

A Review of Tax Research

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Abstract: In this paper, we present a review of tax research. We survey four main areas of the literature: 1) the informational role of income tax expense reported for financial accounting, 2) corporate tax avoidance, 3) corporate decision-making including investment, capital structure, and organizational form, and 4) taxes and asset pricing. We summarize the research areas and questions examined to date and what we have learned or not learned from the work completed thus far. In addition, we provide our opinion as to the interesting and important issues for future research.

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1. Introduction

In this paper, we review tax research in accounting as well as tax research in economics and finance to the extent that it is related to or is affected by research in accounting. Shackelford and Shevlin (2001) provide a careful and thorough review of empirical tax research in accounting in the prior *Journal of Accounting and Economics* review volume. Shackelford and Shevlin limit their review to research published in accounting outlets and describe the development of the relatively young archival, microeconomic-based income tax literature that arose from the Scholes and Wolfson framework. In his discussion of the review, Maydew (2001) emphasizes the need for tax researchers in accounting to think more broadly and to incorporate more theory and evidence from economics and finance. We agree. Tax research has a long history in many disciplines; this fact cannot be ignored. Our goal in this paper is to integrate the theoretical and empirical tax research from accounting, economics, and finance, to summarize what is known and unknown, and to offer suggestions for future research.

The multidisciplinary nature of tax research is what makes tax research exciting (yes, exciting), yet difficult. Tax research can be difficult not only because one has to follow tax studies in accounting, finance, economics, and law (through academic institutions, governmental agencies, and policy think tanks), but also because different disciplines often use different languages and have different perspectives.¹ For example, economists generally focus on tax compliance, tax incidence (such as who bears the corporate tax), investment and economic growth effects (such as how taxes

¹ Slemrod (1992a) characterizes these differences as economists studying what corporations actually do and accountants studying what companies say they do. Gentry (2007) characterizes the difference between economists and accountants as economists believing that “theory is reality” and accountants believing that “perception is reality.” The best, however, may have been when a law professor began his talk at a tax conference of economists, accountants, and lawyers by stating, “Maybe we should be like the U.N. Security Council and give each person earphones so the talks can be simultaneously translated into our own languages.”

affect investment), and optimal tax policy (for example, whether a consumption or an income tax is better at minimizing distortions). In finance, taxes are viewed as a market imperfection in a Miller and Modigliani type of world. This view leads to studies on whether taxes affect firm value (e.g., whether dividend taxes affect expected returns), firm financial policy decisions (e.g., whether taxes affect a firm's use of leverage), and investor portfolio decisions (e.g., the role of international tax considerations in portfolio allocation).

Tax research in accounting examines some of the same questions as tax research in economics and finance. In addition, those working in accounting utilize specific knowledge of financial accounting rules and an understanding of the institutional details of tax and financial reporting (i.e., our comparative advantages) to identify and examine research questions. For example, divergent reporting incentives for tax and financial accounting purposes lead to empirical studies of the tradeoffs between tax costs and financial accounting earnings. One outcome of this research is the ability to put bounds on managers' value of incremental accounting earnings because we can measure the cash tax cost incurred to alter the measure of the earnings. Conversely, by understanding how managers balance tax incentives with external reporting incentives, the same research can provide evidence on the effectiveness of tax policy.

Tax accounting researchers also leverage off another comparative advantage, an understanding of information contained in the income tax disclosures in the financial statements, to examine whether the tax accounts provide incremental information about current and future earnings and firm value. In addition, we also use our understanding of tax return data and the income tax data in the financial reports to derive measures of firms' tax avoidance activities and to address important questions about the determinants and consequences of tax avoidance.² Finally,

² We acknowledge that there is a large body of tax literature in the law field as well. Much of that literature is focused on transaction planning at a detailed level, but some is economics-based. We reference the economics-based literature throughout the paper where applicable.

accountants also have a comparative advantage in studying information asymmetry problems (e.g., asymmetry between the firm and the state and between shareholders and managers) where measurement and information are core issues (Slemrod, 2005).

Although we discuss research at the intersection of accounting, finance, and economics, we do not advocate that accounting researchers broaden the research scope in ways that clearly do not reflect a comparative advantage (e.g., corporate tax incidence or the optimality of a consumption tax). Rather, we advocate that accounting researchers incorporate and/or extend the theories and evidence from economics and finance that are relevant for tax research in accounting. Further, we encourage accounting researchers to increasingly leverage our comparative advantage to examine “real” corporate decisions, issues important in tax policy debates, and the incentive structures involved in corporate tax reporting.

To focus the paper and maintain a manageable length, we limit the review to certain areas of tax research. We focus on tax issues facing businesses because this is where the majority of tax research in accounting is done and because research on businesses overlaps with the scope of most other areas of accounting research. Even then, we are forced to retain only certain areas. First, we discuss the corporate reporting of income taxes in the financial statements and the information tax disclosures provide about current and future earnings. In this section, we also discuss research on the policy proposal to conform book and tax income measurement and review the empirical evidence on the effect of such conformity on the informativeness of accounting earnings. Second, we discuss the recent theoretical models of corporate tax avoidance, evaluate the empirical measures of tax avoidance, and summarize the recent evidence on the causes and consequences of corporate tax avoidance. Third, we address the importance of taxes on business decisions by reviewing the literature on the effect of taxes on business investment, corporate capital structure (including estimation of the marginal tax rate), organizational form, and other decisions. Notably,

we incorporate theory and evidence on the tradeoffs between tax and financial reporting incentives for these “real” decisions. Finally, we review the literature on the effects of investor level taxes on asset prices.

A brief summary of our findings and recommendations in our main areas follows. First, the last decade has produced a great deal of evidence about the information contained in the income tax expense and in book-tax differences reported in, or estimated from, the financial statements. The information in tax expense or book-tax differences, if any, derives from the idea that taxable income is an alternative measure of performance, or a benchmark measure of performance for financial accounting earnings. We emphasize that literature examining the information in the tax accounts about current and future earnings constitutes a subset of financial accounting research. This stream of literature is not about tax avoidance. The research is often, although not always, conducted by tax researchers because of a comparative advantage in knowledge of both tax and accounting rules. We provide a taxonomy of the literature in an attempt to clarify some common misunderstandings. The evidence to date suggests that book-tax differences provide information about current and future earnings (e.g., earnings persistence and future earnings growth) and potentially indicate pre-tax earnings management. Recent research partitions the book-tax difference measures to hone in on the underlying causes of these relations. An important issue in this area is that the literature employs several measures of book-tax differences, but it is often not clear why a particular measure is used for the research question at hand. We provide examples in our review.

Second, the corporate tax avoidance literature is young, but very active. Recent advances in the theory of corporate tax avoidance in a principal-agent (and principal-agent-government) setting should help progress the literature along several dimensions. Moreover, recent work broadens our thinking by incorporating the effects of corporate governance. Empirical tests of these theories offer

many potentially exciting avenues for future research. A primary issue in the empirical tax avoidance literature is the researcher's definition and measurement of tax avoidance. We provide guidance in this area by summarizing the various measures used, highlighting the difference between measures of conforming and nonconforming tax avoidance, and discussing the benefits and limitations of each with regard to the inferences that can be made. Our key message is that researchers must carefully consider the underlying construct that is most appropriate for their particular research question, select an empirical proxy (or proxies when appropriate) that best fits that construct based on logical reasoning, and recognize the limitations on the inferences that can be drawn given the measurement of the proxies and attributes of the sample.

Third, taxes potentially affect many "real" corporate decisions but their order of importance is still an open question. We review the literature on the tax effects in such decisions and focus, in particular, on the interactions and tradeoffs between tax and financial reporting incentives for these real decisions. Shackelford and Shevlin (2001) summarize that the field has much evidence that under certain conditions, such as high debt levels, firms will trade off taxes for higher accounting earnings when making reporting decisions and accounting method choices. Since Shackelford and Shevlin, research has provided evidence that even firms that fraudulently report accounting earnings will at times pay taxes on those earnings, thus sacrificing cash flow to alter a reported accounting number (Erickson, et al., 2004).³ In our review, we focus more on the tax and financial accounting tradeoffs involved in the operating and structural ("real") decisions. We are not saying the effect of book-tax tradeoffs on earnings management is an unimportant question. Rather, the unlocked potential for future research is likely in the context of real corporate decisions. The key point we

³ Erickson et al. (2004) identify a setting and structure tests that avoid the need to compute "as if" tax and accounting numbers ("as if" the firm had made a different decision) which Shackelford and Shevlin argue biased results in prior research. See also Badertscher et al. (2009) for an extension of Erickson et al. to restatement firms. Note also that Seida et al. (2005) develop a model of tax motivated intertemporal income shifting that relates the costs associated with shifting income to the amount of income shifted as called for by Shackelford and Shevlin (2001).

highlight in this area is that taxes *and* the book-tax tradeoff can affect real decisions such as investment and capital structure which in turn affect economic activity and have implications for the structure and efficacy of tax policy. In other words, financial accounting effects may mitigate or exacerbate tax incentives.⁴

Recent papers include the specific effects on the accounting for income tax – the effective tax rate and deferred tax accounts – as a consideration in the tradeoff. The implications of the accounting for income taxes have only recently been explored in this literature, but it appears from these studies that income tax expense effects are important for tax policy efficacy as well. It is in this area of tax and accounting tradeoffs (or interactions) for real decisions that tax accountants may have the greatest opportunities to contribute to tax policy debates - debates at which accountants are often absent. In light of the increasing national deficit and tax-based stimulus packages from the federal government, the effectiveness of tax policy has perhaps never been more important.

Finally, theoretical and empirical studies of the effect of dividend taxation on equity prices and firm behavior have been conducted for well over thirty years. However, we still lack clarity on a number of fundamental research questions. Part of the problem can be traced to inconsistent theoretical assumptions about the role of investor taxation in securities markets. For example, an important issue is understanding the conditions for a capital market equilibrium under which an identifiable marginal investor matters in the sense of Miller and Scholes (1978) or all investors matter in the sense of Brennan's (1970) after-tax CAPM. A related debate is whether institutional ownership can be used to identify the tax characteristics of investors. We provide an overview of

⁴ That tax and non-tax tradeoffs are important in these real (versus reporting) decisions is not a new idea and we do not claim rights to it. For example, some book-tax tradeoff studies about a firm's decision to use LIFO inventory methods involved tests of additional purchases of inventory or inventory liquidations. Shackelford and Shevlin also discuss tradeoff papers dealing with compensation structure (e.g., Matsunaga et al., 1992), capital structure (e.g., Engel et al., 1999), and asset sales and divestitures (e.g., Bartov, 1993; Klassen, 1997; and Maydew et al., 1999). See Shackelford and Shevlin (2001) for a review. However, the implications beyond a book-tax tradeoff were not generally emphasized or at times even discussed in these prior papers. Neubig (2006a) discusses the policy effects of financial accounting concerns and Shackelford et al. (2010) model and discuss the option value of tax and accounting reporting flexibility (we discuss these papers more below).

the various motivations for, and the approaches taken in, studying the effects of dividend taxation. The literature examining capital gains taxation has arguably had more success documenting the role of taxes in pricing and trading decisions.

As we move beyond the set of “established” research areas, we believe there are a number of open areas to explore. First, we do not have a very good understanding of tax loss firms, the utilization and value of tax loss carryforwards, and how the existence of losses affects the behavior (e.g., tax and accounting reporting and “real” decisions) of any of the involved parties. Obvious settings where losses may be important include start-up firms, ownership changes (including merger and acquisition transactions), and financial crises.⁵

Second, we do not have much evidence on the taxation of financial securities or financial institutions. Often, financial institutions are dropped from the sample because of concerns over regulatory differences. After reviewing the literature, it seems clear that we do not even know much about the variety of leases used and even less about the tax (and accounting for tax) implications of more sophisticated financial instruments. Third, more work on privately held firms may be important beyond using them as a comparison group for publicly held firms. These firms have different ownership structures, different financial reporting incentives, and constitute a large portion of our economy.

Finally, research involving international tax issues has increased over time (we incorporate this research throughout our review) and will continue to be in demand. Studies on both foreign direct investment and foreign portfolio investment have grown substantially in recent years and will likely continue to grow. How taxes affect these investment decisions are important topics for many reasons, one of which is the design of tax policy for worldwide activities. It is important to note that

⁵ See Erickson and Heitzman (2010) for a discussion and descriptive evidence on firms that protect their net operating loss carryforwards using shareholder rights plans, namely poison pills.

even though many companies now think globally, tax rules and regulations are still determined on a national basis.⁶ As a result, much of the research is country specific. Looking forward, the potential future adoption of International Financial Reporting Standards (IFRS) in the U.S. may change taxable income to the extent book and tax reporting are aligned and may affect book-tax differences, LIFO inventory accounting (unless otherwise repealed first), and transfer pricing comparisons.

The paper proceeds as follows. We begin by discussing the financial reporting of corporate income taxes and the informational role of the income tax expense disclosures in section 2 (we review the accounting for income taxes under GAAP in an appendix). In section 3 we review the theory and evidence of corporate tax avoidance, and provide a detailed discussion of the empirical measures of tax avoidance. In section 4, we discuss the literature on the effect of taxes and the book-tax tradeoff on real corporate decisions, including investment, financial policy, and organizational form, among others. In section 5 we critique the literature on investor level taxation and asset prices. In section 6, we conclude.

