significantly different from 1, then there is a structural break in the size of the ex-dividend-day effect. $YEAR_{02-04}$ is a time dummy for the period after the tax reform of 2000/2001. If there is no structural break, there should be no significant difference between the unrestricted sum of squares for the whole sample and the restricted sum of squares. Testing whether the coefficients are the same ($\beta_1 = \beta_2$) is obviously equivalent to testing $H_0: \gamma = 0$.

Table 3.1: (Robust) OLS estimates

Variable	DAX	Non-DAX	Trade ⁵⁰	All
α	-0.002340 (0.003450)	-0.002034 (0.001734)	0.001262 (0.001675)	-0.001634 (0.001735)
β_1	1.114233*** (0.140682)	0.972076*** (0.061754)	0.998289*** (0.059097)	0.969569*** (0.0491332)
γ	-0.133516 (0.187333)	0.027064 (0.194218)	0.000100 (0.191305)	0.030469 (0.108404)
δ	-0.001417 (0.005180)	-0.000833 (0.005616)	-0.001667 (0.005703)	-0.001521 (0.003757)
Observations	144	874	864	1018
R^2	0.2930	0.3290	0.3517	0.3287

Chow test for the whole sample:

$H_0: \beta_1 = \beta_2$; F-statistic: $F(1, 1014) = 0.03$; (Prob > F) = 0.8652

Annotation: Heteroskedasticity-robust standard errors are in parenthesis, *** significant at the 1% level, ** significant at the 5% level, * significant at the 10% level.

Table 3.1 presents the OLS estimates of equation (3.10). It can be seen that a DM 1 dividend payment caused an average price drop of DM 0.97 before the reform and DM 1.00 after the reform. γ is always insignificant, meaning that the difference between β_1 and β_2 is not significantly different from 0. β_1 and β_2 are not significantly different from 1. The magnitude of δ (-0.0015) is insignificant. The null hypothesis of the Chow test (Chow 1960), that there is

⁵⁰ Since thin trading among the non-DAX stock might generate a downward bias, "Trade" excludes stocks that report no price change from the cum-day to the ex-day.

no structural break, cannot be rejected. There is no difference in the ex-dividend-day effect in connection with the tax reform.⁵¹

As mentioned by McDonald (2001), equation (3.10) ignores an important fact. Under the imputation system some dividends did not carry a tax credit.⁵² This was the case if they were paid out of “Equity 0” (EK 0), which had not been subject to any tax before. Here, the market may have reacted differently than it would have if the dividends had been paid out of EK45 or EK40.⁵³ Then we have

$$(3.11) \quad \frac{P_{i,t-1} - P_{i,t}}{P_{i,t-1}} + r_{i,t-1}^{CDAX} = \alpha_0 + \alpha_1 D_{credit} + \beta_0 \frac{D_{i,t-1}}{P_{i,t-1}} + \beta_1 \frac{D_{i,t-1}}{P_{i,t-1}} D_{credit} \\ + \gamma \frac{D_{i,t-1}}{P_{i,t-1}} YEAR_{02-04} + \delta YEAR_{02-04} + u_{i,t-1}.$$

Here, D_{credit} is a dummy variable that is 1 if the dividend carried a credit and 0 otherwise. $YEAR_{02-04}$ is another dummy that is 1 if the dividend is paid out after the reform and 0 otherwise. Equation (3.11) assumes that all dividends that carried a tax credit have the same intercept in all the observed years, but allows for a change of the slope coefficient for dividends without a tax credit in response to the tax reform. For dividends without a tax credit that were paid out before the reform, α_0 is the intercept and β_0 is the slope coefficient, $\alpha_0 + \alpha_1$ is the intercept for dividends that were paid out before 2002 and carried a tax credit, $\beta_0 + \beta_1$ is the slope coefficient for such dividends, and γ estimates the difference between the slope coefficients for dividends without a credit that were paid out after the reform and before the reform.

Table 3.2 contains the OLS estimates of equation (3.11). Under the imputation system, dividends that carry a tax credit had an average price drop of DM 0.89 for a DM 1 dividend payment. Dividends without a credit caused an average price drop of DM 1.07 in the period from 1996 to 2001. After the reform a DM 1 dividend payment caused an ex-dividend-day price drop of DM 1.00. The fact that β_1 is insignificant shows that there is no significant difference between a dividend that received a tax credit before the reform and a dividend

⁵¹ I also checked whether different industries correlated differently with the market. Therefore I produced separate estimates at the industry level. I subdivided the sample into four industries (1: biotech, IT, pharma; 2: industry, car; 3: food, household, fashion and 4: other). It turns out that all subsamples have a similar ex-dividend-day effect and there is no difference in the ex-dividend-day effect in connection with the tax reform.

⁵² In 1996, only 1 dividend payment in my sample did not carry the tax credit. However, the number of dividend payments that did not carry the tax credit increased (in my sample) over the years. In 1997 (1998, 1999, 2000 and 2001) 3 dividend payments did not carry the tax credit (8, 21, 22 and 22). Therefore it is better to pool these payments in equation (3.11). Blasch (2008, p.75ff.) shows that dividend payments out of EK 0 depend on the ownership structure. His argument was that firms with a foreign principal shareholder more often paid out dividends from EK 0, since foreign investors (not dividend strippers) could not use the tax credit.

⁵³ The tax rate on retained earnings was 45% from 1996 until 1998, 40% from 1999 until 2000, and 25% from 2001 on. Equity that had been subject to a 45% (40%) corporate tax rate was declared as EK45 (EK40).

payment that did not get the credit before the tax reform 2000/2001. The Chow test shows that there is no structural break in the size of the ex-dividend-day effect.

Table 3.2: (Robust) OLS estimates

Variable	DAX	Non-DAX	Trade	All
α_0	-0.013447** (0.006247)	-0.004420 (0.003389)	-0.004954 (0.003409)	-0.006278* (0.003214)
α_1	0.011470 (0.007301)	0.004613 (0.004289)	0.008735** (0.004369)	0.007017* (0.004030)
β_0	0.917748*** (0.193319)	1.057390*** (0.065999)	1.081566*** (0.076921)	1.066246*** (0.067960)
β_1	0.269316 (0.245738)	-0.166068 (0.122496)	-0.156660 (0.130584)	-0.177273 (0.120035)
γ	0.062968 (0.229992)	-0.057635 (0.195326)	-0.082278 (0.197735)	-0.065204 (0.181765)
δ	0.009690 (0.007360)	0.001523 (0.006267)	0.004550 (0.006435)	0.003075 (0.005707)
Observations	144	874	864	1018
R²	0.3430	0.3309	0.3543	0.3310

Chow test for the whole sample:

$H_0: \beta_1 = \beta_2$: F-statistic: $F(1,1012) = 0.13$; $(\text{Prob} > F) = 0.7199$

Annotation: Heteroskedasticity-robust standard errors are in parenthesis, ***significant at the 1% level, ** significant at the 5% level, * significant at the 10% level.

So far, all the econometric evidence suggests that the price drop per DM of dividends underwent no statistically significant change due to the German tax reform of 2000/2001. The tax reform obviously did not influence the ex-dividend-day effect in Germany. Since only the marginal investor can set the price around the ex-dividend-day, the marginal investor has to be someone who is not affected by the capital gains tax. Section 3.2.2 showed alternative indifference conditions for different kinds of investors. The empirical results suggest that either domestic investors who did not have to pay tax on capital gains, tax-exempt institutions, or foreign investors who are not dividend strippers are the marginal investors in Germany. The German tax reform of 2000/2001 did not influence the marginal investors' arbitrage calculus with respect to dividend payments and capital gains. For domestic investors who do not have to pay tax on capital gains, the tax reform would not have affected their decision, because they only pay tax on dividends. For German investors who did not hold their stocks longer than the speculative period, the tax reform appreciated capital gains in relation to dividend payments. Since the ex-dividend-day effect did not change, those investors seem not to be the marginal investors who set the price around the ex-dividend-day.

In order to see whether there is a clientele effect the ownership structure is observed. Therefore I constructed two subsamples, where (i) the largest investor is subject to the personal income tax (tax-exempt investors are excluded) and (ii) where the largest investor is

subject to the corporate tax. Table 3.3 shows that the average price drop is DM 1.11 (DM 0.95) before (after) the reform for corporations, where the largest shareholder is subject to the personal income tax and DM 1.02 (DM 0.96) for corporations, where the largest shareholder is subject to the corporate tax. Thus, it can be concluded that I cannot identify a marginal investor, since I concluded before that either domestic investors who held their stocks longer than six (or twelve) months, tax-exempt institutions, or foreign investors (no dividend strippers) are the marginal investors in Germany. However, Table 3.3 just showed that corporate investors did not change their arbitrage calculus with respect to dividend payments and capital gains. This suggests that the dividend payment does not depend on the marginal investor. This is in line with Chetty, Rosenberg and Saez (2007) who show that drop-off ratios are generally very volatile and it is difficult to identify tax effects even around major tax reforms.

Table 3.3: (Robust) OLS estimates – Ownership structure

Variable	Income Tax ⁵⁴	Corporate Tax ⁵⁵
α	-0.005236 (0.003498)	-0.003914 (0.001786)
β_1	1.114609*** (0.139382)	1.018857*** (0.061660)
γ	-0.150975 (0.221002)	-0.062183 (0.163142)
δ	0.007405 (0.006211)	0.000819 (0.005123)
Observations	349	494
R^2	0.2761	0.3921

Annotation: Heteroskedasticity-robust standard errors are in parenthesis, *** significant at the 1% level, ** significant at the 5% level, * significant at the 10% level.

One reason why my results are different from the one found by McDonald (2001), is that his data set includes very large dividends, so that dividend stripping activities were more likely. Transaction costs carry less weight for large dividend payments compared to small dividend payments. Investment managers might have engaged in some form of dividend stripping if the dividends were very large. Especially in 1994, companies might have paid large dividends. Until 1994, the tax rate on distributed earnings was 36%, i.e. dividends

⁵⁴ “Income Tax” includes only observations where the largest shareholder is subject to the personal income tax. I also checked whether the results change if the sample includes only observation where the dominant shareholder, who holds more than 50% of the shares, is subject to the personal income tax. It turns out that the ex-dividend-day price-drop is almost the same for that sample. It is reasonable to assume that those investors are in the highest tax bracket.

⁵⁵ “Corporate Tax” includes observations, if the largest shareholder is subject to the corporate tax. I also checked whether the results change if the sample includes only observation where the dominant shareholder, who holds more than 50% of the shares, is subject to the corporate tax. It turns out that the ex-dividend-day price-drop is almost the same for that sample.

obtained a 56.25% tax credit.⁵⁶ In 1994, the tax rate on distributed earnings went down to 30%. Dividends that were paid out in 1994 from profits of the fiscal year 1993 still obtained the higher tax credit. It might be possible that some companies paid out large dividends in 1994, so that some investors (e.g., tax-exempt investors) could benefit from the larger tax credit.

As mentioned earlier, McDonald's (2001) data set is not robust. His data set contains one outlier that distorts the whole result. Actually, this outlier with an extremely high dividend yield and an extremely high price drop can be observed in 1994. It can only be speculated that the change in the tax credit rate was the driving force behind this. If McDonald (2001) would have left out this one outlier, he and I would have received similar results; a DM 1 dividend payment would have caused an average ex-dividend-day price drop of DM 1.09, which is not significantly different from 1. Thus, his dividend stripping story would be precarious.

The present data set does not include very large dividends. Appendix 1 shows that the average price drop before the reform (after the reform) is DM 0.96 (DM 0.99) for a 'normal' dividend and DM 1.01 (DM 1.11) for a 'large' dividend. I cannot find a significant difference between 'normal' and 'large' dividends.

3.3.4 Shareholders of German shares

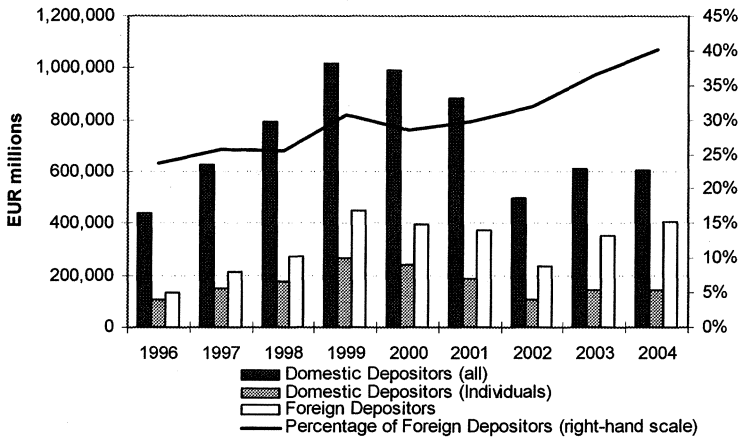
Section 3.3.3 provided no evidence for a structural break in the size of the German ex-dividend-day effect. Considering my empirical results, the dividend stripping story is precarious. Therefore it makes sense to look at capital transactions with foreign shareholders and see whether sales and acquisition of domestic shares by foreign investors changed from 2001 on.

The tax reform of 2000/2001 made foreign shares relatively more attractive to domestic investors. Whereas the imputation system did not provide a tax credit for foreign shares held by domestic investors, the half-income method is also applicable to such shares. Foreign shares held by domestic investors are no longer tax-disadvantaged. It is plausible that domestic shareholders are investing more in foreign stocks and might have exchanged some of their domestic shares for foreign shares. On the other hand, foreign investors are no longer tax-penalized. The imputation system generated a significant cost to foreign investors that did not actively trade away the dividend, so one would expect volumes to increase post-reform, since foreign investors might invest more in German stocks.

⁵⁶ $G = [t_d / (1 - t_d)]$, i.e., $[36\% / (100\% - 36\%)] = 56.25\%$

Figure 3.5 provides an overview of the custody account statistic.⁵⁷ This chart illustrates the volume of German stocks that are held by foreign investors, domestic investors, and domestic individual investors in German deposits. However, it cannot be seen how many German stocks are held in foreign deposits. The custody account statistic shows that shares owned by foreign investors increased from EUR 136,439 million in 1996 to EUR 405,368 million in 2004. It can be recognized that the proportion of foreign depositors to domestic investors increased over time. Whereas in 1996 only 23.7% of domestic shares (in German deposits) were in the possession of foreign investors, that fraction increased to 40% in 2004 (Figure 3.5).

Figure 3.5: Custody account statistic



Source: German Central Bank, own calculations.

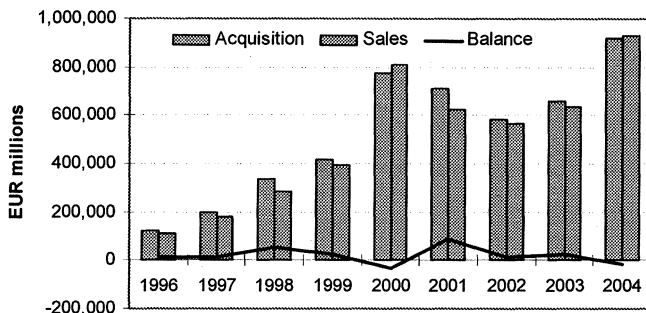
Figure 3.6 displays the sales and acquisitions⁵⁸ of domestic shares by foreign investors from 1996 to 2004. This figure seems to be consistent with foreign investors being more willing to hold German stocks in 2000 once they had gone ex-dividend for that year. If dividend stripping depends on the tax credit, one would expect that the capital transactions with foreign investors went down after the tax reform. Capital transactions with foreign

⁵⁷ Data is provided by the German Central Bank. In 1996, 62.6% (1997: 62.8%; 1998: 62.3%; 1999: 63%; 2000: 63.4%; 2001: 63.4%; 2002: 54.9%; 2003: 57.3%; 2004: 55.6%) of all German stocks were held in German deposits.

⁵⁸ Data is provided by the German Central Bank. The sales and acquisitions of domestic shares by foreign investors represent the capital transactions (sales and acquisitions) with foreign shareholders.

investors do not provide evidence that foreign investors cut down on dividend stripping. In line with the empirical results, capital transactions with foreign shareholders do not provide evidence for the dividend stripping story.

Figure 3.6: Sales and acquisitions of domestic shares by foreign investors



Source: German Central Bank, own calculations.

3.4. Conclusions

The recent abolishment of the imputation system in Germany offers a good opportunity to reinvestigate the ex-dividend-day effect. The present paper has analyzed possible influences of the ex-dividend-day effects in the German stock market with respect to the tax reform of 2000/2001, where the half-income method replaced the imputation system. As a starting point, I used McDonald's (2001) empirical study that concludes that a DM 1 dividend payment caused an average ex-dividend-day price drop of DM 1.26 in the German imputation system. He argues that there are cross-border arbitrage possibilities. While a DM 1 dividend had a pretax value of DM 1.4286 under the imputation system, a marginal foreign shareholder could reap less if dividend stripping is costly.

Apart from the fact that I could not reproduce an ex-dividend-day effect significantly larger than one before the reform, the paper also failed to find a structural break after 2001, which should have occurred if before 2001 the imputation system was responsible for a larger ex-dividend-day effect.⁵⁹ The ratio of price drop to dividend payment remained

⁵⁹ I could not reproduce an ex-dividend-day effect larger than one with my data set, but I could reproduce an ex-dividend-day effect larger than one with Robert L. McDonald's data set.

approximately 1:1. I could not identify a marginal investor. This is in line with Chetty, Rosenberg and Saez (2007) who conclude that it is impossible to detect tax effects, even around large tax reforms.

Appendix: CUSUM test for large dividends

Because of transaction cost of finding partners for dividend stripping and conducting the transactions, investors may engage in dividend stripping if the dividend payment is sufficiently large. To test the hypothesis that 'large' dividends have a larger ex-dividend-day price drop than 'normal' dividends I define a dividend as being large if it is significantly larger than average, i.e. are two standard errors above average. The equation

$$(3.12) \quad \frac{P_{i,t-1} - P_{i,t}}{P_{i,t-1}} + r_{i,t-1}^{CDAX} = \alpha + \beta_1 \frac{D_{i,t-1}}{P_{i,t-1}} + \gamma \frac{D_{i,t-1}}{P_{i,t-1}} \text{Large} + \delta \text{Large} + u_{i,t-1}$$

estimates the slope coefficient of a 'normal' dividend β_1 and the difference between the slope coefficient of a 'large' dividend (β_2) and a 'normal' dividend $\gamma = (\beta_2 - \beta_1)$. Large is a dummy for large dividends, which is 1 if the dividend belongs to the 5% largest dividends in the sample and 0 otherwise. Again, I want to test whether the coefficients β_1 and β_2 are significantly different ($H_0: \gamma = 0$).

Table 3.4: (Robust) OLS estimates

Variable	Before the reform	After the reform
α	-0.001517 (0.001780)	-0.002845 (0.005016)
β_1	0.959354*** (0.068480)	0.994397*** (0.174627)
γ	0.053527 (0.139316)	0.111927 (0.272677)
δ	0.001348 (0.004380)	-0.005102 (0.007690)
Observations	749	269
R^2	0.3335	0.3146

Chow test

i) before the reform: $H_0: \beta_1 = \beta_2$; F-statistic: $F(1, 745) = 0.15$; (Prob > F) = 0.7009

ii) after the reform: $H_0: \beta_1 = \beta_2$; F-statistic: $F(1, 265) = 0.17$; (Prob > F) = 0.6818

Annotation: Heteroskedasticity-robust standard errors are in parenthesis, ***significant at the 1% level, ** significant at the 5% level, * significant at the 10% level.

Table 3.4 shows that the average price drop is DM 0.96 (DM 0.99) before (after) the reform for a 'normal' dividend and DM 1.01 (DM 1.11) for a 'large' dividend. γ is never significant, i.e., the difference between β_1 and β_2 is not significant different from 0. β_1 and β_2

are not significantly different from 1. The Chow test illustrates that there is no significant difference in the ex-dividend-day effect between 'normal' and 'large' dividends in this sample, neither before nor after the reform.

Since there is uncertainty about the point at which a possible structural break in the regression equation might occur, I am also running a CUSUM and a CUSUMSQ test of the stability. It turns out that the both tests accept the null hypothesis that there is no structural break and there is no evidence that the ex-dividend-day effect depends on the size of the dividend payment.

4. Das steuerpolitische Dezemberfieber: Steuergesetzgebung in Deutschland von 1951 – 2004⁶⁰

4.1 Einleitung

Das deutsche Steuerrecht gilt als eines der kompliziertesten der Welt. Häufig geäußerte Behauptungen,⁶¹ nach denen bis zu 80 % der weltweiten Steuerliteratur aus Deutschland stammt, wurden zwar mittlerweile widerlegt. Doch auch der tatsächliche Wert von 10 bis 20% sorgt dafür, dass Deutschland in dieser Hinsicht nach wie vor eine Spitzenstellung in der Welt einnimmt (Rädler, 2004). Die Forderung nach einer Vereinfachung der Steuergesetzgebung ist vor diesem Hintergrund allgegenwärtig: Unternehmer klagen über den deutschen Steuerdschungel, und auch der gemeine Steuerpflichtige dürfte beim alljährlichen Ausfüllen der Einkommensteuererklärung schon mehr als einmal über die nahezu unüberblickbaren Vorschriften geflucht haben.