2. The informational role of accounting for income taxes

The income tax expense occupies just one line on the income statement; footnote disclosure provides additional detail. If one thinks about the comparisons in the financial accounting literature of accrual earnings to cash flows, one can imagine a similar comparison to taxable income as a type of benchmark for accrual accounting (pre-tax) earnings. In addition, because the income tax expense is an accrual-based expense, portions of it can potentially be manipulated to affect after-tax earnings.

⁶ However, tax authorities around the world are coordinating more and the IRS Commissioner has indicated that joint audits with other countries' tax authorities are being planned. See Commissioner Doug Shulman's speech to the New York State Bar Association Taxation Section Annual Meeting in New York City, Jan. 26, 2010

In this section, we discuss the primary conceptual sources of differences between book and taxable incomes (a brief discussion of the rules is in Appendix A). We then present a taxonomy of the studies of GAAP income tax disclosures to date and a summary of what we have learned from these studies within the context of the larger literature on the information content of accounting information.⁷ Finally, we conclude the current section with a discussion of policy calls for conformity of income reported for both tax and financial reporting purposes. This policy option has important potential consequences for financial reporting about which financial accountants should be cognizant. We want to emphasize that this entire section and the literature reviewed herein are about financial accounting implications and inferences and *not* about corporate income tax avoidance. We review the literature on tax avoidance in section 3.

2.1. Sources of differences between book and taxable income

We review the rules for the accounting for income taxes in Appendix A for interested readers. Conceptually, the differences between taxable income and accounting income, i.e. book-tax differences, are driven by a wide variety of factors. The most basic of these is that the two systems have very different objectives and these different objectives lead to different rules.⁸ In theory, financial accounting standards follow from a conceptual framework in which the objective of GAAP is to capture the economics of transactions in order to provide useful information for decision makers, such as equity investors and contracting parties. Tax rules are written under a much more political process. Lawmakers can enact tax rules to raise revenue, encourage or discourage certain activities, and attempt to stimulate the economy. The calculation of taxable income is accrual based (for large, non-agricultural companies) but is really a hybrid of cash basis and accrual basis that does not allow companies to estimate expenses in advance of the cash

⁷ Graham et al. (2009) provide a detailed review of many of the papers in the accounting for income tax area.

⁸ While it is known that the rule differences contribute a great deal to book-tax differences, Seidman (2009) attempts to quantify the extent to which the rule differences drive the amount by looking at changes to the accounting rules.

payments or defer revenue received until earned. In addition, the tax rules focus on the location of the earnings so that the appropriate jurisdiction(s) can tax the income. In contrast, for financial accounting, a consolidated financial statement includes all income (and losses), no matter where earned, from controlled entities. The two income measures are linked, or aligned, to some degree but do not need to conform for many transactions (we discuss the policy proposal of book-tax conformity below).

Another potential source of differences between accounting earnings and taxable income, at least a suspected source, is “aggressive” reporting for book or tax purposes. For example, when managers manipulate earnings upward, they may have a choice between reporting taxable income at the higher amount and paying taxes on the inflated earnings or reporting taxable income at the unmanaged, lower amount and recording a book-tax difference in the financial statements. On one hand, the least costly method of managing earnings would be to record a book-tax difference and not report the managed earnings in taxable income because this saves cash taxes. On the other hand, if book-tax differences provide information to the market about the earnings management, then recording the book-tax difference may reduce the credibility of reported earnings.

An example on the tax side is a firm that is “aggressive” for tax reporting purposes and takes action to lower reported taxable income. The question would then be whether the firm reports a similar position for financial accounting purposes and report lower income to shareholders. On one hand, the least costly path may be to report the book-tax difference and get the best of both worlds (i.e., low taxable income and high accounting income). On the other hand, if the taxing authority uses the book-tax differences as an indicator of some form of tax aggressiveness, this increases the cost of the tax aggressiveness by increasing the likelihood of detection.⁹

⁹ See Cloyd et al. (1996) and Mills (1998) for evidence on the effect of conformity on book and tax reporting decisions.

For any specific firm at any time, it is likely that all of these factors are operating simultaneously to some extent to generate the level of book-tax differences the firm reports. Most authors recognize the many possible determinants of book-tax differences and attempt to develop models or identify settings where a particular determinant can be studied or identified.

2.2. A taxonomy of the literature and review of the evidence

In our view there are at least three categories of, or motivations for, research on the accounting for income taxes. The first category consists of studies about whether and to what extent tax expense and tax disclosures provide information about current or future earnings (including the market's interpretation of the information). The underlying theory here is that taxable income may provide an alternative measure of performance, less subject to earnings management. The second category of studies examines whether the income tax accruals (e.g., valuation allowance, contingency reserve) are used to manipulate after-tax earnings.¹⁰ The third (and much smaller) category examines whether changes in the valuation allowance reveal inside information about future earnings of the firm.

2.2.1. Inferences from book-tax differences about current and future earnings.

The idea that book-tax differences are informative about earnings quality in pre-tax accruals has been around for a while and was formalized to some extent in accounting textbooks such as Revsine et al. (1999), Palepu et al. (2000), and Penman (2001). The argument is that accounting accruals reflect more discretion than the tax laws allow, thus, temporary differences between book and tax income reveal something about discretion in non-tax accounting accruals (e.g., bad debt accrual, warranty expense, deferred revenue, etc.). This theory does not generally extend to permanent differences because permanent differences are not driven by the accounting accruals process.

¹⁰ See Healy and Whalen (1999), Schipper and Vincent (2003), and Dechow et al. (2010) for reviews of the earnings quality and earnings management literatures.

The typical suspicion is that firms that report higher pre-tax book income than taxable income have manipulated book income upward. Indeed, after the Enron and WorldCom scandals, some policy makers and members of the press suggested that there should be additional disclosure of book-tax differences and that companies with large book-tax differences might be doing some manipulation somewhere, either for book or for tax or for both.¹¹ However, most studies are agnostic in making predictions based on the sign of book-tax differences because negative book-tax differences (where book income is less than taxable income) could generate earnings quality concerns as well. For example, firms taking a “big bath” or using “cookie-jar” reserves often cannot deduct for tax purposes the write-offs and expense accruals involved, thus generating negative book-tax differences.

A variety of empirical approaches have been employed in an attempt to examine the information in book-tax differences for earnings quality. Overall the results are quite consistent across the studies – book-tax differences contain information about financial accounting earnings quality. For example, firms that report large (in absolute value) book-tax differences appear to have weaker earnings-return relations (Joos et al., 2000) and total book-tax differences are positively associated with prior earnings patterns, financial distress, and bonus thresholds (Mills and Newberry, 2001).¹² In addition, the evidence suggests that in firm-years with a small earnings increase (à la Burgstahler and Dichev, 1997), there is a relatively larger deferred tax expense (Phillips et al., 2003), suggesting that deferred tax expense is (temporary book-tax differences are) informative about pre-tax earnings management. The evidence in Hanlon (2005) indicates that earnings and the accrual portion of earnings are less persistent when firms have large (in absolute

¹¹ See Grassley (2002), Weisman (2002), and Reason (2002).

¹² The paper by Mills and Newberry (2001) shows that book-tax differences are less informative about tax positions for private firms because private firms will more likely conform book and tax, reducing the size of the book-tax differences for a given tax position. Conversely, public firms have higher non-tax costs and thus report higher book-tax differences. Mills and Newberry (2001) use a measure of temporary and permanent book-tax differences between pre-tax earnings and taxable income.

value) temporary book-tax differences. This implies that book-tax differences have information about the persistence of pre-tax earnings and pre-tax accruals. Hanlon (2005) also examines whether the market understands that when firms have large book-tax differences the accrual portion of earnings is less persistent than when book-tax differences are small.¹³ The results suggest that it does and Hanlon (2005) concludes that the reported book-tax differences are potentially a “red flag” for investors.

It is important to note two points from the latter two papers discussed above. First, the book-tax differences in Phillips et al. (2003) and Hanlon (2005) consist only of temporary differences because these are the differences most closely related to pre-tax accruals and most often hypothesized to provide information about pre-tax earnings quality. Second, these two papers do not examine whether deferred tax expense itself is managed. Rather, the papers examine whether the deferred tax expense can inform us about pre-tax earnings quality or management.

Lev and Nissim (2004) document a positive relation between future earnings growth and the ranked ratio of taxable income to book income. The authors compute the ratio using after-tax earnings and adjust taxable income to be after-tax by reducing it by a tax computed using the statutory rate (i.e., a cross-sectional constant). The authors also test a ranked variable of deferred tax expense (defined as the ratio of deferred tax expense to assets) but find only weak evidence of a relation with future earnings growth. Thus, the authors conclude that their measure of “total book-tax differences” holds information about future earnings growth but temporary differences do not. Lev and Nissim also report that returns can be predicted using the tax-to-book ratio.¹⁴ Examining a

¹³ There are limitations to the paper such as the short time period, the possibility of correlated variables with book-tax differences (in other words, it could be something else that tells investors about the lower persistence, not the book-tax differences), and general problems in estimating book-tax differences, even temporary differences.

¹⁴ Weber (2009) examines whether Lev and Nissim’s return results are attributable to mispricing or risk. Weber concludes that the result is due to mispricing because the association between the ratio and returns only exists for firms with weaker information environments and disappears when controls for analysts’ forecast errors are included.

different market participant, credit ratings agencies, Ayers et al. (2009) find that revisions in credit ratings appear to be more negative when firms have large changes in book-tax differences.¹⁵

As discussed above, book-tax differences can arise from a variety of sources. Recent studies attempt to further investigate why book-tax differences are associated with earnings properties and with market participants' valuations (e.g., lower persistence, the relation with credit ratings, etc.) by identifying firms more likely to have managed earnings and those more likely to have tax planned or avoided taxes. One way to disentangle the firms is to sort observations by the level of book-tax differences and then by the extent of total or discretionary accounting accruals. Following this approach, Ayers et al. (2009) find that the association between credit ratings and book-tax differences is weaker when book-tax differences are driven by tax planning. Employing the same partitioning methodology, Blaylock et al. (2010) report evidence that Hanlon's (2005) results are driven by firms more likely to have managed earnings upward.¹⁶

One issue in the literature is that different studies use different measures of book-tax differences. For example, some focus on temporary differences (Phillips, 2003; Hanlon, 2005), while others focus on total differences between tax and pre-tax book income (Mills and Newberry,

¹⁵ Schmidt (2006) seems similar to the above but in fact is different in many regards. Schmidt examines whether ETR changes are transitory or have some persistence and whether the market understands the implications for future earnings. He uses the interim reporting requirements of the financial accounting rules (APB 28 and SFAS 1977) to decompose the change in the ETR into an initial change (first quarter) and revised changes (quarters 2–4). Schmidt (2006) finds significant positive association between the tax change components of earnings and that the initial (Q1) change to the ETR is more persistent than a change in the other quarters. He also documents that the market underweights the forecasting ability of the tax change component of earnings but that the mispricing seems to be in all the later quarters. The paper does not hinge on the ETR revealing information about other accounts, which then provides information about future earnings properties. Schmidt (2006) is a nice contribution to the literature but is not in the spirit of the literature above, however, and thus, is not included in the discussion.

¹⁶ The strategy of partitioning firms into those more likely to be tax planners and those more likely to be managing earnings is from Ayers et al. (2009) where the research question is about the relative information in taxable income versus book income. The authors extend Hanlon et al. (2005) and document that taxable income has more incremental information relative to book when tax planning is less likely and earnings management is more likely. In general, we think this split of firms is useful and further innovations including more detailed partitioning or identification of the sources of book-tax differences will likely further our understanding. However, we recognize that categorizing book-tax differences by source or management intent for the transaction that generated the difference is difficult. In addition, identifying individual book-tax differences from the tax footnote is complicated because only the balance sheet amounts are disclosed and changes in these accounts do not often tie to the income statement effect (likely due to merger and acquisition activity – see Collins and Hribar, 2002 and Hanlon, 2003). Moreover, which items firms disclose in the tax note is to some extent a choice variable.

2001), and yet others focus on total differences between after-tax income measures (Lev and Nissim, 2004).¹⁷ It is certainly appropriate to adopt different measures for different research questions, but it seems that studies often adopt different measures to address similar questions without providing a reason why. We discuss the specific measures and links to earnings quality next with the hope of clarifying the issues.

The main issue for research design is that most measures of a “total” difference between book income and taxable income will usually contain many items that are not really book-tax differences (e.g., tax credits which do not affect either income measure) and it will include permanent differences that are not related to accounting accruals (e.g., municipal bond interest). The concern is over interpretation. Temporary differences reflect information about pre-tax accruals and are consistent with the theory that book-tax differences provide information about management in other non-tax accruals – bad debt, warranty expense, etc. Measures of total book-tax differences include much more than temporary differences, which may be useful in certain research settings (e.g., when examining market participants’ use of the information). However, total book-tax differences are a very noisy proxy to use to test whether the information in the tax expense is telling us anything about earnings management in other pre-tax accrual accounts. Thus, studies that use total book-tax differences cannot directly draw inferences about pre-tax earnings quality (especially if consistent results are not obtained when temporary differences are tested alone). In other words, the research question should dictate the measure used (e.g., is the interest in pre-tax accruals or after tax items?) and the measure used will dictate the inferences that can be drawn. In our opinion, the difference in inferences is an important issue to recognize in papers using book-tax differences.

¹⁷ In addition, while most papers use levels, some papers use changes in book-tax differences. See Phillips et al. (2003) for a discussion of changes versus levels. Ayers et al. (2009) use changes because they are examining changes in credit ratings. Further yet, some papers compute discretionary book-tax differences – an issue we address more fully when reviewing the tax avoidance literature.