Dabei ist es nicht in erster Linie die Komplexität des Steuerrechts an sich, welche Unternehmen wie Arbeitnehmern die Zornesröte ins Gesicht treibt. Vielmehr ist es die als extrem empfundene Schnelllebigkeit der Steuergesetzgebung: Kaum hat man sich in eine neue Regelung eingearbeitet, wird sie auch schon wieder von einer anderen abgelöst. Andel sprach 1998 in diesem Zusammenhang vom „chaotischen Aktionismus des Gesetzgebers“, der das Aktualisieren eines finanzwissenschaftlichen Lehrbuchs extrem erschwere (Andel, 1998, S. III).⁶² Auch der Bankenverband bemerkt, dass „die verabschiedeten Gesetze in immer kürzeren Abständen geändert, oft schon nach ihrem Inkrafttreten, [...] nachgebessert“ werden (Bundesverband deutscher Banken, 2005). Die Forderungen nach „Ruhe an der Steuerfront“ (BfTKOM, 2003) und einer höheren „Planungssicherheit im Steuerrecht“ (Verband der freien Berufe in Bayern, 2005) findet sich daher immer wieder. Sogar die Bundessteuerberaterkammer - also ein vermeintlicher Profiteur der steuerrechtlichen Komplexität - fordert in einer Pressemitteilung aus dem September 2005 „nur ein

⁶⁰ Diese Kapitel beruht auf einer gemeinsamen Arbeit: Blasch, Frank; Klautke, Tina; Weichenrieder, Alfons J. (2007), „Das steuerpolitische Dezemberfieber: Steuergesetzgebung in Deutschland von 1951 bis 2004“, *Perspektiven der Wirtschaftspolitik*, 8(3), 221-241.

⁶¹ So argumentiert beispielsweise die Bundesvereinigung der Deutschen Arbeitgeberverbände (2003, S. 30).

⁶² Beispielhaft sei hier auf den Überblick über die Änderungen im Unternehmenssteuerrecht bei Büttgen-Pöhlend (2004, S. 38ff.) verwiesen.

Steuergesetz pro Jahr, verabschiedet zur Mitte eines Jahres, Inkrafttreten mit Wirkung zum 1. Januar des Folgejahres“ (Bundessteuerberaterkammer, 2005, S. 3).

Auch die Politik hat die Klagen der Wirtschaft vernommen und fordert ähnliches. So sprach Thüringens Ministerpräsident Dieter Althaus in einer Rede anlässlich des 12. Symposiums „Deutsche Fragen“ des Bundesverbandes deutscher Banken mit dem Ostdeutschen Bankenverband und der Universität Erfurt am 27. Oktober 2004: „Die stetige Flut von Gesetzesänderungen haben einen ‚Steuerdschungel‘ geschaffen, der international seinesgleichen sucht. [...] Für die Steuerpflichtigen ist das Steuerrecht damit nicht mehr verständlich.“ Der niedersächsische Finanzminister Hartmut Möllring erkennt in einem Grußwort anlässlich der Landesverbandstagung des Steuerberaterverbandes Niedersachsen und Sachsen-Anhalt im Mai 2003, dass „das ständige ‚Hin und Her‘ in der Steuergesetzgebung [...] die Planungssicherheit“ nicht fördert. Er fordert daher „mehr Verlässlichkeit auch und gerade in der Steuergesetzgebung“. Und schließlich schreibt das Ministerium für Wirtschaft des Landes Brandenburg in einer Pressemitteilung aus dem September 2004: „Das Steuerrecht muss außerdem berechenbarer werden. Es kann nicht sein, dass Paragraphen immer wieder geändert werden. Unternehmen brauchen Planungssicherheit.“ (Ministerium für Wirtschaft des Landes Brandenburg, 2004).

Während Klagen und Forderungen hauptsächlich auf subjektiven Empfindungen der Betroffenen beruhen, existieren kaum systematische empirische Untersuchungen über die deutsche Steuergesetzgebung.⁶³ Als wichtige Vorarbeit ist das Papier von Köster (2005) zu nennen, der die Steuerreformen in der Bundesrepublik der Jahre 1964 bis 2004 empirisch untersucht hat. Dabei unterscheidet er zwischen Reformen, die die Steuerlast der Bürger erhöht haben und solchen, die zu einer finanziellen Entlastung geführt haben. Zur Ermittlung dieser Angaben nutzt er den Finanzbericht des Bundesministeriums der Finanzen (BMF), in dem die wichtigsten Steuerrechtsänderungen aufgeführt und deren vermutete finanzielle Auswirkungen prognostiziert werden. Die zentralen Ergebnisse dieser Arbeit sind zum einen, dass „bürgerliche“ Bundesregierungen (unter CDU-Führung) weniger Steuerreformaktivitäten zeigen als SPD-geführte Kabinette. Zum zweiten werden in den Monaten vor einer

⁶³ Berger (1998) verfolgt einen ähnlichen quantitativen Ansatz und ermittelt den Zeitpfad der Regulierungsaktivität auf dem Arbeits-, dem Kapitalmarkt und auf dem Gebiet der Umweltpolitik. Dabei wird deutlich, dass ein negativer Zusammenhang zwischen Regulierungsaktivität und dem Wirtschaftswachstum besteht. Bräuninger und König (2000) analysieren die innere Mechanik der deutschen Gesetzgebung und gehen insbesondere der Frage nach, welche Determinanten die Wahrscheinlichkeit der Verabschiedung einer Gesetzesinitiative und die Dauer des Gesetzgebungsprozesses beeinflussen. Eine Studie der Steuerberatungsgesellschaft PricewaterhouseCoopers aus dem Jahr 2006 vergleicht den Umfang des Unternehmenssteuerrechts der zwanzig größten Volkswirtschaften der Welt auf zentralstaatlicher Ebene anhand der existierenden Gesetzestextseiten. In dieser einfachen Analyse belegt Deutschland den zehnten Platz mit 1700 Seiten (Cussons, 2006, S. 16).

Bundestagswahl weniger Steuererhöhungen vorgenommen als sonst, und schließlich werden weniger Steuererhöhungen verabschiedet, wenn in Bundestag und Bundesrat die gleichen Parteien die Mehrheiten haben.

Der vorliegende Aufsatz ergänzt die Ergebnisse Kösters, indem die herrschenden Vermutungen über die Entwicklung der Steuergesetzgebung anhand der Anzahl und des Umfangs der vom Bund und von den Ländern erlassenen Gesetze einerseits und den Rechtsverordnungen andererseits in den Jahren von 1951 bis 2004 untersucht werden. Als breitere Datenbasis nutzen wir das vom BMF herausgegebene Bundessteuerblatt, das einerseits einen längeren Zeitraum abbildet und zum anderen neben den Gesetzen auch die Rechtsverordnungen erfasst. Darüber hinaus erhalten wir über die Textlänge eine zusätzliche Information. Der Frage nach der Komplexität des Steuerrechts können wir dabei jedoch nicht ohne weiteres nachgehen. Aus den im Zeitverlauf verabschiedeten Änderungsgesetzen lässt sich per se nicht ablesen, ob diese das Steuerrecht vereinfachen oder komplizierter machen. Zwar ist zu vermuten, dass der Umfang eines erlassenen Gesetzes mit der Komplexität des gesamten Steuerrechts positiv korreliert ist, da das Streichen einer Regelung weniger Platz in Anspruch nimmt als die Änderung eines bestehenden oder das Hinzufügen eines gänzlich neuen Paragraphen. Dass die Gesetze über die Jahre komplizierter werden, lässt sich jedoch nicht nachweisen, ohne die Inhalte der Gesetzestexte zu analysieren und ein quantitatives Maß für die Komplexität des Rechts zu entwickeln. Doch auch ohne diese kaum zu generierende Information können wir zumindest die Arbeitsintensität des Gesetzgebers untersuchen. Diese wird dabei einmal gemessen an der absoluten Zahl der verabschiedeten Gesetze und Verordnungen und darüber hinaus am textlichen Umfang der selbigen.

Ein erstes, etwas überraschendes Ergebnis ist, dass der Output des Gesetzgebers im Zeitverlauf nicht angestiegen ist. Die Anzahl und der Umfang der verabschiedeten Verordnungen sind in der Tendenz sogar leicht rückläufig. Dass die Klagen der Steuerzahler aber nicht ganz unberechtigt sind, zeigt ein zweites zentrales Resultat der Untersuchungen: Die überwiegende Mehrheit der Gesetze wird zum Ende eines Jahres erlassen; und der Anteil der Gesetze, die erst im Dezember verabschiedet werden, nimmt im Zeitverlauf zu. Aus diesem Grunde kann man von einem steuerpolitischen „Dezemberfieber“ sprechen: Zunehmend werden Gesetze, die für das nächste Jahr relevant sind, erst im Dezember endgültig verabschiedet.⁶⁴ Der Steuerzahler erhält immer weniger Zeit sich auf die

⁶⁴ In seiner eigentlichen Bedeutung bezeichnet das Dezemberfieber die Neigung der staatlichen Bürokratie, kurz vor Ende eines Haushaltsjahres überproportional hohe Sachausgaben zu tätigen. Begründet wird dieses Phänomen mit dem üblichen Ablauf eines Haushaltszyklus: Dabei ist Grundlage für den Budgetansatz für das kommende Jahr die Höhe des verbrauchten Budgets des Vorjahres. Um zukünftige Kürzungen des eigenen

Änderungen einzustellen. Ein drittes Ergebnis der Studie ist, dass in den zwölf Monaten vor einer Bundestagswahl signifikant mehr Gesetze verabschiedet werden als in den zwölf Monaten danach. Schließlich zeigen unsere Untersuchungen, dass der weit überwiegende Anteil der Steuergesetze und -verordnungen der Zustimmung des Bundesrats bedarf. Einen Einfluss von gespaltenen Mehrheiten zwischen Bundestag und der Länderkammer auf den zustimmungspflichtigen Anteil der Gesetze und Verordnungen finden wir hingegen nicht.

Der weitere Text ist wie folgt strukturiert: Im nächsten Abschnitt gehen wir kurz auf den von uns erhobenen Datensatz ein. Im Kapitel 4.3 untersuchen wir empirische Muster in der Steuergesetzgebung. Kapitel 4.4 fasst die wesentlichen Resultate zusammen.

4.2 Der Datensatz

Als Datenquelle verwenden wir das Bundessteuerblatt (Teil I), welches seit 1951 vom Bundesministerium der Finanzen (BMF) herausgegeben wird. Es enthält alles, „was von amtlicher Seite auf dem Gebiet des Besitz- und Verkehrssteuerrechts⁶⁵ [...] veröffentlicht wird.“ (Bundesministerium der Finanzen, 1951, S. 1). Dazu gehören insbesondere alle vom Gesetzgeber im Bund und in den Ländern verabschiedeten Steuergesetze. Des Weiteren werden auch die vom BMF oder den Ländern erlassenen Rechtsverordnungen betrachtet. Zwar werden diese von einem Ministerium ohne formelles Verfahren im Bundestag beschlossen; trotzdem bedürfen sie, sofern sie mit Steuerfragen zusammenhängen, zu einem Großteil der Zustimmung des Bundesrates.⁶⁶

Mit Hilfe dieser Quelle ist es uns möglich, die jährlich verabschiedeten Gesetze und erlassenen Verordnungen für die Jahre von 1951 bis 2004 zu quantifizieren. Zu beachten ist dabei, dass entscheidend für die zeitliche Zuordnung eines Gesetzes nicht deren Veröffentlichung im Bundessteuerblatt ist, sondern der Zeitpunkt der Ausfertigung durch den Bundespräsidenten. Verzögerungen im Prozess der Veröffentlichung verzerren somit die

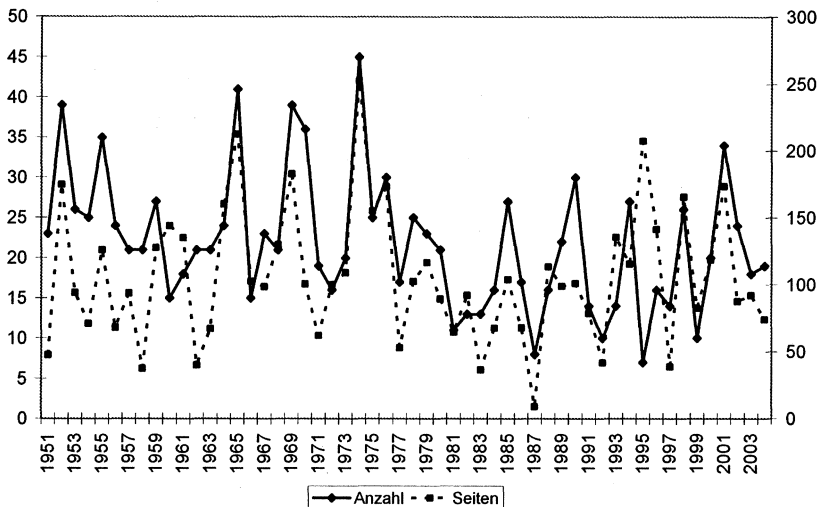
Budgets zu vermeiden, neigen die Bürokraten zu extrem hohen, vermutlich ineffizienten Ausgaben kurz vor Jahresende. Eine ausführliche Diskussion zum Dezemberfieber findet sich z.B. bei Pappenheim (1997).