2.2.2. *Are earnings managed through the tax accounts?*

At least three tax-related items are thought to be available for earnings management: the valuation allowance, the tax contingency reserve, and the amount of foreign earnings designated as permanently reinvested. Note that this set of the literature is not about inferring information about pre-tax accruals, but testing whether managers use the tax accounts to manage earnings. The earnings management literature is large, with a mixture of analyses of summary measures of accruals and individual accounts (see Dechow et al., 2010 for a review). The literature we discuss here includes both types of analyses.

Why would the tax expense and the related accounts be different from other accounts and do they warrant a separate investigation? First, the items are separately disclosed (except the tax contingency reserve prior to FIN 48 (discussed below) and thus provide specific accounts to test for earnings management (fulfilling the request by Healy and Whalen, 1999). Second, changes in these accounts affect earnings dollar for dollar (i.e., there is no tax effect). Third, these accounts affect only after-tax earnings. Thus, to the extent debt and compensation contracts are based on pre-tax earnings these accounts may be managed less often for contracting reasons, enhancing the ability to detect the effect of pure stock market pressures. Finally, the within-firm dynamics may be different for these accounts as they may require “sign-off” by (or at least input from) the tax department. Thus, the accounts are sufficiently different to warrant independent study.

Dhaliwal et al. (2004) study earnings management through the total tax expense line (i.e., through the GAAP ETR rather than through any one component of the expense). The authors provide evidence that firms lower the projected GAAP ETR from the third to the fourth quarter when the company would otherwise miss the analyst consensus forecast, implying that managers

lower accrued tax expense to meet analysts' forecasts.¹⁸ However, the change in GAAP ETR could also arise through tax planning transactions.¹⁹ For example, Desai (2003) provides specific examples of firms engaging in tax shelters where the main objective is to increase accounting earnings. Evidence in Cook et al. (2008) suggests that the results in Dhaliwal et al. are caused by both management of tax accruals and tax avoidance behavior, where tax avoidance is proxied for by high tax fees paid to the auditor.²⁰ We turn next to the evidence on earnings management through specific tax accounts: the valuation allowance, the tax contingency reserve, and the designation of foreign earnings as permanently reinvested.

The valuation allowance is a contra-asset established against deferred tax assets based on management's expectations of future taxable income amounts and timing. The justifications for changes in the account are difficult for the auditor to verify (because managers use expectations of earnings for many years into the future), opening the door for manipulation (Miller and Skinner, 1998). Changes in the valuation allowance affect earnings directly by changing the amount of deferred tax benefit recognized. Specifically, an increase in a valuation allowance for a given deferred tax asset will decrease earnings (decrease the amount of deferred tax asset recognized) and a decrease in a valuation allowance for a given deferred tax asset will increase earnings.

Evidence of earnings management through the valuation allowance is somewhat mixed. Miller and Skinner (1998) find no evidence of earnings management in this account, while Bauman et al. (2001) find limited evidence and conclude that earnings management in the account is not

¹⁸The accounting for the effective tax rate falls under APB 28 *Interim Financial Reporting*, which requires firms to adjust the GAAP ETR each quarter to the estimated annual GAAP ETR.

¹⁹ An interesting follow-up study by Gleason and Mills (2008) provides evidence consistent with the market understanding and discounting the reward to firms for meeting a target through managed tax expense; however, note that the company is still rewarded more than having missed the target so managing the expense is not useless even though the market discounts the reward.

²⁰This idea of actual tax planning as opposed to accrual management being used to manage the tax expense is similar in spirit to Roychowdhury's (2006) examination of real transactions for earnings management more generally.

widespread.²¹ However, Schrand and Wong (2003) report that banks manage the valuation allowance to achieve analysts' consensus forecasts and historical earnings per share targets in some cases. Frank and Rego (2006) present more comprehensive evidence consistent with managers using the valuation allowance to meet analyst forecasts, but do not find evidence of earnings management through the account for any other target.

These papers contribute to the literature by showing that a specific tax account that potentially involves a great deal of manager discretion is used in certain contexts to manage earnings, although not to the extent some feared when the standard was set. In our opinion, the incremental contribution of additional studies on the use of the valuation allowance to manage earnings will be limited. There are likely more interesting issues to address. For example, Skinner (2008) examines consequences of the inclusion of deferred tax assets (with no valuation allowance) as part of regulatory capital for financial institutions in Japan. In the U.S., rules in place since 1995 only allow a small portion of deferred tax assets to be used as regulatory capital for banks because of the subjectivity and uncertainty in valuation. Recently, groups have questioned whether this limitation should be lifted.²² Additional research would be useful in assessing financial institutions' setting of valuation allowances and, if the rules change, an examination of firm behavior at that time could prove useful to such regulatory policy debates.

The next account potentially used to manage earnings is the tax contingency reserve. Historically, the tax contingency reserve, previously known as the tax cushion, was determined

²¹ Miller and Skinner (1998) state that their primary question is whether managers comply with the provisions of SFAS 109 and thus conclude that their earnings management tests are not powerful. They study 200 firms with large deferred tax assets, not firms with incentives to manage earnings. The Bauman et al. (2001) paper provides detailed discussion on how to measure the earnings effect of a change in the valuation allowance and concludes that not all changes in the contra-asset account result in an income effect as had been assumed in prior studies, see their paper for further discussion. See also Visvanathan (1998) for more evidence on valuation allowances and earnings management.

²² These concerns were expressed in a September 25, 2009 letter from the The Clearing House Association and the American Bankers Association, which together represent nearly all U.S. depository institutions, to the four agencies responsible for determining regulatory capital (Board of Governors of the Federal Reserve System, the Federal Deposit Insurance Corporation, the Office of the Comptroller of Currency, and the Office of Thrift Supervision). The letter addresses the agencies' earlier concerns over the proper valuation of deferred tax assets.

under SFAS No. 5 – *Accounting for Contingencies*. Additional guidance was recently issued in 2006 in FASB Interpretation Number 48 (FIN 48), *Accounting for Uncertainty in Income Taxes*.²³ In essence, the standard and interpretation require managers to accrue a liability for tax assessments from expected challenges to tax positions taken in the current and prior periods. The following is a simplified example. Suppose a company takes a risky tax position and reduces its tax liability by \$1,000. Management is required to estimate how much additional tax would likely be assessed upon a future audit. Suppose they estimate the likely additional tax liability to be \$200.²⁴ The company then records an additional \$200 of income tax expense and a corresponding accounting liability even though the company did not pay this amount to the tax authorities and the position has not yet been challenged. This adjustment to tax expense is recorded in the current tax expense (although if the position relates to a temporary difference, it is at times recorded in deferred tax expense²⁵). The magnitude of the effect on current tax expense, and resulting estimates of taxable income, are unknown before FIN48 and difficult to correct.

Unlike the valuation allowance, the tax contingency reserve is not limited by the amount of deferred tax assets, was very rarely disclosed prior to FIN 48 (Gleason and Mills, 2002), and

²³ FIN 48 became effective in the first quarter of 2007 for most calendar-year companies. This interpretation was issued because the FASB was concerned that “diverse accounting practices had developed resulting in inconsistency in the criteria used to recognize, derecognize, and measure benefits related to income taxes” (FIN 48). The interpretation uses the terminology “unrecognized tax benefits” (UTBs) for the portion of the tax benefits from uncertain tax positions that are not recognized for financial reporting purposes (instead of the old terms “tax cushion” or “tax contingency reserve”). The new disclosure requirements include a tabular reconciliation of the beginning and ending balances of the UTBs, expected future changes in UTBs, and the amount of the UTBs that would affect income if released.

²⁴ When the account was governed under SFAS No. 5 it was not clear exactly how the probability of audit should be taken into account when assessing the amount of reserve to record and thus firms adopted a wide range of practices with regard to audit probability. Under FIN48, the company is to assume the tax authority will audit the position.

²⁵ Although a reading of SFAS 109 would seem to indicate that all of the tax contingency reserve should be in current tax expense, anecdotally we know that some amounts are recorded in deferred tax expense. If recorded in current tax expense before FIN 48, the liability may have been recorded in an “other liability account.” See for example Microsoft’s 2005 annual report in which the company discloses that it had \$3 billion in tax contingency liabilities and \$961 million in legal contingencies included in “other long term liabilities.” Most companies did not provide such detailed disclosures pre-FIN 48.

involves more managerial discretion.²⁶ Thus, it is an account potentially available for earnings management. However, whether it is managed is hard to test because of lack of disclosure before FIN 48. Evidence in Gupta and Laux (2008) suggests that the pre-FIN 48 tax contingency reserve, when disclosed by firms, was used to manage earnings to meet or exceed analyst forecasts.

FIN 48 requires disclosure of the tax contingency reserve, renamed in the interpretation as “unrecognized tax benefit” or UTB.²⁷ Recent disclosures by firms following the implementation of FIN 48 reveal that this account is large for many firms. For example, as of January 1, 2007, Merck disclosed \$7.4 billion in unrecognized tax benefits; General Electric disclosed \$6.8 billion; and AT&T disclosed \$6.3 billion.²⁸ Some early papers on FIN 48 find that firms have incentives to reduce their tax contingency reserves to avoid disclosure under FIN 48, and that doing so prior to the adoption of the new standard allowed firms to increase earnings rather than record an adjustment to stockholders’ equity (Blouin et al., 2010).

The final suspected method of managing earnings through the tax accounts is via the designation of permanently reinvested earnings. Firms can potentially manage earnings by either increasing or decreasing the amount of certain foreign source earnings designated as permanently reinvested (see Appendix A for details on the accounting). Krull (2004) finds that managers use discretion in the designation of permanently reinvested earnings (PRE) to manage reported earnings to meet analyst forecasts but not other targets.

²⁶ See Gupta and Laux (2008) for a discussion of the tax contingency disclosure and recognition requirements prior to FIN 48. Gleason and Mills (2002) provide one of the earliest studies on the tax contingency reserve and show that firms often do not disclose contingent tax reserves (estimated using tax return data relative to financial statement data) even when the estimated reserve amount met general materiality standards. However, Gleason and Mills did not examine whether the account was used to manage earnings.

²⁷ See FIN 48 for a detailed discussion. FIN 48 changes the threshold for disclosure and recognition of tax positions. Moreover, it changes the measurement of the tax liability the firm must recognize. Under FIN 48, the firm records the liability for uncertain tax positions meeting the threshold as unrecognized tax benefits. We discuss the use of FIN 48 as a proxy for tax avoidance below.

²⁸ Source: Credit Suisse “Peeking Behind the Tax Curtain” by David Zion and Amit Varshney. May 18, 2007. For the 361 calendar year-end firms in the S&P 500 for which Credit Suisse could obtain disclosures, the total unrecognized tax benefits as of January 1, 2007 was \$141 billion.

Overall, there is some evidence that the tax expense accrual is used to manage earnings. As rules change through time for computation, disclosure, or other factors (e.g., the inclusion of deferred tax assets as part of regulatory capital), the extent to which firms can manage earnings through these accounts may change significantly. Thus, while further contributions in the earnings management through tax accounts area are hard to envision, constantly changing rules surrounding the accounts may create opportunities for further study. Another consideration is that for any of these accounts there will be real transactions that can masquerade as earnings management that researchers need to be cognizant of when designing and interpreting empirical tests. For example, most valuation allowance studies control for the economic factors outlined in SFAS 109 for establishing the account, in particular the role of future expected performance. In a more specific example, as mentioned above, there is evidence that firms released a significant portion of tax contingency reserves prior to adoption of FIN 48, which increased accounting earnings and has been attributed to earnings management (Blouin et al., 2010). However, firms also appear to be settling with the tax authorities during this time period in attempts to clear the slate and resolve the uncertainty before the implementation of FIN 48. Blouin et al. document this economic explanation as well.

A deeper understanding of institutional details will allow us to reconcile data and results across studies. For example, Graham et al. (2010a) report that 75 percent of the firms in their sample designate 100 percent of unremitted foreign earnings as PRE. If these data are correct and generalizable, it suggests that there is little practical variation in the discretion applied to the designation. Thus, while Krull (2004) argues that firms use discretion within the account to manage earnings (and we do not dispute her results), such a conclusion does not easily square with the observation that the PRE designation seems to be fixed in many firms. An alternative explanation is that to manage earnings firms must repatriate (or reinvest) more cash than they otherwise would

which would be a “real” decision rather than a simple accounting designation. Another possible explanation is that accounting policies at companies may have become fixed over time if managers have come under greater scrutiny about their PRE designations post-SOX than when her tests were conducted. Thus, the difference above could be a result of different sample periods.

2.2.3. Do changes in the valuation allowance reveal manager’s private information about future performance?

Changes to the valuation allowance depend in part on the manager’s expectation of future taxable income and the likelihood that deferred tax assets will be realized in the future. To the extent taxable income is an alternative measure of performance, changes in the valuation allowance can provide forward-looking information about future economic performance. Anecdotes and examples in the press and financial accounting textbooks suggest that a firm’s valuation allowance can be indicative of future earnings problems.²⁹ There is some empirical evidence that valuation allowance changes have incremental predictive ability for future earnings and cash flows (Jung and Pulliam, 2006), and that investors appear to use valuation allowance disclosures to infer management’s expectations of future performance (Kumar and Visvanathan, 2003).³⁰

2.3. Book-tax conformity

There is an ongoing debate in the tax literature and among policymakers about whether or not the U.S. should conform its two sets of income measures – book and tax – into one common measure.³¹ The most common proposal is to tax accounting earnings (or slightly adjusted accounting earnings). Proponents claim benefits such as reduced compliance costs, a broader base

²⁹ Common examples are Bethlehem Steel’s 2001 valuation allowance increase (see Weil and Liesman, 2001) and GM’s valuation allowance increase of \$39 billion in 2008 (Green and Bensinger, 2007).

³⁰ Prior studies document a relation between valuation allowance changes and contemporaneous stock prices (e.g., Amir et al., 1997; Ayers, 1998; and Amir and Sougiannis, 1999).

³¹ Other countries have either moved away from a conformed system or more toward a conformed system over time. In addition, upon the adoption of International Financial Reporting Standards the European Union (EU) seriously considered making the income measured under IFRS the common consolidated tax base. The EU opted not to adopt such a plan at this time (see Schön, 2005 for a discussion).

and lower rate, possible elimination or at least downsizing of the IRS, and a forced trade-off such that firm management will tell the truth when they report the income number.³² For example, management will not want to overstate earnings or the firm will have to pay more tax, and they will not want to understate earnings to save taxes if shareholders punish management for reporting a lower number. These benefits, if attainable, would be hard to argue against. Opponents claim that conformity would not be as simple as the proponents argue, the rate would not be able to be lowered as much as claimed because of the behavioral response on the part of firms, and a substantial cost would be incurred – a decrease in the information contained in the accounting earnings number.³³

While there are many differences between book and taxable incomes in the U.S., it is important to note that the two systems are at some level currently aligned. Indeed, there is a stream of literature that tests whether earnings management occurs around tax acts (i.e., companies shift taxable income to be in lower taxed years and the evidence of shifting is significant in financial accounting earnings). Examples of these studies include Scholes et al. (1992), Guenther (1994) and Maydew (1997). Thus, while the U.S. has a dual reporting system and the two income amounts can, and often do, diverge a great deal, there is basic alignment in the fundamental accounts (e.g., many types of sales, much of cost of goods sold, etc.).

The experience around the world varies. For example, Germany historically has had a much higher degree of book-tax conformity than the U.S. (see Harris et al., 1994). However, many European practices involve maintaining one set of company accounts – the single accounts – that are conformed, and one set of accounts – the group accounts – that are not conformed. While many point to higher conformity around the world, the single accounts which have the greater conformity

³² See Desai (2003), Desai (2005), Desai (2006), Graetz (2005), Murray (2002), Rossotti (2006), and others.

³³ See Shackelford (2006), Hanlon et al. (2009), Hanlon and Shevlin (2005), and McClelland and Mills (2007).

are not those presented to the capital markets in many cases. Thus, in some sense the companies still have two sets of books.³⁴

In examining what would happen here in the U.S. if book-tax conformity were adopted, the ideal research design cannot be employed since the U.S. has not switched from a full book-tax conformity system to a non-conformed system (or vice versa). In addition, to properly analyze all aspects one would have to be able to obtain an accurate measure of the compliance costs for tax and accounting purposes both before and after the change. In the absence of such a natural experiment, how has the issue been studied? Most of the research to date has primarily focused on one testable item: whether there is a decrease in information in accounting earnings after book-tax conformity increases. Alternative approaches to testing this question include cross-country studies, comparisons of information contained in book and estimated taxable incomes, examinations of settings in which conformity changed, and simulations.³⁵ While there are weaknesses with each of these approaches, they all essentially document a substantial cost of conformity in terms of a loss of information in financial accounting earnings. In addition, the simulations show that the tax rate necessary to achieve revenue neutrality is higher than the attainable rates suggested by proponents of book-tax conformity (see Hanlon and Maydew, 2009 who estimate a 26 percent revenue neutral rate and McClelland and Mills, 2008, who estimate a 28 percent to 35 percent revenue neutral rate).

For tax accountants and financial accountants, book-tax conformity is an important proposal. In some ways, it is more important for financial accounting than for tax. Depending on how much influence governments have on the standard setters of the conformed income, the number reported

³⁴ See Atwood et al. (2010) and Goncharov and Werner (2009) for a discussion of these issues. Note that Goncharov and Werner (2009) attempt to reconcile results in the extant literature with the use of single and group accounts. The authors argue that the financial reporting incentives play an economically significant role in the preparation of the single accounts. Further, see the financial accounting literature on comparison of accounting across countries more generally (e.g., Ball et al., 2000) and a discussion of the international studies on book-tax conformity (Hanlon et al., 2008).

³⁵ See Guenther et al. (1997), Ali and Hwang (2000), Ball et al. (2000), Ball et al. (2003), Guenther and Young (2000), Hanlon et al. (2005), Hanlon and Shevlin (2005), McClelland and Mills (2007), Hanlon et al. (2009), Ayers et al. (2009), Atwood et al. (2010), and Hanlon and Maydew (2009).

(and process to determine the rules to compute the number) could be closer to the current taxable income than current book income.³⁶ If that were to occur, much of the philosophy of the FASB and the SEC (i.e., having an independent standard-setting board, full disclosure rules, etc.) would be eliminated (see Hanlon and Shevlin, 2005 for a discussion).³⁷

President George W. Bush's Tax Reform Panel suggested the topic of conformity be studied further. What additional research is needed? The evidence suggests there will a substantial cost in terms of the information loss in accounting earnings should book-tax conformity be adopted. We have little evidence about anything else. Some think that the potential adoption of International Financial Reporting Standards (IFRS) will open the door to a one accounting standard world, which could then open the door to a worldwide-consolidated tax base (Shaviro, 2009). The costs estimated in terms of information loss in accounting earnings will still apply and, should the IFRS-as-tax-base model be considered, this cost would need to be evaluated. Further evidence on a broader set of costs and benefits would be valuable to inform this debate.³⁸

2.4. Summary and suggestions for the future

Do differences between book and taxable incomes provide information about current and future earnings? Do firms appear to manage the tax expense line? What are the costs and benefits of having companies report the same income measure to tax authorities and to shareholders? These are some of the broad questions examined to date in this area of research.

³⁶ See Hanlon and Shevlin (2005) and also a recent article by Kessler (2008) on the influence of the EU on the IASB. In all likelihood, government inclination to interfere with accounting standard setting would increase should those standard setters be determining taxable income as well.

³⁷ See Kothari et al. (2010) for a discussion of the uses of accounting information and the use of that information by multiple stakeholders/constituents.

³⁸ One alternative is partial conformity, taking into account the potential harm to accounting earnings with each item considered (i.e., working from the current system to a more conformed system instead of conforming and starting over creating differences). Clearly, the first items to change are the special provisions in the tax code that provide tax breaks or punishments to particular taxpayers or for certain activities. Removing these would make the system simpler, increase conformity, and retain the information in financial accounting earnings. But like all of the tax code, these provisions are very political in nature and their removal would be a shift in the tax law setting process currently in the U.S.

In sum, the evidence is consistent with book-tax differences containing information about pre-tax earnings quality. Book-tax differences are by definition differences between book and tax reporting of the same transaction. Thus, if information is available elsewhere about the transaction, an open question is whether investors get the information from the book-tax differences or from some other source (this is a question with accounting earnings more generally). This issue is often recognized by the authors of these studies and examining the information in the book-tax differences is still important if the accounts could provide investors with the information. Future research will likely benefit from investigating the conditions under which there is more or less information and perhaps from sorting out the sources of the information, if possible. Researchers should be careful in choosing the measure of book-tax differences that are appropriate for the research question. For example, if one is interested in examining pre-tax accrual quality than a measure of temporary book-tax differences is appropriate.

The evidence on whether firms manage the tax expense line item, for the most part, suggests the answer is “yes.” However, an interesting take-away from this literature is that given all the discretion and judgment necessary to establish the tax accrual accounts, there is not the level of earnings management evidence that many likely suspected. Future contributions in this area seem limited; however, regime shifts, rule changes, and changes in cross-sectional determinants may open avenues for future research.

Book-tax conformity is an important issue to both financial accountants and tax researchers. This policy alternative is seen by some as a non-starter but at times gains support in Washington and in other governments around the world. The most important issue in this area is to consider all the costs, including those generated by any reporting responses on the part of the companies and those from political posturing on the part of the government.

3. Tax avoidance

In this section, we shift our attention to the corporate reporting of taxable income to tax authorities. There is widespread interest and concern over the magnitude, determinants and consequences of corporate tax avoidance and aggressiveness. Shackelford and Shevlin (2001) call for research on the determinants of tax aggressiveness and Weisbach (2002) asks why there is not more tax sheltering (later coined the “undersheltering puzzle”). These are certainly important topics of research. The challenge for the area is that there are no universally accepted definitions of, or constructs for, tax avoidance or tax aggressiveness; the terms mean different things to different people. Similar to financial accounting research on “earnings quality,” the lack of an accepted definition should not stop research on the topic. Quite the contrary; the more good research on the topic, the more likely an accepted definition will take shape.

Let us first discuss our conceptual definition of tax avoidance in an attempt to minimize confusion over semantics for the rest of our review (and perhaps in future research). We define tax avoidance broadly as the reduction of explicit taxes. This definition conceptually follows that in Dyreng et al. (2008) and reflects all transactions that have any effect on the firm’s explicit tax liability. This definition does not distinguish between real activities that are tax favored, avoidance activities specifically undertaken to reduce taxes, and targeted tax benefits from lobbying activities.³⁹ However, we do not limit our conceptual term “tax avoidance” to the Dyreng et al. (2008) empirical measure; we define tax avoidance very broadly. If tax avoidance represents a continuum of tax planning strategies where something like municipal bond investments are at one

³⁹ We do not distinguish between technically legal avoidance and illegal evasion for two reasons. First, most of the behavior in question surrounds transactions that are often technically legal. Second, the legality of a tax avoidance transaction is often determined after the fact. Thus, avoidance captures both certain tax positions (e.g., municipal bond investments) as well as uncertain tax positions that may or may not be challenged and determined illegal. Weisbach (2003) discusses a similar problem with definitions. He points out that lawyers and economists are quick to classify “avoidance” as legal tax planning and “evasion” as illegal tax planning as if one can determine the legality of a tax structure easily. A problem with tax shelters is that it is almost always ambiguous whether the transaction is permissible or not.

end (lower explicit tax, perfectly legal), then terms such as “noncompliance,” “evasion,” “aggressiveness,” and “sheltering” would be closer to the other end of the continuum. A tax planning activity or a tax strategy could be anywhere along the continuum depending upon how aggressive the activity is in reducing taxes.⁴⁰ However, much like art, the degree of aggressiveness (beauty) is in the eye of the beholder; different people will often have different opinions about the aggressiveness of a transaction. The individual studies we discuss often use different terms to describe the tax reporting behavior (“aggressiveness,” “sheltering,” “evasion,” “noncompliance,” etc.). Clearly, most interest, both for research and for tax policy, is in intentional actions at the aggressive end of the continuum (e.g., evasion). However, to minimize the focus on semantics, we will, for the most part, discuss the literature using the generic term “tax avoidance.”

We first discuss the theory of corporate tax avoidance. This includes the relationships between the shareholders, management, and the government and the potential agency issues that can arise in corporate tax avoidance. We also discuss the recent re-incorporation of corporate governance into the tax avoidance literature. This involves consideration of firm-level governance structures and the effect on responses to taxation and also a consideration of tax authorities acting as additional governance mechanisms for the firm.

We then focus our discussion on the measurement of tax avoidance. Because a wide range of proxies are currently used in the literature and because of the significant policy implications of research on tax avoidance, researchers must be careful to consider whether the measure they choose is appropriate for their particular research question. In our review, we attempt to clarify the information that can be inferred from the different measures and clearly state what information cannot. Most importantly, we point out that most measures in the literature capture only non-

⁴⁰ One definition of tax aggressiveness is found in Slemrod (2004) and Slemrod and Yitzhaki (2002) in which aggressive tax reporting encompasses a wide range of transactions whose primary intent is to lower the tax liability without involving a real response by the firm and is a subset of tax avoidance activities more generally. Intuitively, aggressiveness is thought of as pushing the envelope of tax law.

conforming tax avoidance; that is, tax avoidance transactions accounted for differently for book and tax purposes. Conforming tax avoidance, in which financial accounting income is reduced when the tax strategy is employed, is not captured by most measures. We discuss the empirical measures before discussing the literature in order to review what inferences can and cannot be made from studies given the limitations of the empirical measures. Finally, we discuss research on the determinants and consequences of tax avoidance.

3.1. Theory of corporate tax avoidance

The factors affecting individual tax avoidance and compliance are well studied in public economics (Slemrod and Yitzhaki, 2002). In theory, individual tax compliance is determined by tax rates, the probability of detection and punishment, penalties, and risk-aversion (Allingham and Sandmo, 1972) as well as intrinsic motivations such as civic duty. Many of these factors apply to the corporate taxpayer as well. However, as Slemrod (2004) points out, additional issues arise in widely held corporations because of the separation between ownership and control. Risk-neutral shareholders expect managers acting on their behalf to focus on profit maximization, which includes going after opportunities to reduce tax liabilities as long as the expected incremental benefit exceeds the incremental cost. Thus, tax avoidance is not, in and of itself, a reflection of agency problems. However, separation of ownership and control can lead to corporate tax decisions that reflect the private interests of the manager. Thus, the challenge for shareholders and boards of directors is to find the combination of control mechanisms and incentives that minimize these agency costs (Jensen and Meckling, 1976).