⁶⁵ Zu den Besitz- und Verkehrssteuern gehören die direkten Steuern (insbesondere die Einkommen-, Körperschaft- und Gewerbesteuer) sowie die Steuern, die Vorgänge des Rechts und Wirtschaftsverkehrs erfassen (insbesondere die Erbschaft-, Grund-, Umsatz-, Versicherungs- und Grunderwerbsteuer). Nicht erfasst werden im Bundessteuerblatt hingegen die speziellen Verbrauchsteuern (Kaffeesteuer, Sektsteuer, Mineralölsteuer etc.). Trotz dieser Einschränkung werden wir aus Gründen der Einfachheit im Folgenden von „Steuergesetzen“ oder dem „Steuerrecht“ sprechen.

⁶⁶ Teil II des Bundessteuerblattes beinhaltet die Entscheidungen des Bundesfinanzhofes. Bis 1967 gab es drei Teile: Teil I enthielt ausschließlich die Veröffentlichungen des BMF, Teil II die der Länder und Teil III die Entscheidungen des Bundesfinanzhofes. Für diesen Zeitraum verwendeten wir die Teile I und II bei der Zusammenstellung unseres Datensatzes. Des Weiteren enthalten die Bundessteuerblätter nicht Recht setzende Bekanntmachungen und Erlasse, die wir in unserem Datensatz nicht berücksichtigen.

zeitliche Einordnung nicht. Das gleiche gilt für die Verordnungen, die ebenfalls nicht nach ihrer Veröffentlichung, sondern nach dem Zeitpunkt des Erlasses sortiert werden.

Abbildung 4.1: Anzahl und Umfang aller erlassenen Gesetze im Zeitverlauf



Quelle: BMF, Bundessteuerblatt, eigene Berechnungen.

Zu jedem Gesetz bzw. zu jeder Verordnung haben wir darüber hinaus erhoben, ob eine Zustimmungspflicht des Bundesrats bestand und wie viele Seiten der Text eingenommen hat. Da sich die Schriftgröße der Bundessteuerblätter im Laufe der Jahre nicht unwesentlich verändert hat, mussten wir eine Korrektur vornehmen. Dies geschah, indem wir alle Seitenzahlen auf das Schriftbild des Jahres 1980 normierten.

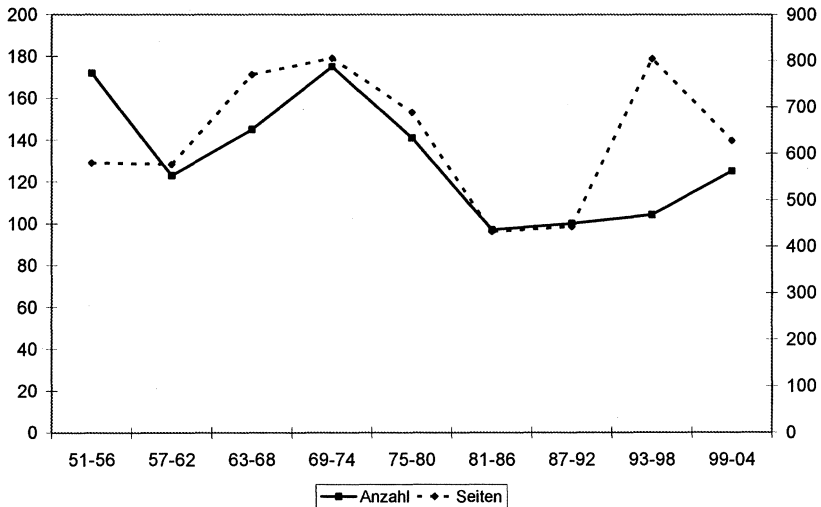
Mit Hilfe dieses Datensatzes können wir in einem ersten Schritt ermitteln, ob sich die Aktivität des Gesetzgebers im Laufe der Jahre systematisch verändert hat. Zunächst betrachten wir dabei die *Gesetze*: Abbildung 4.1 zeigt die Anzahl der jährlich erlassenen Gesetze im Zeitverlauf (durchgezogene Linie, linke Achse) und deren Gesamtumfang gemessen in (standardisierten) Seitenzahlen (gestrichelte Linie, rechte Achse).

Deutlich wird, dass die gesetzgeberische Aktivität starken Schwankungen unterworfen ist. Dabei ist ein weit gehender Gleichlauf beider Linien erkennbar, was darauf hindeutet, dass die durchschnittliche Länge der Gesetze im Zeitverlauf in etwa konstant geblieben ist. Entgegen der weit verbreiteten Meinung ist im Zeitverlauf hingegen kein Aufwärtstrend zu

erkennen, was auch durch Abbildung 4.2 bestätigt wird. Um die starken jährlichen Schwankungen zu neutralisieren, wurden hierzu jeweils sechs Jahre zu einer Gruppe zusammengefasst.⁶⁷

Bis Mitte der 1970er Jahre ist die steuergesetzgeberische Tätigkeit verhältnismäßig konstant, ehe sie bis Ende der 1980er Jahre deutlich zurückgeht. In den 1990er Jahren ist dann wieder ein Anstieg zu erkennen, allerdings lediglich bei den Seitenzahlen. Der bis dahin zu erkennende Gleichlauf von Anzahl und Umfang wird durchbrochen: Die Gesetze scheinen im Schnitt länger geworden zu sein. Allerdings ist dies in erster Linie auf einen „Ausreißer“ im Jahr 1995 zurückzuführen: Das in diesem Jahr verabschiedete „Jahressteuergesetz 1996“ fasste Änderungen an nicht weniger als 40 einzelnen Steuergesetzen in einem einzigen Artikelgesetz zusammen und war insgesamt 163,5 Seiten lang.

Abbildung 4.2: Anzahl und Umfang aller erlassenen Gesetze im Zeitverlauf (6-Jahres-Gruppen)



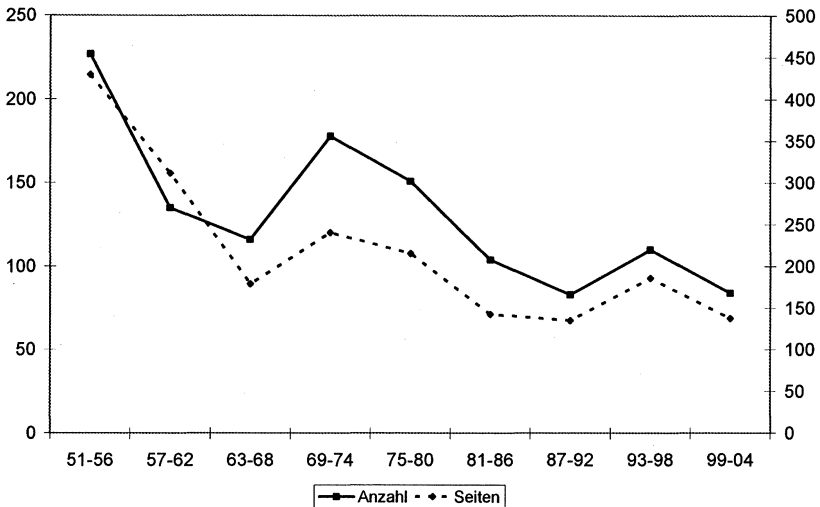
Quelle: BMF, Bundessteuerblatt, eigene Berechnungen.

Deutlicher und dauerhafter ist der Abwärtstrend, wenn man die Entwicklung der jährlich erlassenen *Rechtsverordnungen* im Zeitverlauf betrachtet, wie dies in Abbildung 4.3

⁶⁷ Die Einteilung in 6-Jahres-Gruppen erfolgt, da wir so neun gleich große Gruppen erhalten und die Zahlen damit unmittelbar vergleichbar sind.

vorgenommen wird. Auch hier sind jeweils sechs Jahre zu einer Gruppe zusammengefasst. Seit den 1950er Jahren zeigt sich fast ein linearer Abwärtstrend, der lediglich in den 1970er und Mitte der 1990er Jahre leicht nach oben durchbrochen wird.

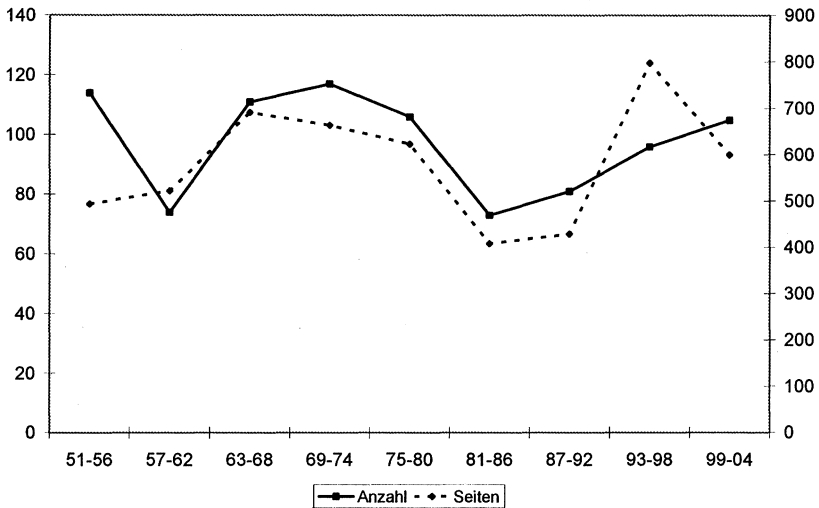
Abbildung 4.3: Anzahl und Umfang aller erlassenen Rechtsverordnungen im Zeitverlauf (6-Jahres-Gruppen)



Quelle: BMF, Bundessteuerblatt, eigene Berechnungen.

Eine mögliche Verzerrung bei den bisherigen Darstellungen könnte in der Wiedervereinigung und der damit verbundenen Zunahme von 11 auf 16 Bundesländer begründet liegen. Die Zahlen ab 1991 sind daher nicht mehr ohne weiteres mit den vorherigen vergleichbar, da sie ja auch die von den Bundesländern verabschiedeten Gesetze bzw. erlassenen Rechtsverordnungen enthalten. Daher ergänzen wir unsere Analyse um zwei weitere Grafiken, die ausschließlich die Bundesgesetze (Abbildung 4.4) und Bundesverordnungen (Abbildung 4.5) zeigen, da bei der reinen Betrachtung der Bundesebene der Strukturbruch herausgefiltert wird. Wir beschränken uns dabei auf die Gruppendarstellung.

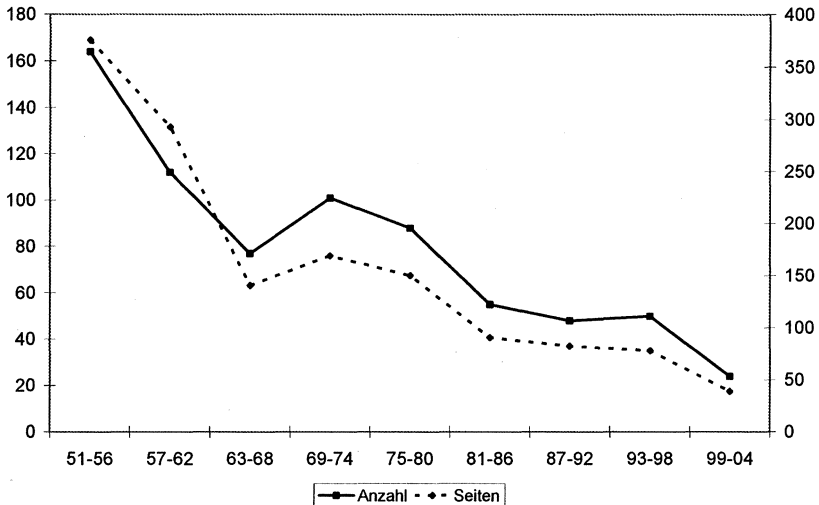
Abbildung 4.4: Anzahl und Umfang aller erlassenen Bundesgesetze im Zeitverlauf (6-Jahres-Gruppen)



Quelle: BMF, Bundessteuerblatt, eigene Berechnungen.

Bei den Bundesgesetzen ändert sich das Bild kaum gegenüber der Abbildung 4.2. Es ist kein allgemein steigender Trend zu erkennen, aber auch die schwache Abwärtstendenz verschwindet fast vollkommen. Hinsichtlich der Verordnungen verstärkt sich hingegen der stark fallende Trend noch einmal – der Bund erlässt immer weniger Rechtsverordnungen. Ob die beobachteten Schwankungen und Tendenzen einer bestimmten Systematik unterliegen, wird im folgenden Kapitel 4.3 genauer untersucht.

Abbildung 4.5: Anzahl und Umfang aller erlassenen Bundesverordnungen im Zeitverlauf (6-Jahres-Gruppen)



Quelle: BMF, Bundessteuerblatt, eigene Berechnungen.

4.3 Empirische Muster in der Steuergesetzgebung

4.3.1 Abhängigkeit der Steuergesetzgebung vom Wahlzyklus

In einem ersten Schritt untersuchen wir, ob die steuerliche Gesetzgebungsaktivität von den Wahlzyklen abhängt. Da die wesentlichen steuerlichen Regelungen auf Bundesebene getroffen werden, konzentrieren wir uns im Folgenden auf die Gesetze und Verordnungen, die vom Bund erlassen wurden.

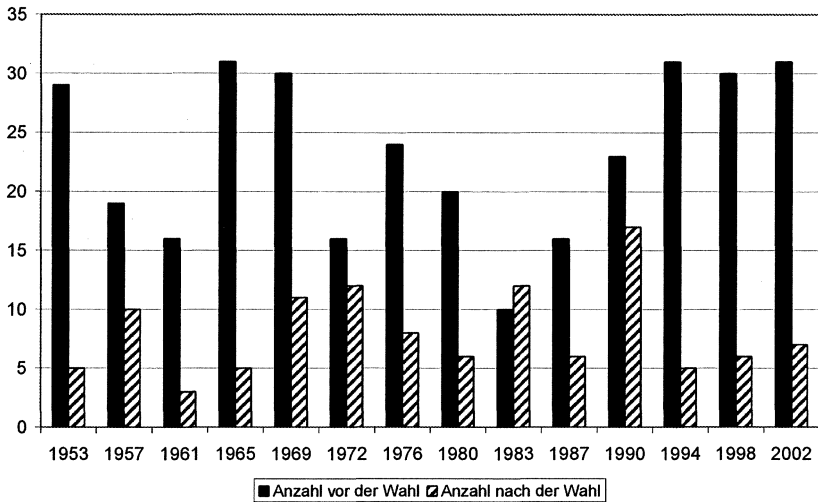
In seinem Pionierwerk „The Economic Theory of Democracy“ aus dem Jahr 1957 hat Anthony Downs umfassend das Verhalten von Wählern und Politikern analysiert. Dabei kommt er u.a. zu dem Schluss, dass für die Wahlentscheidung der Bürger das, was eine Partei in der zu Ende gehenden Wahlperiode getan hat, deutlich wichtiger ist als das, was die Parteien für die Zukunft versprechen (Retrospective Voting). Ähnlich argumentieren Persson und Tabellini (2003, S. 18ff.) sowie Nordhaus (1975, S. 181). Da die Erinnerungen an politische Entscheidungen, die kurz vor einem Wahltermin getroffen werden, frischer sind als an Entscheidungen, die unmittelbar zu Beginn einer Legislaturperiode getroffen werden, spricht die Down'sche Theorie dafür, dass die Gesetzgebungsaktivität der Regierung kurz vor

einem Wahltermin größer ist als direkt nach einer Wahl (Downs, 1968, S. 35ff.). Dies gilt insbesondere dann, wenn die anstehenden Entscheidungen populär sind und darauf hoffen lassen, dass man auf diese Weise noch den einen oder anderen Wähler für sich gewinnen kann (Köster, 2005, S. 15). Einen weiteren Grund für eine reduzierte Gesetzgebungstätigkeit nach einer Wahl gibt es, wenn es nach dem Urnengang zu einer Veränderung im Amt des Bundesfinanzministers kommt. Meistens werden bei dieser Gelegenheit Abteilungen neu geordnet und auch auf unterer Ebene Positionen neu besetzt. Eine neue Leitung benötigt vermutlich eine gewisse Einarbeitungszeit und ist daher in den ersten zwölf Monaten nicht so produktiv wie die Vorgängerleitung in ihren letzten zwölf Monaten.

Andererseits gibt es aber auch gute Gründe dafür, dass gerade vor Wahlen weniger Gesetze erlassen werden. Die Empfehlung Machiavellis, „Grausamkeiten“ direkt nach Amtsantritt zu beschließen, würde dafür sprechen, dass die Gesetzgebung insbesondere zu Beginn einer Legislaturperiode zunimmt. Schließlich ist nicht selten zu beobachten, dass ein knappes Jahr vor dem Wahltermin der Beginn des Wahlkampfes ausgerufen wird und gesetzgeberische Vorhaben in dieser Phase gerade nicht mehr in Angriff genommen werden.

Während die Theorie uns also keine eindeutige Antwort auf die Frage gibt, ob der Gesetzgeber vor oder nach einer Wahl aktiver ist, sprechen die Daten eine relativ eindeutige Sprache. Im ersten Schritt betrachten wir zunächst wieder die *Gesetze*: Abbildung 4.6 zeigt, wie viele Gesetze der Bund in den zwölf Monaten vor einer Bundestagswahl verabschiedet hat (schwarze Säulen) und wie viele danach (schraffierte Säulen).

Abbildung 4.6: Anzahl der Bundesgesetze im Jahr vor und im Jahr nach einer Bundestagswahl



Quelle: BMF, Bundessteuerblatt, eigene Berechnungen.

Wie man sehr gut erkennen kann, wurden in den zwölf Monaten vor einer Wahl fast immer deutlich mehr Gesetze erlassen als in den zwölf Monaten nach einer Wahl.⁶⁸ Dabei gab es nur vier Mal durch eine Wahl auch einen Wechsel im Amt des Bundesfinanzministers: 1957 (Etzel folgte Schäffer), 1961 (Starke folgte Etzel), 1969 (Möller folgte Strauß) und 1998 (Lafontaine folgte Waigel). In den anderen Wahljahren herrschte also Kontinuität an der Spitze des Ministeriums und dennoch wurden meist deutlich weniger Gesetze verabschiedet als vor der Wahl. Lediglich in den Jahren 1972 und 1990 ist die Differenz nicht so stark ausgeprägt, und im Jahr 1983 wird die Regel sogar einmal durchbrochen. Diese drei Wahljahre sind allerdings gerade diejenigen, in denen die Legislaturperiode aufgrund einer vorzeitigen Auflösung des Bundestages (1972 und 1983) bzw. aufgrund der Wiedervereinigung (1990) verkürzt wurde, wodurch der normale Rhythmus der Gesetzgebung gestört worden sein dürfte.⁶⁹

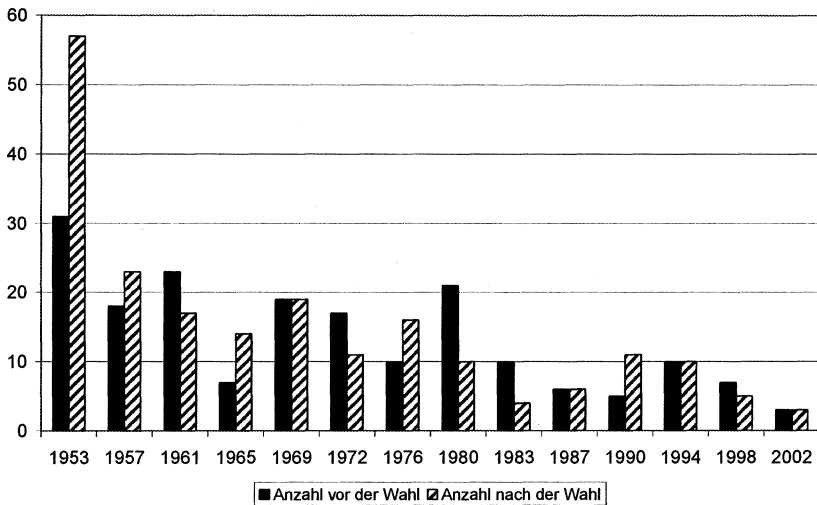
Bei den *Verordnungen* ist hingegen kein klares, von den Wahlterminen abhängiges Muster zu erkennen, wie Abbildung 4.7 zeigt. Auch hier stehen die schwarzen Balken für die

⁶⁸ Der Wilcoxon-Rangsummentest bestätigt diese Beobachtung auf einem Signifikanzniveau von unter 0,1 %.