Slemrod (2004), Chen and Chu (2005), and Crocker and Slemrod (2005) lay the theoretical foundation for understanding corporate tax avoidance within an agency framework. Chen and Chu (2005) examine corporate tax avoidance under a standard principal-agent model and focus on the efficiency loss due to the separation of management and control. Crocker and Slemrod (2005)

examine the compensation contract of the executive (e.g. CFO or tax director) who determines the firm's deductions from taxable corporate income and focus specifically on the relative efficacy of tax compliance penalties levied on the principal versus the agent. Most of the literature prior to these studies assumes the firm makes the tax reporting decision with no agency considerations.

The separation of ownership and control implies that if tax avoidance is a worthwhile activity, then the owners ought to structure appropriate incentives to ensure that managers make tax-efficient decisions. By tax-efficient, we mean corporate tax decisions that increase the after-tax wealth of the firm's owners, that is, where the marginal benefits of the transaction exceed the marginal costs. This can be done explicitly based on tax outcomes or implicitly via contracts linking pay to after-tax returns or stock price. This approach can be extended to generate a set of predictions about the relation between tax reporting, incentive structures, and firm value.

Another perspective has recently been introduced into the literature by Desai et al. (2007) who propose a situation in which self-interested managers structure the firm in a complex manner in order to facilitate transactions that reduce corporate taxes *and* divert corporate resources for private use (which presumably includes manipulating after-tax earnings for private gain). Desai et al. (2007) posit that in such a scenario, a strong tax authority can provide additional monitoring of managers, and thus, the incentives of the outside shareholders are aligned with the tax authority to reduce diversion of resources by insiders.⁴¹ The authors extend their theory to several aspects of the tax system. First, they predict that a system of high tax rates but weak enforcement may increase managerial diversion from the tax authority as well as from outside shareholders. Thus, the authors argue that outside shareholders benefit when tax enforcement increases because it increases the

⁴¹ A third possible scenario is where the inside managers collude with the tax authority such that the tax authority looks away from divertive activities in exchange for extra payments. While this seems unlikely in many contexts, it is somewhat analogous to the results in Erickson et al. (2004) which documents that firms paid taxes on overstated, allegedly fraudulent earnings. Sen. Grassley, then chairman of the Committee on Finance, explained that such strategies, "...basically have made the IRS an unwitting accomplice to their fraud" (U.S. Committee on Finance, 2003).

probability that diversion will be detected. Based on a sample of Russian firms undergoing an increase in tax enforcement following the election of Vladimir Putin in 2000, tax payments increased, related party trades were curtailed, and tax haven entities were abandoned.⁴² Important to the interpretation that tax authorities reduce agency problems, shareholders of firms in the oil industry appeared to approve of the increased enforcement, as stock prices for tax avoiding firms rose significantly around government enforcement actions.⁴³

The second point Desai et al. (2007) make is that corporate governance affects the response of firms to changes in corporate tax rates. When governance is weak, an increase in the tax rate results in more diversion lowering corporate tax revenues. When corporate governance is strong, an increase in the corporate tax rates will yield higher corporate tax revenues. The authors find evidence consistent with their conjecture through tests across countries.⁴⁴

These papers provide theory and predictions about the relationships and incentives of the various parties – insiders, outside shareholders, and the state – in corporate tax avoidance settings. In addition, the studies make predictions about cross-sectional variation in tax avoidance activities

⁴² It is important to note that tax authorities are likely not interested in resolving agency problems per se. The effect on shareholders is a byproduct of the tax authorities' interest in controlling managerial diversion, which hurts both tax authorities and shareholders. In addition, the authors follow one particular company and show that reported company income soared, and for the first time the company issued a dividend to shareholders. The authors note that the *Financial Times* reported that to comply with the new laws the companies "must show the true extent of their financial operations to outside shareholders, who are just as keen to have a share of the proceeds as the tax inspector" (A. Jack, *Financial Times*, September 17, 2001).

⁴³ While the Desai et al. (2007) theory about tax authority monitoring reducing managerial diversion is certainly interesting and the examples and empirical results in the paper are compelling, the generalizability of data from one industry in Russia is somewhat difficult. A separate test of the theory is in Guedhami and Pittman (2008) who examine the cost of debt for private firms' 144A bond issues in the U.S. using the probability of a face-to-face IRS audit from TRAC (Transactional Records Access Clearinghouse) as the measure of IRS monitoring. They find evidence consistent with the Desai et al. prediction -- the higher the IRS audit rates, the lower the yield spread (the lower the cost of debt). The authors conclude that the IRS is an active third-party monitor and alleviates the information asymmetry between controlling shareholders and outside investors resulting in lower interest rates for the firms. This line of research is intriguing. In public companies, most would agree a stronger financial reporting or securities law enforcement agency would be preferable to a strong IRS. It is somewhat hard to believe that financial markets perceive the IRS as competent enough to monitor given the plethora of stories about how the agency has few resources and little talent to match that of corporate tax departments. Further research is necessary to make broader policy implications about resource allocation or the impact on tax revenues. There are limitations to the TRAC data to be sure (e.g., it is highly determined by size and year); however, the data may prove a valuable proxy for IRS monitoring in future research.

⁴⁴ The control premium varies across country and is from negotiated control block sales as computed by Dyck and Zingales (2004).

(including determinants) and the market consequences of those activities. These studies help advance our understanding of the relation between corporate governance and tax avoidance. We include in our review a number of papers that integrate the implications of these theories. This literature is relatively young and as a result, most studies have examined firm-level determinants without much examination of executives and their incentives and the position of the state as a minority shareholder.⁴⁵

3.2. *Measuring tax avoidance*

In this section, we discuss the various measures of tax avoidance in the literature. Our main point is that not all measures are appropriate for all research questions. We first discuss where one can obtain information on firm level taxes and then discuss the most common tax avoidance measures in detail.

Corporations report taxable income on their tax returns and also report income tax expense and income tax assets and liabilities on their GAAP financial statements. Thus, estimates of taxable income and tax payments, important factors in measuring tax avoidance, could be obtained from either source. Most tax avoidance measures are obtained from financial statement data because tax returns are not publicly available and access is granted to only a few (we discuss potential problems with tax return information below). Yet, it is well known that there are many problems with computing estimates of taxable income from financial statements. Hanlon (2003) and McGill and Outslay (2004) and others discuss and show the potential issues in conducting such an exercise. In essence, there is a lack of disclosure in financial statements about taxable income and/or the actual cash taxes paid or to be paid on the current year's earnings. FASB's task in designing financial accounting standards is in establishing rules under which companies represent their economic

⁴⁵ Note that the idea that the taxing government is a minority shareholder is an "old" one included in the original Scholes-Wolfson text and earlier work (see Desai et al., 2007 for a review). However, the attention given to other stakeholders beyond the firm itself has been limited in the extant research until recently.

performance for external stakeholders to evaluate that performance and estimate future performance. FASB is not inherently interested in disclosure of tax data, except to the extent those items affect GAAP earnings and the GAAP balance sheet. There are potential reasons why outsiders want to know taxable income, for example, to use as a benchmark for accounting earnings and to evaluate corporate tax avoidance and/or corporate tax citizenship (see Hanlon, 2003 and Shackelford et al., 2003).

Knowing that financial statement data leads to errors in estimating taxable income, it is important to consider what the alternative source - access to tax returns - would and would not solve. Because of the different consolidation rules between book and tax (see Appendix A and Hanlon, 2003), it is nearly impossible to match any one tax return to any one set of financial statements (see Mills and Plesko, 2003). Thus, even with tax return data it is very difficult (if not, impossible) to ascertain how much tax is being paid on the reported accounting earnings or cash flow reported in a filed 10K. Looking at the tax return alone, one could compare to the accounting earnings for the entities included in the tax return (via the schedule M-1 or M-3), but again if one is interested in benchmarking to accounting earnings for some certain group of entities (the consolidated set for GAAP), then this approach may not provide the solution. In addition, tax regulations and enforcement are conducted at a national level, so using U.S. tax returns only provides information about the U.S. portion of the activity of a U.S. multinational corporation. Further, if one wants the market's interpretation of the information in a firm's taxable income, then research must use data available to the market (i.e., something other than tax return data). Finally, research conducted using tax return data is not replicable. There are settings where tax return data are valuable, to be sure, but many times researchers say "ideally we would use tax return data" or "tax return data provides the truth" when that is not necessarily the case.

The measures of tax avoidance that we review are listed in Table 1. We list 12 measures of tax avoidance commonly used in the literature.

Effective tax rate measures: These are computed by dividing some estimate of tax liability by a measure of before tax profits or cash flow. These measures capture the average rate of tax per dollar of income or cash flow. Understanding what the numerator captures is essential. In Table 1 we describe the inferences that are possible across the various numerators. Most importantly, the numerator in the GAAP ETR (defined as total income tax expense divided by pre-tax accounting income) is total income tax expense. A tax strategy that defers taxes (e.g., more accelerated depreciation for tax purposes) will not alter the GAAP ETR. In addition, several items that are not tax planning strategies, such as changes in the valuation allowance or changes in the tax contingency reserve could affect the GAAP ETR. The GAAP ETR is the rate that affects accounting earnings. The Cash ETR, on the other hand, is computed using cash taxes paid in the numerator, and *is* affected by tax deferral strategies but is *not* affected by changes in the tax accounting accruals. The annual Cash ETR could mismatch the numerator and denominator if the cash taxes paid includes taxes paid on earnings in a different period (e.g., from an IRS audit completed in the current year) while the denominator includes only current period earnings.

Depending on the research question, a more important consideration may be the denominator of the ETR. Most effective tax rates use pre-tax GAAP earnings as the denominator and thus can only capture non-conforming tax avoidance (e.g., ETRs will not reflect the tax benefits of interest deductibility). Thus, if a firm that does not face a strong financial accounting constraint (e.g., a private firm) avoids most of its explicit taxes by reporting lower accounting earnings as well as lower taxable income (i.e., conforming tax avoidance), this type of tax avoidance would not be captured by the typical effective tax rate measures. As a result, the researcher must be very careful

when making inferences about overall tax avoidance if the sample under consideration contains firms with differing levels of importance placed on financial accounting earnings.

Long-run effective tax rates: Dyreng et al. (2008) develop a long-run cash ETR measure estimated as the sum of cash paid for income taxes over ten years scaled by the sum of pre-tax income (net of special items) over the same period.⁴⁶ The main benefit of the measure is the long-run nature of the computation which avoids year-to-year volatility in annual effective tax rates. Using the long time periods allows the use of cash taxes paid in the numerator because the long-run measure avoids much of the mismatch of cash taxes and earnings.⁴⁷ The use of cash taxes paid is beneficial because it avoids tax accrual effects present in the current tax expense.

However, note that all ETR variants, including the long-run measure, 1) reflect all transactions that have any effect on the firm's explicit tax liability, 2) do not distinguish between real activities that are tax-favored, avoidance activities specifically undertaken to reduce taxes, and targeted tax benefits from lobbying activities, 3) do not directly capture implicit taxes (although if the denominator is lower for a given amount of tax, the ratio will be higher),⁴⁸ and 4) do not capture conforming tax avoidance because the measure uses book income as the denominator. Further, some may interpret the low ETRs (including the long-run measure) as the result of upward earnings management (if the taxes remain constant) and not due to any specific tax savings behavior. But if taxes remain constant as the firm manages earnings upward over the long run, then the firm is still

⁴⁶ Dyreng et al. adjust net income for special items to retain more firms in the sample (reduce the number of loss firms). The authors estimate the tests without making the adjustment and retain fewer firms, but the basic inference in terms of the proportion of firms that sustain low long-run rates is the same (and in sensitivity they estimate the results using cash flow as the denominator, avoiding the issue altogether). However, this same adjustment will not be necessary or even right for all research questions.

⁴⁷ The mismatch of cash taxes and earnings results from 1) the timing of cash tax payment through estimates and with the tax returns, 2) settlements with tax authorities (earnings recorded in prior periods but tax paid to tax authorities later in time), 3) any potential U.S. residual taxes on foreign earnings which are not paid until the earnings are repatriated in cash (whereas the earnings are included in income when earned).

⁴⁸ Implicit taxes is a term popularized by Scholes and Wolfson (1992) to describe the effect of tax preferences on asset prices and expected pre-tax returns. An investment in a tax-preferred asset is said to bear implicit taxes when the pre-tax returns are lower than the returns on a fully taxed asset of identical risk (e.g., municipal bond investments).

avoiding taxes on the overstated accounting earnings. In addition, earnings management through accruals should reverse over the long run, to some extent mitigating the concerns about the effect of earnings management in the long-run measure.⁴⁹

Book-tax differences: It seems intuitive that book-tax differences could provide information about tax avoidance behavior given our previous discussion of the sources of book-tax differences.

⁵⁰ However, compared to the earnings quality studies in which researchers can correlate book-tax differences with outcomes such as future earnings patterns, the information in book-tax differences about tax avoidance is harder to document because valid tax outcomes are difficult to obtain. Mills (1998) documents that firms with large book-tax differences (measured on the tax return and using deferred tax expense from the financial statements) are more likely to be audited by the IRS and have larger proposed audit adjustments. Wilson (2009) finds that book-tax differences are larger for firms accused of engaging in tax shelters than for a matched sample of non-accused firms. The evidence from these studies suggests that book-tax differences capture some element of tax avoidance. Of course, book-tax differences by definition only capture nonconforming tax avoidance. Thus, this measure cannot be used to compare tax avoidance activities across firms with varying levels of importance on financial accounting earnings. Further, as both authors recognize, it is important to keep in mind that in both studies the firms in the sample are firms that were

⁴⁹ Dyreng et al. (2008) suggest an alternative specification using cash flows from operations as a scalar in order to partially address the earnings management issue and as a way to eliminate the use of book earnings as a benchmark and capture some types of conforming tax avoidance behavior. Note that scaling by cash flows only allows the capture of conforming tax avoidance if the tax avoidance strategy is accruals based (e.g., the expense is accrued for both book and tax purposes). However, if the tax avoidance does not involve accruals but instead reduces both cash flows and taxable income (taxes paid) then again both the numerator and denominator will be reduced and the measure will not capture this type of tax avoidance.