⁶⁹ Ein nahezu identisches Bild ergibt sich, wenn man statt der Anzahl den Umfang der vor und nach einer Bundestagswahl verabschiedeten Gesetze betrachtet.

in den zwölf Monaten vor einer Bundestagswahl erlassenen Verordnungen, die schraffierten hingegen für die im Jahr nach der Wahl beschlossenen. Offensichtlich lässt sich der Gesetzgeber bei den weniger öffentlichkeitswirksamen Rechtsverordnungen nicht so stark von den Wahlterminen beeinflussen wie bei den Gesetzen, was als Hinweis für eine Bestätigung der Theorien von Downs sowie Persson und Tabellini gedeutet werden kann.

Abbildung 4.7: Anzahl der Bundesverordnungen im Jahr vor und im Jahr nach einer Bundestagswahl



Quelle: BMF, Bundessteuerblatt, eigene Berechnungen.

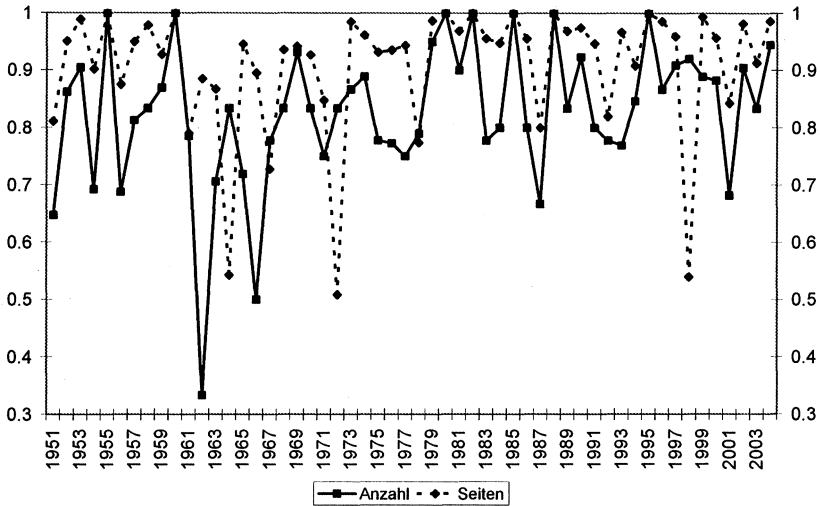
4.3.2 Zustimmungspflicht des Bundesrates

Nicht alle Gesetze und Verordnungen können der Bundestag bzw. die Bundesregierung von sich aus beschließen. Sobald diese Auswirkungen auf die Bundesländer haben – und dies ist aufgrund der hohen Verflechtung bei den Steuereinnahmen zwischen den Gebietskörperschaften sehr häufig der Fall – muss auch der Bundesrat zustimmen. In diesem Kapitel beschäftigen wir uns daher mit der Frage, ob die gesetzgeberische Aktivität mit den Mehrheitsverhältnissen in Bundestag und Bundesrat zusammenhängt.

Abbildung 4.8 zeigt dabei zunächst, welcher Anteil der verabschiedeten *Gesetze* der Zustimmung des Bundesrats bedurfte. Man kann sehr gut erkennen, dass der überwiegende

Anteil der die Steuern betreffenden Gesetze zustimmungspflichtig ist. Die Quote liegt fast in jedem Jahr über 50 Prozent, in sieben Jahren konnte sogar kein einziges Gesetz ohne den Segen der Länderkammer verabschiedet werden.

Abbildung 4.8: Anteil der zustimmungspflichtigen Bundesgesetze



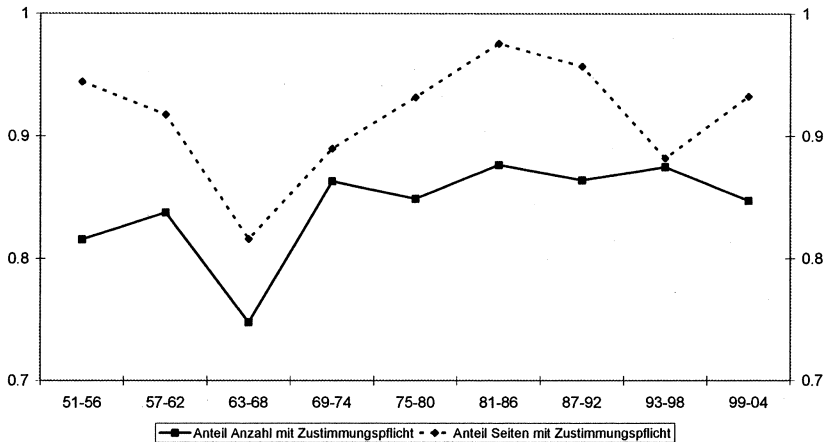
Quelle: BMF, Bundessteuerblatt, eigene Berechnungen.

Um die starken jährlichen Schwankungen wieder zu neutralisieren, haben wir auch hier die Zahlen zu jeweils Sechs-Jahres-Gruppen zusammengefasst.⁷⁰ Wie Abbildung 4.9 zeigt, ist allenfalls eine leichte Aufwärtstendenz im Zeitverlauf zu erkennen. Dies überrascht nicht, da der Anteil der zustimmungspflichtigen Gesetze bereits in den 1950er Jahren sehr hoch lag (über 80 Prozent). Insofern ist ein weiterer deutlicher Anstieg kaum möglich. Andererseits gab es seither auch keine bedeutende Änderung der Finanzverfassung mit der Folge einer Entflechtung und stärkerer Einnahmeautonomie für den Bund auf der einen und die Länder auf der anderen Seite, die ein Sinken des zustimmungspflichtigen Anteils hätte erwarten lassen. Auch die kürzlich von beiden Kammern angenommene Reform des Föderalismus dürfte hier keine Änderung bringen, da die Finanzverfassung von den

⁷⁰ Die Zusammenfassung von jeweils sechs Jahren zu einer Gruppe ist aus Gründen der Einheitlichkeit gewählt und nicht inhaltlich motiviert. Andere Gruppierungen führen zu sehr ähnlichen Trendverläufen.

Änderungen weitgehend ausgenommen und in ein zweites Reformvorhaben auf unbestimmte Zeit verschoben wurde.⁷¹

Abbildung 4.9: Anteil der zustimmungspflichtigen Bundesgesetze (6-Jahres-Gruppen)

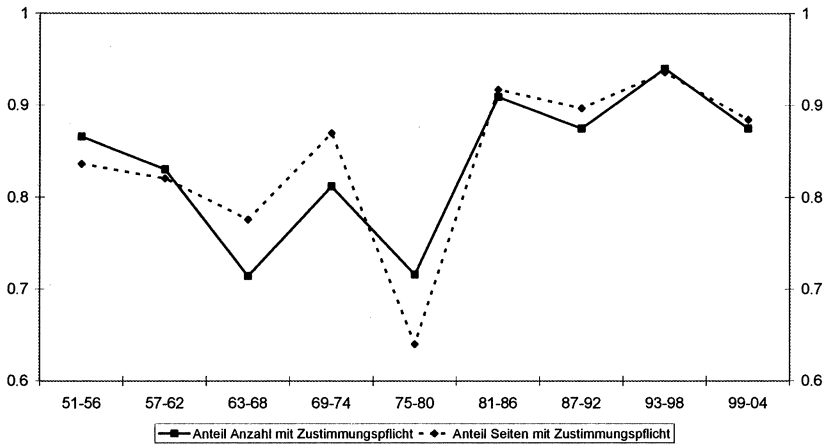


Quelle: BMF, Bundessteuerblatt, Eigene Berechnungen

Ein nahezu identisches Bild ergibt sich bei Betrachtung der *Rechtsverordnungen*. Abbildung 4.10 zeigt den zustimmungspflichtigen Anteil der Bundesverordnungen im Zeitverlauf, wobei wiederum sechs Jahre zu einer Gruppe zusammengefasst wurden. In jeder Jahresgruppe unterlagen mindestens 60 % der Verordnungen einer Zustimmungspflicht, Mitte der 1990er Jahre erreichte diese Quote sogar Werte von mehr als 90 %. Über den gesamten Zeitverlauf ist auch bei den Rechtsverordnungen ein leicht steigender Trend zu erkennen.

⁷¹ Auch die inzwischen beschlossene Einsetzung einer Reformkommission zur Vorbereitung der „Föderalismusreform II“ lässt aufgrund der abzusehenden Schwierigkeiten in den Verhandlungen zwischen Bund und Ländern keine zeitnahe Änderung erwarten.

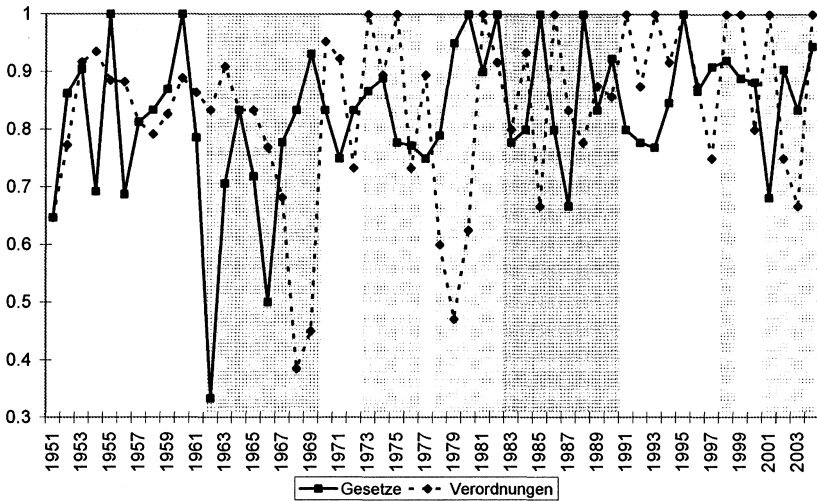
Abbildung 4.10: Anteil der zustimmungspflichtigen Verordnungen (6-Jahres-Gruppen)



Quelle: BMF, Bundessteuerblatt, Eigene Berechnungen

Hinsichtlich der Systematik könnte man annehmen, dass der Anteil an Gesetzen oder Verordnungen, die der Zustimmung des Bundesrates bedürfen, mit den Mehrheitsverhältnissen in Bundestag und Bundesrat korreliert ist. Hinter dieser Hypothese steht die Überlegung, dass der zustimmungspflichtige Anteil in den Jahren besonders hoch ist, in denen die Parteien, die die Bundesregierung stellen, auch die Mehrheit der Stimmen im Bundesrat haben. Umgekehrt wird eine Bundesregierung für den Fall, dass sie keine Mehrheit in der Länderkammer hat, bemüht sein, Gesetze so zu verfassen, dass eine Zustimmung des Bundesrates nicht erforderlich ist. Zwar ist aufgrund der starken Interdependenzen in der Finanzverfassung der überwiegende Teil der Steuergesetze, wie bereits erwähnt, zustimmungspflichtig und der Freiheitsgrad der Bundesregierung daher sehr eingeschränkt. Dass dennoch mitunter versucht wird, Gesetze zustimmungsfrei zu gestalten, zeigte sich z.B. im Rahmen der Rentenreform 2001. Die SPD/Grüne-Regierung splittete das Reformvorhaben in einen zustimmungsfreien Teil (Altersvermögensergänzungsgesetz), der unmittelbar in Kraft treten konnte, und einen zustimmungspflichtigen Teil (Altersvermögensgesetz), der erst nach einem Vermittlungsverfahren von beiden Kammern verabschiedet wurde (Heller, 2001, S. 232f.). Die Zustimmungsbedürftigkeit von Gesetzen könnte also endogen sein und von den Mehrheitsverhältnissen im Bundesrat abhängen.

Abbildung 4.11: Anteil der zustimmungspflichtigen Bundesgesetze und Verordnungen in Abhängigkeit von den Mehrheiten in Bundestag und Bundesrat



Quelle: BMF, Bundessteuerblatt, eigene Berechnungen.

Anmerkung: Dunkelgrau schattierte Flächen kennzeichnen eine Regierungsmehrheit im Bundesrat, hellgrau Schattierungen eine Oppositionsmehrheit.

Abbildung 4.11 greift diesen Gedanken auf und verdeutlicht die Mehrheitsverhältnisse in Bundestag und Bundesrat durch Schattierungen. Dabei bedeutet ein dunkelgrauer Hintergrund, dass die Bundesregierung sich auch auf eine Mehrheit in der Länderkammer stützen konnte. Dies war in 16 Jahren der Fall: Erstmals in den Jahren von 1962 bis 1969 unter der CDU/FDP-Koalition von Bundeskanzler Erhard sowie der anschließenden großen Koalition unter Kiesinger und ein weiteres Mal unter der Regierung Kohl in den Jahren 1983 bis 1990. Dem gegenüber kennzeichnen hellgrau unterlegte Perioden, dass die Bundestagsopposition eine Mehrheit im Bundesrat hatte und sie diese gezielt als Blockadeinstrument nutzen konnte. Dies war in 14 Jahren zu beobachten: Erstmals in den Jahren 1973 bis 1976 sowie 1978 bis 1982 unter der sozialliberalen Koalition, ein zweites Mal gegen Ende der Regierung Kohl 1998 und schließlich in den Jahren ab 2001 unter Rot-Grün. Alle nicht markierten Flächen signalisieren, dass weder die Bundestagsmehrheit noch die dortige Opposition über eine Mehrheit im Bundesrat verfügten.

Die Vermutung, dass der Anteil der zustimmungspflichtigen Gesetze von der Mehrheit im Bundesrat abhängt, wird nicht bestätigt. Allenfalls in der zweiten „dunkelgrauen“ Phase in

den 1980er Jahren scheint der Anteil der zustimmungspflichtigen Gesetze und Verordnungen etwas über dem Durchschnitt zu liegen. Demgegenüber weist die erste Phase mit gleichen Mehrheiten in beiden Kammern in den 1960er Jahren sogar eher unterdurchschnittliche Werte auf. Dies zeigt sich auch, wenn man die durchschnittlichen zustimmungspflichtigen Anteile in den drei zu unterscheidenden Zuständen (Mehrheit in beiden Kammern, Opposition im Bundestag, aber Mehrheit im Bundesrat, Sonstige Konstellationen) betrachtet: In den Jahren, in denen die Bundesregierung auch die Mehrheit im Bundesrat stellt, waren 81,71 % der Bundesgesetze und 76,66 % der Verordnungen zustimmungspflichtig. Dem gegenüber stehen 86,22 % (bzw. 81,98 %) in den Jahren, in denen die Bundestagsopposition die Mehrheit im Bundesrat stellt und 83,38 % (bzw. 86,63 %), wenn weder Regierung noch Opposition über eine Stimmenmehrheit in der Länderkammer verfügen.

Die graphischen Eindrücke und die Betrachtung der Durchschnitte bestätigen sich auch in einer einfachen Regressionsanalyse, deren Ergebnisse in Tabelle 4.1 zusammengefasst sind. Sowohl für Gesetze als auch für Verordnungen werden zwei abhängige Variablen betrachtet: ZUST_ANZAHL ist der Anteil der zustimmungspflichtigen Bundesgesetze bzw. Verordnungen, gemessen an der Anzahl, die Variable ZUST_SEITEN misst den Anteil anhand der Seitenzahlen. Die Regressoren REGIERUNG bzw. OPPOSITION sind Dummy-Variablen, die den Wert 1 annehmen, wenn in dem betreffenden Jahr die Bundesregierung bzw. die Opposition im Bundestag über eine Mehrheit im Bundestag verfügte.

Wie man aufgrund von Abbildung 4.7 bereits vermuten konnte, ist der Zeittrend bei den *Gesetzen* in beiden Regressionen allenfalls schwach signifikant positiv: Der zustimmungspflichtige Anteil an Steuergesetzen gemessen anhand der Anzahl ist im Zeitverlauf leicht gestiegen. Dieser Effekt verschwindet jedoch, wenn man den Anteil der zustimmungspflichtigen Gesetze auf Basis der Seitenzahlen definiert. Die Koeffizienten der Dummy-Variablen REGIERUNG und OPPOSITION sind nicht signifikant. Wie Abbildung 4.9 bereits vermuten ließ, lässt sich die Hypothese einer Endogenität der Zustimmungspflichtigkeit nicht bestätigen.⁷²

Bei den *Verordnungen* ist der Zeittrend stärker positiv und in beiden Regressionen zumindest auf dem 10%-Niveau signifikant. Der schwach signifikante negative Einfluss einer Regierungsmehrheit im Bundesrat auf den Anteil der zustimmungspflichtigen Verordnungen

⁷² Man beachte, dass selbst ein signifikant positiver Koeffizient OPPOSITION die genaue Art der Endogenität ungeklärt ließe. Falls die Bundestagsmehrheit in Zeiten unterschiedlicher Mehrheiten in Bundestag und Bundesrat zustimmungspflichtige Gesetze erst gar nicht auf den Weg bringt oder diese im Verfahren scheitern, dann wäre auch dies eine Erklärung für einen hohen relativen Anteil nicht zustimmungspflichtiger Gesetzesverabschiedungen.

bestätigt die Eindrücke aus dem deskriptiven Teil, spricht aber wiederum gegen eine Endogenität.

Offensichtlich verhindert der in Steuerangelegenheiten doch sehr geringe Spielraum bezüglich der Zustimmungspflicht für den Gesetzgeber hier deutlichere Effekte. Eine weitere Erklärungsmöglichkeit ist, dass Bundesregierungen – insbesondere bei Steuererhöhungen – nicht darauf bedacht sind, die alleinige Verantwortung für eine gesetzliche Änderung zu übernehmen und stattdessen eher eine breite Basis für steuerrechtliche Entscheidungen suchen. Daher ist der Anreiz, bei gespaltenen Mehrheiten die Gesetze zustimmungsfrei zu gestalten (sofern dies überhaupt möglich ist), gering (Köster, 2005, S. 15).

Tabelle 4.1: Determinanten des Anteils der zustimmungspflichtigen Bundesgesetze und -verordnungen

Variable	Gesetze		Verordnungen	
	ZUST ANZAHL	ZUST SEITEN	ZUST ANZAHL	ZUST SEITEN
ZEITTREND	0,00199* (0,064)	0,00088 (0,283)	0,00229** (0,043)	0,00230* (0,083)
REGIERUNG	-0,06131 (0,186)	-0,01987 (0,589)	-0,10099** (0,027)	-0,07792* (0,073)
OPPOSITION	0,01497 (0,635)	-0,01052 (0,784)	-0,06891 (0,227)	-0,05742 (0,387)
Beobachtungen	54	54	54	54
R ²	0,14	0,019	0,13	0,087

Anmerkungen: *** signifikant auf 1%-Niveau, ** signifikant auf 5%-Niveau, * signifikant auf 10%-Niveau. P-Werte in Klammern basieren auf robusten Standardfehlern. Alle Regressionen beinhalten eine Konstante, deren Koeffizient nicht dargestellt ist.

4.3.3 Gesetzgebung im Jahresverlauf

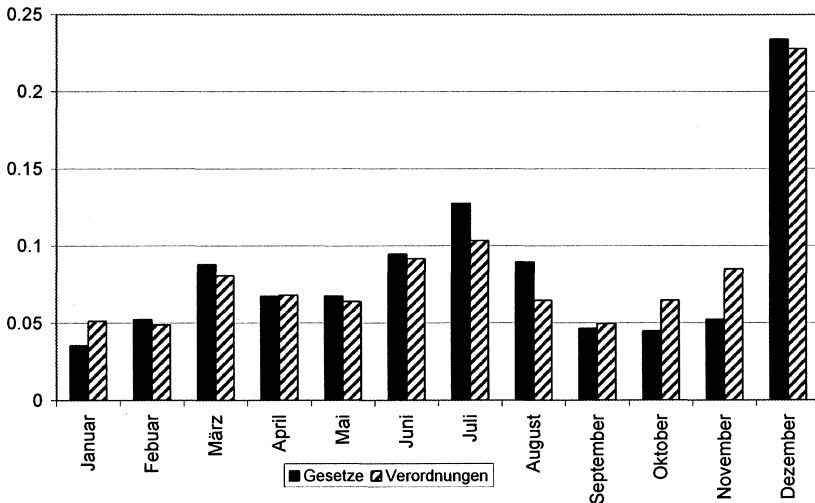
Der bevorzugte Termin zum Inkrafttreten von gesetzlichen Neuregelungen ist für gewöhnlich der 1. Januar. Um diesen einhalten zu können und rückwirkende Regelungen zu vermeiden, ist es in aller Regel erforderlich, ein Gesetz bis zum 31. Dezember des Vorjahres zu beschließen und zu verkünden. Es ist zu erwarten, dass ein fester Termin den Zwang zur Einigung so sehr steigert, dass man umso wahrscheinlicher zu einer Entscheidung kommt, je näher der Termin rückt. Deshalb dürfte der Anteil der zum Jahresende verabschiedeten Gesetze an allen in einem Jahr verabschiedeten Gesetzen überproportional groß sein.

Die folgende Abbildung 4.12 bestätigt diese Erwartung eindrucksvoll. Sie zeigt, welcher Anteil der Gesetze (schwarze Säulen) bzw. Rechtsverordnungen (schraffierte Säulen) in den zwölf Monaten eines Jahres über den gesamten Beobachtungszeitraum jeweils verabschiedet wurde. Während der Anteil pro Monat zwischen fünf und zehn Prozent liegt

(mit einem kleinem lokalem Maximum vor der Sommerpause im Juli), wurden in einem Dezember rund 23 % der neuen Regelungen zur Rechtskraft gebracht, also fast dreimal so viele wie bei einer Gleichverteilung über den Jahresverlauf hinweg. Man kann gewissermaßen von einem steuerpolitischen „Dezemberfieber“ sprechen: Kurz vor Ende des Jahres wird der Gesetzgeber besonders aktiv und verabschiedet überproportional viele Gesetze und Verordnungen.⁷³

Die eingangs erwähnten Klagen über die mangelnde Planungssicherheit für die Steuerzahler erfahren vor diesem Hintergrund eine besondere Berechtigung. Nicht ohne Grund forderte die Bundessteuerberaterkammer, dass in Zukunft nur noch ein Steuergesetz pro Jahr, und dieses spätestens zur Jahresmitte zu verabschiedet sei, so dass bis zum Inkrafttreten noch einige Monate vergehen können. Abbildung 4.12 belegt, dass diese Forderung nicht aus der Luft gegriffen, sondern eine Folge der steuerrechtlichen Realität ist.