⁵⁰ Recognize that book-tax difference measures are closely related to effective tax rate measures; in general, the book-tax difference measures subtract one measure of income from the other and the effective tax rate measures are a ratio of some measure of tax (expense or paid) to a measure of income.

“caught.” If the tax authority uses large book-tax differences to identify tax avoidance, then what the studies capture is the tax authority’s model of tax avoidance.⁵¹

Tax shelter firms: This classification of tax avoidance is advantageous if a researcher is interested in identifying cases of intentional tax planning behavior at a transaction level at the aggressive end of the tax avoidance continuum. However, there are several important tradeoffs. First, there are potential selection biases. Similar to the statements above, the sample of tax shelter firms identifies only firms that were either caught and formally charged or that disclosed the shelter under recent disclosure rules for certain transactions. Second, the use of a tax shelter is likely endogenous. Firms that can otherwise avoid taxes may not need to engage in shelters, and firms that for whatever reason cannot otherwise avoid taxes may be the ones that engage in (resort to) tax shelters. Thus, tax sheltering firms may not be the firms that avoid the most taxes if one adopts a more general definition of tax avoidance.⁵² In other words, the shelters are single transactions and may not capture the firm’s overall avoidance behavior. As a result, studies that correlate a measure of tax avoidance with tax shelter use may or may not be establishing support for the validity their tax avoidance measure. Whether tax shelter proxies are appropriate measures of tax avoidance obviously depends on the research question. However, the authors’ interpretations of the evidence must clearly recognize the limitations imposed (as well as the benefits garnered) by using a tax shelter sample.

⁵¹ Desai (2003) and others point to the increasing difference between book and tax income over the 1990s as evidence of aggressive tax reporting. (Desai in later papers attempts to control out other causes of book-tax differences.) However, Shevlin (2002) argues that one must be cautious when drawing inferences about the levels and trends in tax avoidance based on book-tax differences. See also Treasury (1999), Manzon and Plesko (2002), Yin (2003), Hanlon and Shevlin (2005), and Mills et al. (2002).

⁵² We recognize that there is not an accepted definition of tax shelter either. We do not have the space to go into this issue but refer readers to the papers on tax shelters such as Bankman (1999, 2004), Graham and Tucker (2006), Wilson (2009), and Hanlon and Slemrod (2009).

Unrecognized tax benefits (UTB): This proxy is measured as the levels and or changes in UTB, the accounting reserve for future tax contingencies.⁵³ For research using UTB as a measure of tax avoidance, it is important to keep in mind that UTBs are potentially driven by two underlying determinants. The first is obviously taxes. Higher UTBs represent more uncertainty in the firm's tax positions and thus, are likely indicative of the degree of tax avoidance.⁵⁴ The second determinant, and the more problematic one for research design, is financial reporting incentives. The amount of unrecognized tax benefit recorded for financial accounting (i.e., the amount of the accounting accrual for potential future tax assessments) is an accounting accrual subject to the judgment of management. The accrual ultimately affects bottom line earnings which is precisely why researchers study the account for indications of earnings management (see section 2 discussion above). Further, consider a manager that takes an aggressive tax position to reduce taxable income but also wishes to take an aggressive position for financial accounting. The manager is unlikely to record a reserve for the tax associated with the tax position. If one considers the conjecture that tax avoidance strategies are sometimes adopted with the primary purpose of increasing accounting earnings, the point is especially salient – the reserve will not be recorded (i.e., all benefits will be recognized so as to increase earnings) and the tax avoided will not be captured in the UTB. Thus, the tax contingency or UTB is not a clean measure of tax avoidance by any stretch. We are not claiming that the correlation of other measures of tax avoidance and the UTB will not be significant. However, not all tax avoidance will be included in the UTB (or other measures) and thus it is hard to interpret what a significant correlation really means. Studies of UTBs should recognize the dual nature of the account and discuss the implications for their research question, design, and results.

⁵³ Amounts are disclosed by firms under Financial Accounting Standards Board Interpretation No. 48, *Accounting for Uncertainty in Income Taxes* (FIN 48) issued in 2006. See discussion in section 2.

⁵⁴ Lisowsky (2010) reports an empirical link between tax sheltering and his measure of the pre-FIN 48 tax contingency reserve.

Discretionary or “abnormal” measures of tax avoidance: Desai and Dharmapala (2006 and 2009b) compute a measure of abnormal book-tax differences by regressing total book-tax differences on total accruals, where total accruals is intended to control for accounting earnings management. The residual is used to proxy for the construct of tax avoidance. Separately, Frank et al. (2009) estimate the discretionary portion (DTAX) of their PERMDIFF measure (PERMDIFF is essentially the difference between the effective and statutory tax rates multiplied by pre-tax accounting income). These discretionary measures are similar in notion to the Jones (1991) model of discretionary accruals and could be useful conceptually in the sense that the “discretionary” portion attempts to remove underlying determinants that are not driven by unintentional tax avoidance leaving the portion driven by intentional tax avoidance (some notion of intentional actions towards the aggressive end of the tax avoidance continuum) in the residual.

Like the Jones model, regression-based partitions are only as good as the model used and the validity of the proxies employed for the “known” determinants. Because we lack good structural models of book-tax differences and effective tax rates, the discretionary models could introduce additional error. In addition, because taxes affect many decisions but are not often first-order drivers it is difficult to know what variables to include in the “known” (not tax driven) determinants and which effects to let fall into the residuals. For example, should the extent of a firm’s foreign operations or amount of research and development spending be classified as items to be included in the first stage regression as known determinants of a GAAP ETR (because the manager that took these actions could have done so for non-tax reason and tax savings were just a byproduct)? Or, should the effects of these variables be included as part of the overall intentional tax avoidance measure (the residual) since we know both of these can be intentionally used by the firm (and managers) to reduce taxes? This is a difficult issue and one for which we do not have an answer. However, researchers should consider their research question and the implications of the model

when structuring the research design for their particular question and when making inferences from the results.

The measure developed by Frank et al. (2009) has been used in subsequent papers and thus, similar to our earlier discussion of the long-run cash ETR from Dyreng et al. (2008), we discuss the measure in some detail to be clear on the types of questions that the measure can and cannot address. The intent of the measure is to capture items that alter, and in particular reduce, the firm's GAAP ETR which then raises bottom-line earnings, all else constant. The authors' label of "PERMDIFF" for the total amount is somewhat unfortunate, however, because the measure captures much more than permanent differences.⁵⁵ This has led to some misapplication of the measure and misinterpretation of results. The PERMDIFF measure is essentially an "ETR differential" and can be calculated as the statutory tax rate minus the GAAP ETR. To get the dollar figure comparable to Frank et al. (2009), multiply the ETR differential by pre-tax book income. Because it is a function of GAAP ETR, this measure does not capture conforming tax avoidance behavior or tax deferral strategies (and thus cannot be used to make inferences about overall tax avoidance, especially if the sample being analyzed has both private and public firms – i.e., firms with varying degrees of importance of accounting earnings). The measure will capture the effects of tax credits (in fact, it overweights the effects of credits), foreign operations in jurisdictions with different tax rates (e.g., if earnings are designated as permanently reinvested), and any other item that affects GAAP ETRs. In addition, the PERMDIFF measure only captures tax avoidance that helps the company boost accounting earnings by reducing the GAAP ETR. In sum, the effect of these items should be considered when motivating studies using this measure (i.e., are these the types of transactions the research question is about?).

⁵⁵ Frank et al. (2009) use DTAX as the name of the discretionary portion.

Beyond the details of the measures described above, an important issue is the field's perception of the meaning of permanent book-tax differences and temporary book-tax differences as it pertains to tax avoidance.⁵⁶ With regard to permanent book-tax differences, some have made the argument that permanent differences likely reflect aggressive tax reporting (meaning at the aggressive end of the tax avoidance continuum). Indeed, there are claims that the “ideal tax shelter is one that generates a permanent difference” and claims that permanent differences reflect the most egregious type of tax avoidance (i.e., the most aggressive behavior). It is important to carefully consider whether these statements are true and *why* these statements are made.

What evidence do we have? If one thinks that engaging in a tax shelter indicates some notion of tax aggressiveness (recognizing that firms that do not shelter, or at least do not get caught, may indeed be avoiding more taxes through all available means) then we can look to the available anecdotal and empirical evidence on tax shelters. Anecdotally, we observe that transfer pricing disputes have resulted in some of the largest tax settlements with the IRS in history. Transfer pricing, however, results in *no* book-tax difference. We observe other transactions such as the Lease-in-Lease-Out (LILO) and Contested Liability Acceleration Strategy (CLAS) that generate temporary differences (including depreciation differences). Yet others, such as the Corporate Owned Life Insurance shelter generate a permanent difference (and part of the tax benefits are interest, which yields no book-tax difference). Thus, some “shelters” generate a temporary book-tax difference, some a permanent difference, and some do not generate a difference between book and tax incomes at all.⁵⁷

⁵⁶ As we discussed above, temporary book-tax differences are directly related to pre-tax accounting accruals and thus the conjecture is that they could provide information about earnings management. Again most of the “earnings quality” type studies test only for associations with earnings properties but they do acknowledge in general that book-tax differences, including temporary book-tax differences, can to some extent be driven by tax avoidance as well.

⁵⁷ We thank Pete Lisowsky and Ryan Wilson for comments and consultation on this section. See Graham and Tucker (2006), Hanlon and Slemrod (2009), and the U.S. Treasury (1999) for descriptions of the shelters.

The data are limited but can shed some initial light on the issue. Wilson (2009) reports that both temporary and permanent book-tax differences are significant in predicting tax shelter involvement. Indeed, when Wilson (2009) employs a broad control sample *only* the temporary book-tax differences are significant. Further evidence is found in Lisowsky et al. (2010) who examine 101 tax shelters disclosed to the Internal Revenue Service as Reportable Transactions.⁵⁸ The authors report that out of the 101 disclosed Reportable Transactions only 48 report any book-tax difference at all on the tax return. Of those that did, 12 report a related permanent book-tax difference (\$1.4 billion total) and 38 report a related temporary difference (\$2.5 billion total; note the same transaction can have part of the effect as a temporary difference and part as a permanent difference).⁵⁹ Thus, although more evidence is needed, the premise that a tax position leading to a permanent difference is more “tax aggressive” than a tax position that does not is currently unsupported.

So why do people say that “ideal shelters are those that generate permanent differences”? The most likely explanation is the financial accounting implications of such a difference. A tax strategy that generates a permanent book-tax difference reduces the firm’s effective tax rate and increases accounting earnings (and can be timed to when such an increase is desirable). It is ‘ideal’ precisely because of the financial accounting benefits. Thus, tests that correlate some measure of permanent differences and measures of financial accounting aggressiveness may be documenting that firms that care about financial accounting are more “aggressive” for financial accounting (i.e., it is somewhat circular) rather than the implied conclusion that firms that are aggressive for *tax* are aggressive for financial accounting. We do not intend to minimize the importance of studying low

⁵⁸ There are two types of reportable transactions, listed and non-listed. See Lisowsky (2010) and Lisowsky et al. (2010) for a description of listed and reportable transactions.

⁵⁹ The Lisowsky et al. (2010) paper is an early working paper and using listed transactions has some limitations which the authors recognize. However, at a first pass their data reveal some evidence on the extent to which listed transactions involve conforming tax avoidance and the extent to which listed transactions involve temporary versus permanent differences.

ETR firms or transactions that lower GAAP ETRs. Our message here is that researchers should be careful not to conclude the transactions to achieve this effect are the most aggressive for tax purposes per se (e.g., investments in municipal bonds will lower the GAAP ETR but these investments are not “aggressive” for tax purposes).

To summarize, prior and current research employs a variety of metrics to measure corporate tax avoidance. We cannot overemphasize that not all measures are equally appropriate for every research question. In addition, many proxies in essence capture the same thing – some measure of book-tax differences – and researchers should, when employing multiple measures, consider which measures should yield different results and why (or why not).⁶⁰ We have attempted to provide guidance on the appropriateness of certain measures for general types of research questions and samples. In the following section, we discuss the studies on the determinants and consequences of tax avoidance and we specifically highlight areas where the measure used for tax avoidance limits the interpretation of the results.

3.3. Determinants of tax avoidance

Several studies examine the relation between firm-level characteristics and tax avoidance using a number of the proxies discussed above (e.g., GAAP ETR, tax shelter use, etc.). For example, Gupta and Newberry (1997) examine a wide range of determinants of GAAP ETRs. Rego (2003) reports evidence that suggests the scale of international operations leads to more tax avoidance opportunities resulting in lower GAAP ETRs. Both studies examine only non-conforming tax avoidance. In addition, firms accused of using tax shelters have larger book-tax

⁶⁰ This message is analogous to that about the earnings quality literature in Dechow et al. (2010) and the related discussion DeFond (2010).

differences, more foreign operations, subsidiaries in tax havens, higher prior-year effective tax rates, greater litigation losses, and less leverage (Wilson, 2009; Lisowsky, 2010).⁶¹

A young, but growing empirical literature incorporates agency predictions into an analysis of corporate tax avoidance. One aspect is that if avoidance activities create value and compensation incentives align the manager's interest with shareholders, then firms that use more after-tax performance based incentives should engage in more tax avoidance. Consistent with this notion, Phillips (2003) finds evidence from survey data that compensating business unit managers on after-tax income leads to lower GAAP ETRs. However, Desai and Dharmapala (2006) extend the theories in Slemrod (2004) and Desai et al. (2007) by modeling the effect of incentive compensation and governance structures on tax avoidance at the firm level and find a negative association between equity-based compensation and tax avoidance (measured by abnormal book-tax differences). Employing cross-sectional variation in their tests, the authors report that the negative association holds only among firms with weaker shareholder rights and lower institutional ownership. Desai and Dharmapala attribute this difference to the theoretical predictions in Desai et al. (2007) discussed above. If managers engage in tax avoidance in order to increase managerial diversion, then *increasing* equity incentives to further align managers and shareholders will decrease diversion, which then *decreases* tax avoidance engaged in to accomplish the diversion.