Abbildung 4.12: Anteile der verabschiedeten Gesetze und Verordnungen im Jahresverlauf



Quelle: BMF, Bundessteuerblatt, eigene Berechnungen.

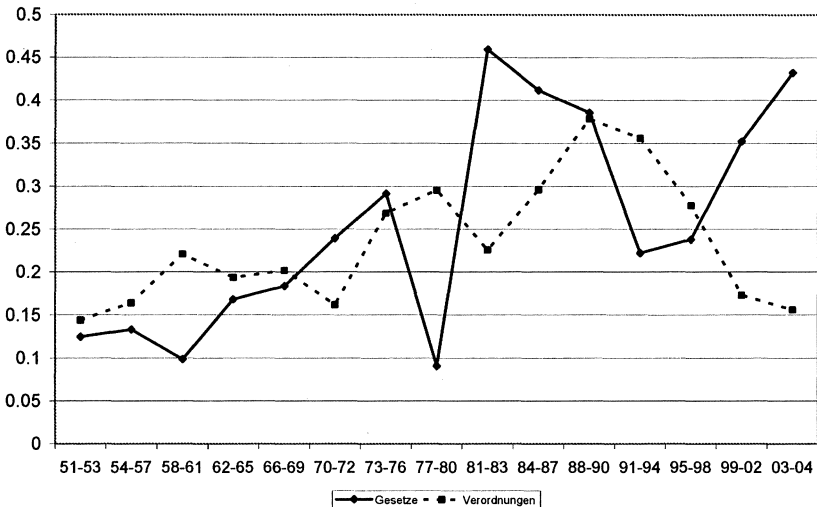
Anmerkungen: Dargestellt wird der monatliche Anteil an allen Gesetzen (schwarze Säulen) bzw. Verordnungen (schraffierte Säulen) im Zeitraum von 1951 bis 2004.

⁷³ Bei der Interpretation von Abbildung 4.12 ist zu beachten, dass der parlamentarische Sitzungskalender einen gewissen Gesetzgebungszyklus vorgibt: So wird die Arbeit meist erst in der zweiten oder dritten Januarwoche wieder voll aufgenommen, was den relativ geringen Anteil zu Beginn des Jahres erklären dürfte. Ferner ist der August (und zum Teil noch der September) durch die Sommerpause ein Monat, in dem auch a priori eine geringe Gesetzgebungstätigkeit zu erwarten ist.

Betrachtet man den Anteil der im Dezember an den im gesamten Jahr verabschiedeten Gesetzen (durchgezogene Linie) bzw. Verordnungen (gestrichelte Linie) im Zeitverlauf, wie dies in Abbildung 4.13 getan wird, sieht man, dass dieses „Dezemberfieber“ immer weiter steigt. Dabei wurden die Legislaturperioden zu Gruppen zusammengefasst, um die jährlichen Schwankungen zu neutralisieren. In den 1980er Jahren war das Dezemberfieber besonders stark ausgeprägt: Gut 40 % der jährlichen *Steuergesetze* kam erst im letzten Monat des Jahres zu Stande. In den 1990er Jahren sank diese Quote zunächst wieder, in den letzten Jahren unseres Beobachtungszeitraums hat sie aber wieder knapp 40 % überschritten und ist damit deutlich höher als in den ersten Jahren der Bundesrepublik Deutschland.

Bei den *Verordnungen* ist der Anstieg des Dezemberfiebers im Zeitverlauf bis Ende der 1990er Jahre kontinuierlich und erreicht schließlich über 35%. Erst in der letzten Jahresgruppe sinkt der Anteil dann wieder auf gut 15%.

Abbildung 4.13: Anteil der im Dezember an den im gesamten Jahr verabschiedeten Gesetzen und Verordnungen im Zeitverlauf



Quelle: BMF, Bundessteuerblatt, eigene Berechnungen.

Unsere Schlüsse aus der graphischen Betrachtung werden auch im Rahmen einer einfachen Regressionsanalyse bestätigt, deren Ergebnisse in Tabelle 4.2 zusammengefasst

sind. Die abhängige Variable in der ersten Spalte ist der Anteil der im Dezember verabschiedeten an allen im gleichen Jahr erlassenen Gesetzen, in der zweiten Spalte der entsprechende Anteil bei den Verordnungen. Der Zeittrend ist jeweils positiv und hoch signifikant. Als weiteren Regressor haben wir die Dummy-Variable WAHL eingeführt, die den Wert 1 annimmt, sofern im betreffenden Jahr eine Bundestagswahl stattfand. Wenig überraschend ist der Koeffizient dieser Variable bei den Gesetzen signifikant negativ. Da Bundestagswahlen zumeist im Herbst stattgefunden haben und die Gesetzgebungsaktivität nach einer Wahl deutlich geringer als davor ist (siehe Kapitel 4.3.1), sinkt in Wahljahren auch der Dezemberanteil.

Tabelle 4.2: Determinanten des Dezemberfiebers, alle Gesetze und Verordnungen

Variable	Gesetze	Verordnungen
	ANT DEZ	ANT DEZ
ZEITTREND	0,00542*** (0,000)	0,00200** (0,032)
WAHL	-0,13041** (0,012)	-0,00581 (0,860)
Beobachtungen	54	54
R ²	0,385	0,086

Anmerkungen: *** signifikant auf 1%-Niveau, ** signifikant auf 5%-Niveau, * signifikant auf 10%-Niveau. P-Werte in Klammern basieren auf robusten Standardfehlern. Alle Regressionen beinhalten eine Konstante, deren Koeffizient nicht dargestellt ist.

Eine nahe liegende weitere Fragestellung ist nun, ob das Dezemberfieber in den Jahren besonders ausgeprägt ist, in denen eine bestimmte Mehrheitskonstellation im Bundesrat gegeben ist. Aus diesem Grunde fügen wir die Variablen REGIERUNG und OPPOSITION als zusätzliche Regressoren ein, wobei als abhängige Variable nun der Dezemberanteil an allen zustimmungspflichtigen Bundesgesetzen (1. Spalte) bzw. Verordnungen (2. Spalte) fungiert (siehe Tabelle 4.3). Auch bei diesen Spezifikationen finden wir einen signifikant positiven Zeittrend. Die Koeffizienten der Variablen REGIERUNG und OPPOSITION sind jedoch nicht signifikant. Der Dezemberanteil hängt demnach offensichtlich nicht von den Bundesratsmehrheiten ab.

Tabelle 4.3: Determinanten des Dezemberfiebers, nur zustimmungspflichtige Gesetze und Verordnungen

	Gesetze	Verordnungen
	ANT DEZ ZUST	ANT DEZ ZUST
JAHR	0,00587*** (0,000)	0,00445*** (0,002)
WAHL	-0,17099*** (0,002)	-0,02756 (0,564)
REGIERUNG	0,04132 (0,455)	0,02972 (0,574)
OPPOSITION	-0,05240 (0,253)	-0,07342 (0,248)
Beobachtungen	54	54
R ²	0,381	0,167

Anmerkungen: *** signifikant auf 1%-Niveau, ** signifikant auf 5%-Niveau, * signifikant auf 10%-Niveau. P-Werte in Klammern basieren auf robusten Standardfehlern. Alle Regressionen beinhalten eine Konstante, dessen Koeffizient nicht dargestellt ist.

4.4 Fazit

Unsere Untersuchungen haben gezeigt, dass in den letzten Jahrzehnten entgegen einer weit verbreiteten Meinung die "Produktivität" des Steuergesetzgebers, wenn man sie quantitativ in Gesetzestexten bemisst, nicht gestiegen ist. Bei den Verordnungen gab es sogar einen leicht sinkenden Trend.

Allerdings ist festzuhalten, dass den Steuerpflichtigen, den Steuerberatern und Finanzämtern immer weniger Zeit gegeben wird, sich auf neue Regelungen einzustellen. Der Anteil der im Monat Dezember erlassenen Gesetze und Verordnungen hat über die Jahrzehnte signifikant zugenommen. Wir haben es mit einem „Dezemberfieber“ in der Steuergesetzgebung zu tun: Kurz vor Jahresende wird der Gesetzgeber besonders aktiv, um Reformen noch vor Beginn des neuen Jahres zu verabschieden. Nicht zuletzt diese steigende Tendenz zur Beschlussfassung „kurz vor Toresschluss“ dürfte zum Ärger über das deutsche Steuerrecht besonders beitragen. Zwar ist vorstellbar, dass die Fortschritte in der Informationstechnologie bei den Steuerpflichtigen eine beschleunigte Adaption an Steuernovellierungen erlauben könnten. Andererseits könnte aber gerade der Eingriff in bestehende Software hier längere Vorlaufzeiten angezeigt sein lassen.

Unsere Studie zeigt ferner, dass der These des „Retrospective Voting“ in Politikerkreisen offensichtlich große Bedeutung beigemessen wird: Die Anzahl der in den zwölf Monaten vor einer Bundestagswahl verabschiedeten Steuergesetze ist signifikant höher als im Jahr nach dem Urnengang. Vor dem Hintergrund der Ergebnisse von Köster (2005),

der gezeigt hat, dass es die Politiker vermeiden, Steuererhöhungen kurz vor einer Wahl zu verabschieden, zeigt sich, dass man den Souverän vor einer Abstimmung mit Steuersenkungen anscheinend freundlich stimmen möchte.

Der überwiegende Teil der Steuergesetze bedarf der Zustimmung des Bundesrats. Der Anteil der zustimmungspflichtigen Gesetze lag bereits zu Beginn der 1950er Jahre bei rund 80 % und ist seither noch weiter gestiegen. Dies spiegelt die starken Interdependenzen innerhalb der Finanzverfassung in der Bundesrepublik wider. Eine – häufig geforderte – Entflechtung und damit einhergehend stärkere Autonomie von Bund und Ländern ist nicht in Sicht. Jedoch ergibt sich in unserer quantitativen Analyse kein Einfluss der gespaltenen Mehrheiten auf das Ausmaß des Dezemberfiebers. In dieser Hinsicht verspricht eine Entflechtung daher nicht unbedingt Verbesserung.

Bei all diesen Ergebnissen müssen die Grenzen unserer Analyse im Auge behalten werden. So haben wir uns nur auf den Strom an neuen Gesetzen bezogen. Die Komplexität der verabschiedeten Gesetze und ihre Wirkung auf den Bestand der geltenden Regelungen blieben außen vor. Und obwohl unser Ansatz einer systematischen Quantifizierung der Gesetzgebungstätigkeit interessante Trends offen gelegt hat, wird die Frage, wo Vereinfachungen sinnvoll und nötig sind, damit noch nicht beantwortet.

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Frankfurt am Main, den 24. Oktober 2008

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