Ownership structure may also be important. While the tax policy in place can have important implications for the development of corporate ownership patterns (Desai et al., 2007), ownership patterns can have an important effect on tax avoidance (Desai and Dharmapala, 2008). Firms with concentrated ownership, such as the family firms examined in Chen et al. (2010), may avoid more taxes because controlling owners benefit more from the savings. On the other hand,

⁶¹ Zimmerman (1983) examines the effect of size on tax avoidance, as measured by GAAP ETRs (Zimmerman's intent was not testing tax avoidance per se but rather the effect of political costs, proxied for by size, on firm behavior). See also Hanlon et al. (2007) and Mills et al. (1998).

these firms may avoid fewer taxes because these long-term concentrated holders have a longer horizon and may be more sensitive to the total costs of avoidance arising from reputation effects and suspicions of diversion from minority shareholders. Chen et al. document that family firms avoid fewer taxes than non-family firms, a result that appears consistent with Desai and Dharmapala (2006). That is, family owned firms are willing to forgo tax benefits to avoid concerns by minority shareholders of family rent seeking masked by tax avoidance activities. However, the result is also consistent with a more basic model from the evasion literature, which links aggressive tax reporting to an individual's risk aversion and intrinsic motivation. On a relative basis, high-ownership family firms are more likely to behave like individuals.

As mentioned above, an important issue highlighted by the growing research on tax avoidance is how to measure avoidance and how to interpret the results when firms in the sample place different levels of importance on accounting earnings. We use the Chen et al. (2010) paper discussed above as an example. Chen et al. employ four measures of tax avoidance: the GAAP ETR, the Cash ETR, total book-tax differences, and abnormal total book-tax differences. It is important to note that each of these measures of tax avoidance capture only nonconforming tax avoidance. In other words, if family-owned firms place less importance on accounting earnings, which is plausible if they are under less capital market pressure, they may be willing to voluntarily conform book and tax treatment, i.e., take a tax deduction and record an accounting expense. The measures used in Chen et al. cannot pick up such conforming tax avoidance. The paper provides a contribution to the literature nonetheless, but interpretation of the results must be done with care. The results in the paper show that family owned firms engage in less nonconforming tax avoidance – that is, they pay more in tax per dollar of book income. What the paper does not reveal is whether the family owned firms generally engage in more tax avoidance, including conforming tax

avoidance.⁶² While the literature at present does not have a good measure of conforming tax avoidance, alternative measures that would test tax avoidance where tax is not measured relative to accounting earnings include a ratio of cash taxes paid to cash flows from operations, or possibly the marginal tax rate in order to obtain a broader perspective on the firms' activities (although the use of the marginal tax rate alone would not be sufficient).

Recent studies examine items beyond firm level characteristics and ownership. For example, when the tax department is considered a profit center, GAAP ETRs are lower but cash ETRs are not (Robinson et al., 2010). Armstrong et al. (2010) report similar results with respect to the GAAP ETR versus the Cash ETR when testing tax director compensation contracts. In addition, separate from firm level characteristics and incentives, the top executives appear to have a significant effect on tax avoidance using both GAAP and Cash ETRs (Dyreg et al., 2010).

Overall, the field cannot explain the variation in tax avoidance very well, although strides have been made in linking avoidance to firm characteristics, manager effects, ownership, governance, and incentive structures.⁶³ Some plausible explanations are that the theory on corporate tax avoidance in an agency framework is relatively young and is not well developed or sufficiently incorporated into the empirical literature at this time. In addition, empirical measures of tax avoidance that rely on financial statements have known limitations in part because they capture variation in tax avoidance as well as the choice between conforming and nonconforming tax avoidance.⁶⁴ In addition, reliable empirical measures of some of the interesting cross-sectional determinants, such as governance, are difficult to obtain because corporate governance is

⁶² Badertscher et al. (2010) encounter similar issues in their comparison of private equity backed firms and public firms.

⁶³ Gupta and Newberry (1997) explain 38 to 48 percent of GAAP ETR based on basic economic characteristics of the firm. Rego (2003) reports R²s of 10 to 14 percent in similar regressions.

⁶⁴ One way perhaps to improve our understanding may be to try to explain long-run rates from Dyreg et al. (2008) as these presumably remove random variability from the measure. Note also proxies based on tax return data or compliance statistics have their own set of limitations.

endogenous.⁶⁵ Finally, tax avoidance may be highly idiosyncratic and determined by a number of factors and interactions, not all of which can be measured.

3.4. *The consequences of tax avoidance*

Tax avoidance has a number of potential consequences. The consequences may be direct, i.e., taking a deduction for an otherwise non-deductible expense increases cash flow and investor wealth, or indirect, i.e., the increased deduction lowers the marginal benefit of the interest tax shield and may change the firm's capital structure decisions (e.g., Graham and Tucker, 2006). One potential consequence is that the firm may be identified by tax authorities and forced to pay additional taxes and perhaps interest and penalties, representing a decrease in cash flow and investor wealth.⁶⁶ Moreover if the firm avoids taxes through investing in tax advantaged assets (see Berger, 1993), implicit taxes could act to mitigate the effect of tax avoidance on shareholder wealth. For example, while the literature contains conflicting evidence on the role of tax incentives on the price of investment assets (see Goolsbee, 1998a; Hassett and Hubbard, 1998), it is not clear whether firms that are successful at tax avoidance sacrifice pre-tax cash flows or incur other non-tax costs, and if they do, to what extent.

Tax avoidance also has potential consequences for managers, shareholders, creditors, and the government. Consider the case of shareholders. If risk-neutral shareholders demand that managers take actions to maximize after-tax cash flows, then tax avoidance is a natural byproduct of managerial decision making if managers are provided the right incentives. If managers optimally avoid taxes (on average), and if investors form unbiased beliefs about the extent and payoff from tax avoidance, then no association should emerge between tax avoidance and firm value or stock returns. However, this assumes the right incentives are provided, the incentives work perfectly, and managers and shareholders understand all the risks and rewards of avoiding taxes.

⁶⁵ See Armstrong et al. (2010) for a discussion of corporate governance.

⁶⁶ See Crocker and Slemrod (2005) for research on the effects of increasing penalties.

Desai and Dharmapala (2009b) find that abnormal book-tax differences (their proxy for tax avoidance) have no average association with firm value measured by market-to-book. However, there is cross-sectional variation in the association; it depends on the level of institutional ownership. Firms with high institutional ownership have a stronger positive association between book-tax differences and market-to-book, which suggests that the value shareholders place on corporate tax avoidance depends on their ability to control the manager, consistent with governance differences explaining cross-sectional variation in the consequences of tax avoidance.

Hanlon and Slemrod (2009) analyze the market reaction to news about a firm's involvement in tax shelters. They find a negative, albeit relatively small, stock price reaction of -1.04 percent on the first press mention of the shelter.⁶⁷ Firms in more consumer-oriented fields have a more negative reaction and the reaction also depends on investor perceptions of the firm's avoidance level. Firms that appear less likely to avoid tax have less negative event returns which the authors interpret as an indication that the market is positively surprised.

Frischmann et al. (2008) examine the market reaction to events surrounding the passage of FIN 48. They argue that if the market expected tax costs to rise, there would be a negative reaction, and if the market expected disclosures to improve, there would be a positive reaction. They document very little in terms of reaction to the events surrounding passage of the rule and a small positive return for firms surrounding the first disclosures under the rule. An interesting test would be whether the stock price reaction to FIN 48 depends on the strength of corporate governance (under the theory in Desai and Dharmapala, 2006). One would expect that the response to the news of the rule enactment was negative (or less positive) for well-governed firms but positive for poorly governed firms.

⁶⁷ The results of this study must be interpreted in the correct light. The sample firms are those that were publicly accused of using a tax shelter, which means that these firms were caught. Thus, the reaction may be different for these firms than for firms with less extreme tax avoidance and/or tax avoidance that is not caught.

3.5. *Summary and suggestions for the future*

Why do some corporations avoid more tax than others? How do investors, creditors, and consumers perceive corporate tax avoidance behavior? What non-tax costs are borne by the shareholders of tax avoiding firms? These are interesting questions worthy of study.

Our overarching concerns are with the divergent proxies for tax avoidance and, more importantly, the strength of the inferences that can be made given the chosen proxies and the research question at hand. Further, it is difficult to validate measures of tax avoidance. For example, some have attempted to use the sample of known tax shelter firms to validate financial statement-based tax reporting proxies. However, engaging in a tax shelter is likely endogenous. Even the unrecognized tax benefits disclosed under FIN 48 is not the panacea because this account is also affected by financial reporting incentives.

There are many interesting avenues for future research. For example, careful thought should be given to the implications of Chen and Chu (2005), Crocker and Slemrod (2005), and Desai and Dharmapala's (2006) principal-agent-tax authority models and predictions. The theory from Desai and Dharmapala (2006) that rent extraction and tax avoidance require complementary technologies is an interesting angle and is underexplored. In addition, we look forward to future research that focuses on new methodology for measuring tax avoidance and perhaps methods by which to identify conforming tax avoidance and methods to identify firms that consistently pursue strategies toward the more aggressive end of the continuum. Another area where work could be done is a more serious examination of the effects of ownership structure. In addition, it may be interesting to consider the role of bondholders on tax avoidance (and vice versa).⁶⁸ However, the theories relating tax avoidance to ownership structure and bondholder-stockholder conflicts is less developed.

⁶⁸ Ayers et al. (2009) report that credit rating agencies are more cautious of firms with large book-tax differences and that the result is attributable to firms with a higher likelihood of earnings management and not to firms that are likely tax avoiders.

Moreover (although this statement is likely biased), the field could push the “manager effect” concept of Dyreng et al. (2010) to other areas. For example, what is the role of directors and their connections to other aggressive tax-reporting firms? An emerging literature in finance and other areas considers the role of social linkages of directors and executives across firms, which has been used to explain co-movement in investment. A similar test could be done about co-movement in tax avoidance activities. The following is an illustrative quote:

Hustlers are also striking at the top, going after chief financial officers and board members. When Merrill Lynch was promoting its now-famous installment sales shelter in the early 1990s, Merrill board member Robert Luciano, who was then chairman of Schering-Plough, took the idea to executives of AlliedSignal, on whose board he also sat. Schering used the scheme too. [(Novack and Saunders, December 1998, Forbes)]

Perhaps a more fundamental question is who makes the tax decisions for the firm? What is the role of the general counsel in tax decisions? How much control do the top executives have over the tax director, and how is their performance monitored? What are the cross-sectional determinants that guide the balance of power (e.g., decentralization versus centralized management)? These are interesting issues we hope to see resolved in the coming years.

In addition, it may be interesting to correlate tax avoidance associated with environmental or social responsibility constructs (or even divorce rates). Another possible area is whether tax avoidance affects mergers and acquisitions. Specifically, how do acquirers handle targets with prior uncertain tax positions that could lead to future tax liabilities? Do these “aggressive” positions affect acquisition price, that is, does the acquirer price tax risk? To what extent do firms purchase tax indemnity insurance to protect against tax risk and how is this insurance priced?⁶⁹ We look forward to future studies on these topics and others. An examination of these topics may allow the tax accounting field to push the boundaries of the traditional areas of tax research in accounting.

⁶⁹ See Wolfe (2003) and Logue (2006).

4. Taxes, book-tax tradeoffs, and real corporate decisions

In this section we review the literature on the effect of taxes on various corporate decisions. We focus on a few key areas in the interest of space. The effect of taxes on decision-making is important for several reasons, one of which is that governments use tax policy to provide incentives and disincentives for certain actions (e.g., investment) and thus the degree to which taxes actually impact corporate decisions determines whether such policies are effective. In addition, determining the effect of non-tax factors, such as financial accounting costs, and their tradeoff or interaction with taxes offers insights into why some tax policies may not affect behavior to the degree intended or may, at times, lead to unintended consequences. We review the literature in three main areas – investment, capital structure, and organizational form – by covering research from all disciplines, highlighting the accounting measurement issues, and incorporating an examination of the importance of financial accounting and capital market incentives. We briefly discuss the literature in several other areas where the literature is less developed. The effect of taxes and the tradeoff or interactive effect of taxes and financial accounting implications (or managerial accounting costs or agency costs) on real corporate decisions is an area where accounting researchers are contributing and should continue to focus.

4.1. Investment

Investment is the fundamental source of firm value and economic growth. Finance textbooks devote considerable attention to capital budgeting theory and techniques. Corporate taxes can play a role in the manager's investment decision because the amounts, timing, and even uncertainty of tax payments and deductions affect the calculation of a project's net present value and hence the decision to invest. In addition, tax incentives can potentially interact with financial reporting effects

in ways that affect investment decisions. We discuss research on capital investment, research and development spending, and investment location.⁷⁰

4.1.1. Theory of investment and taxes: a brief background

The fundamental decision rule for investment is simple: invest as long as the marginal benefits exceed the marginal costs. The typical approach to studying the link between investment and taxes is based on the neoclassical theory of investment. Early applications of this theory are based on a derivation of the user cost of capital in which the cost of investment is a function of the required returns to debt and equity and an adjustment for corporate taxes (Hall and Jorgensen, 1967). In this model, corporate taxes on profits increase the cost of investment, while allowances for depreciation and investment tax credits reduce it.

More recent attempts to understand neoclassical theory of investment are based on applications of q theory (Tobin, 1969). In accounting, q theory underlies recent research on financial reporting and investment decisions (e.g., Biddle and Hilary, 2006; McNichols and Stubben, 2008; Biddle et al., 2009; and Bushman et al., 2008). The q theory basically holds that a firm will invest as long as the value of the marginal investment to shareholders exceeds its cost, or alternatively, when the ratio of value to cost of the marginal investment – marginal q – exceeds 1. Investment theory is an important line of research in finance and economics and is summarized in Hassett and Hubbard (2002) and Hassett and Newmark (2008).⁷¹ The q theory approach to

⁷⁰ One could consider merger and acquisition (M&A) activity as well, which we discuss in a separate section below.

⁷¹ Measurement of q varies in the literature. As noted by Desai and Goolsbee (2004) the q in corporate finance is usually estimated by scaling the market value of assets by the book value of assets, while in public finance, q is estimated by scaling the market value of assets to the firm by an estimate of their replacement cost. See Erickson and Whited (2000), Hayashi (1982), Hassett and Hubbard (2002), Summers (1981), Fazzari et al. (1998), Kaplan and Zingales (2000), Hennessey and Whited (2007), Desai and Goolsbee (2004), and Cummins et al. (2006) for further discussions of the q literature.

understanding investment can be extended to include taxes and is often used as the framework for linking investment to tax incentives (Hall and Jorgensen, 1967; Summers, 1981).⁷²

4.1.2. *Taxes and investment: some evidence*

Traditionally, economists have investigated the effect of corporate taxes on investment using aggregate data, drawing inferences from time series changes in tax rates or tax regimes.⁷³ Using these methods, the literature has had little success documenting a link between tax incentives and investment. Hines (1998) states, “The apparent inability of tax incentives to stimulate aggregate investment spending is one of the major puzzles in the empirical investment literature.” Hassett and Hubbard (2002, p. 1316) conclude that, “the tendency for a number of aggregate variables to move together over the business cycle makes it difficult to isolate effects of individual fundamentals on investment using time series data.” The endemic problems plaguing aggregate time series analysis are first, a change in tax rates is likely endogenous, meaning in response to some macroeconomic factors that could also affect investment, and second, it is difficult to control for the effect of contemporaneous non-tax shocks on investment.⁷⁴

The lack of an observed correlation between aggregate investment and taxes over time implies that more powerful methods are needed to identify tax effects. As a result, the economics literature has incorporated more cross-sectional analyses that exploit variation in tax incentives

⁷² Such models can also be extended to incorporate investor level taxes, but require making assumptions about the price-setting investor(s) and the role of dividend taxes and dividend taxation on investment incentives. We ignore investor tax effects on investment here, but return to the link between investor taxes and financial asset prices in a later section.

⁷³ As a clarifying point, it is important to consider the tax rate used to investigate whether and to what extent investment varies with taxes. To study the question, economists generally use the “marginal effective tax rate,” which is based on tax codes and measures the wedge between the pre- and post-tax return on the marginal investment project after taking into account the return on the investment, inflation and the amount and timing of depreciation deductions and investment tax credit. This is very different from either the effective tax rate calculated in accounting or the marginal tax rate used in corporate finance. The effective tax rate (or GAAP ETR) is the ratio of the tax expense to pre-tax earnings reported in the firm’s accounting statements. The marginal tax rate (MTR) is the firm-specific present value of tax on an additional dollar of income. The computation of the MTR takes into account the carryover provisions of net operating losses (NOLs) and is discussed more fully below. See Edgerton (2009b) for a good discussion of issues with the METR and a recent attempt to adjust for effects of tax loss carrybacks and carryforwards in his analysis of investment responses to tax incentives.

⁷⁴ See Hassett and Hubbard (2002), Desai and Goolsbee (2004), and Hassett and Newmark (2008) for reviews of the literature on taxes and investment.

across firms, asset types, and locations to identify tax effects. While it is somewhat difficult to draw macroeconomic inferences about aggregate investment from these micro-level studies, recent empirical studies appear to have reached a consensus that the elasticity of investment with respect to the tax-adjusted user cost of capital ranges between -0.25 and -1 (Hassett and Hubbard, 2002; Hassett and Newmark, 2008).⁷⁵

The evidence on the response of investment to taxes using cross sectional analysis can be illustrated in the context of bonus depreciation provisions that were introduced to induce investment following September 11, 2001. The provisions provided for an immediate deduction of up to half of the cost of certain assets put in place during a specified time period. Although these provisions seem large, little evidence exists that the bonus depreciation provisions of the post-9/11 era increased aggregate investment (Desai and Goolsbee, 2004). However, as House and Shapiro (2008) note, bonus depreciation affects the after-tax cost of investments differently. The authors show using asset-level data that investment in assets for which the bonus incentives would provide the greatest benefit – qualifying assets with the longest lives when the acceleration of the deductions matters most – did increase in response to the incentives. This result is both a timing effect (investment was made earlier than it otherwise would have been) and a substitution effect (investment in less tax favored assets likely declined).⁷⁶ Whether there is a permanent aggregate effect on investment is not

⁷⁵ Increasing tax incentives to invest may have little impact on the quantity of new investment if supply is inelastic in which case increases in the price of capital goods offset the increased tax benefit (in other words spending may increase but part of the increased spending is for higher priced goods (implicit taxes) rather than more goods). A very detailed examination of investment responses in the form of R&D spending to tax incentives controlling for nontax incentives is Berger (1993). He finds that the credit induced \$1.74 of additional spending per dollar of revenue lost by the Treasury. Berger also documents a significant implicit tax cost from the credit. Evidence of implicit taxes is not easy to produce for capital assets. Goolsbee (1998a) concludes that capital goods prices do respond to changes in investment tax incentives. Hassett and Hubbard (1998) argue that U.S. firms are price-takers in a world market for capital and, hence, shifts in U.S. demand arising from tax incentives will have no impact on the prices they face. House and Shapiro (2008) and Desai and Goolsbee (2004) find no evidence that supply prices reacted to bonus depreciation incentives.

⁷⁶ See, however, Cohen and Cummins (2006) who find no effect of the incentives on investment quantities and Edgerton (2009c) who finds no evidence on changes in the relative prices of new and used construction machinery (used machinery did not qualify for the incentives). In addition, see Edgerton (2009b) for an examination of the policy's effectiveness in light of the presence of loss firms. In essence, he concludes that the incentives were 5 percent

answered by their study, however, they do document that investment decisions are sensitive to tax policy, a result that is difficult to show using aggregate investment data.⁷⁷ Additional evidence that exploits other cross-sectional variation, such as firm-level effects across countries or surrounding tax reforms is summarized in Hassett and Hubbard (2002) and Hassett and Newmark (2008).

Evidence on the link between investment and taxation can be interpreted within the framework of Slemrod (1992b) who summarizes firm responses to taxation into three categories: 1) the timing of economic transactions, which are likely the most responsive to tax incentives, 2) financial repackaging and accounting alterations, and 3) real decisions of firms and individuals. The evidence at the micro-level suggests that there was an increase in investment in the targeted type of assets. However, this increase could have come at the cost of lower investment in other types of assets, lower investment in the targeted assets in later periods, and could partially reflect mere changes in the accounting classification rather than real differences in purchases.

Although few studies in accounting test the effect of taxes on investment, and certainly not aggregate real investment, accounting research can contribute to this area. Empirical research in economics and finance increasingly relies on cross-sectional studies using financial statement data (see, e.g., Barnett and Sakellaris, 1998; Bond and Cummins, 2000; Erickson and Whited, 2000; Desai and Goolsbee, 2004; and Cummins et al., 2006). Measurement issues are important, and institutional knowledge of the financial accounting behind estimates of investment, measurement of q , and financial constraints becomes crucial.⁷⁸ In addition, any investment decision will affect pre-tax accounting earnings through depreciation or expensing. If financial reporting effects are important, the effect on accounting earnings likely provides incentives or disincentives for

less effective than they would have been if all firms were fully taxable (and declines in cash flows reduced effectiveness much more).

⁷⁷ See also Desai and Goolsbee (2004) for a summary of the literature and additional work on investment and tax policy.

⁷⁸ For example, Bushman et al. (2008) argue that the research on investment and financing constraints (e.g. Fazzari et al., 1988) is confounded because the measure of financing constraints, cash flows, also capture accruals that reflect investment in working capital.

investment that could have implications for interpretation of the results. In addition, different types of policy choices may or may not affect accounting earnings, perhaps through the income tax expense (e.g., the investment tax credit or accelerated/bonus depreciation). Edgerton (2009d) compares the effectiveness of tax policies that do and do not affect accounting profits and finds that policies that do not affect accounting profits (e.g., accelerated depreciation) are less effective in stimulating investment than those that do increase accounting profits (e.g., investment tax credits).

4.1.3. Investment in intangibles

Investment in intangible assets, e.g., through research and development programs, is both significant in magnitude and directly affected by tax policy and targeted incentives. Hassett and Newmark (2008) suggest that inquiry into the drivers of investment in intangible assets is ripe for exploration. A line of research in accounting beginning at least with Berger (1993) examines the effectiveness of tax incentives for R&D spending, and evidence suggests that spending on R&D is sensitive to the tax rate and credit incentives (see also Klassen et al., 2004; Gupta et al., 2006; Chen and Gupta, 2009).

Under certain conditions, financial reporting incentives have the potential to mitigate the response of investment to tax incentives. For example, in the accounting literature there is evidence that firms cut R&D spending to boost earnings (e.g., Bushee, 1998). In addition, a recent study by Brown and Krull (2008) intersects financial accounting and tax reporting incentives in the R&D investment decision.⁷⁹ Stock option exercises by R&D employees generate R&D tax credits that decrease income tax expense and increase earnings, helping managers meet their earnings target. The authors document that the tax credits from these option exercises reduce the amount by which firms decrease R&D spending in periods with strong incentives to manage earnings. This evidence

⁷⁹ In addition, many firms now have greater investments in other intangibles which are typically subject to different expensing rules and faster depreciating property (e.g., computer based technology) quite possibly making firms' investment responsiveness to targeted tax depreciation incentives weaker (Desai and Goolsbee, 2004).

suggests that tax incentives and the accounting for income taxes through the tax credit increase earnings and thus mitigate real earnings management through R&D, and that financial reporting incentives may mitigate the effectiveness of tax incentives on real investment.

Additional theory and evidence along these lines would be useful to the academic literature on investment decisions. The tax and book effects are at times conflicting and could confound interpretations unless both effects are considered simultaneously. Thus, an understanding of the relative importance of accounting choice and the value of accounting earnings is important for policymakers if accounting outcomes can mitigate the intended response of tax policies.⁸⁰ For example, in Neubig's (2006b) testimony before Congress, he discusses the importance of the accounting effects for tax policy, and argues that corporate executives prefer lower statutory rates over full expensing for capital investment in part because lower rates increase accounting earnings.

4.1.4. Investment location decisions

While the effect of tax policies on aggregate investment has been difficult to document, research considering the tax effects on investment location has been more successful. In addition, research in accounting has been more active in this area relative to research on investment levels discussed above. Contrary to the “Why did the chicken cross the road?” joke mentioned in Maydew (2001) (because taxes were lower—implying this was a question with an obvious answer) and even beyond his response about the interesting chickens (firms) being the ones that do not cross the road (or have to incur other costs to cross the road), broader issues about investment location and taxes include: 1) how sensitive the chickens (firms) are to taxes, 2) what happens to the economies on both sides of the road and to worldwide capital allocation because of the road-crossing chickens (e.g., is there tax evasion on the high tax side via income stripping to the low tax side?), and 3) how

⁸⁰ See also Robinson and Sansing (2008).

do or should policymakers respond? If countries desire to attract or retain investment then determining the effects of the tax system on investment location is an important issue.

The largest area of research is on foreign direct investment (FDI), that is, significant investment in foreign entities (generally defined as a 10 percent voting interest) by U.S. taxpayers and investment (similarly defined) in U.S. entities by foreign taxpayers.⁸¹ This research generally focuses on the allocation of capital in response to tax rate differences among alternative locations and on the income shifting activities to low tax jurisdictions. A smaller, but related and important area of research examines the issue of cross-border investment at the state level.⁸²

Evidence from this literature consistently shows that host country taxes matter and that on average the tax elasticity is negative, meaning that a decrease in host country tax rates (which increases the after-tax return on investment) leads to an increase in FDI in that jurisdiction.⁸³ Variation in this elasticity can be explained by industry, time, and country-level factors. For example, capital flows to tax havens from non-manufacturing firms appear to be more responsive to taxes than capital flows from manufacturers (see, e.g., Grubert and Mutti, 1991; and Hines and Rice, 1994).⁸⁴ Later studies show that capital has become more sensitive to tax rates over time (Altshuler et al., 2000), that the openness of the trade regime matters (Grubert and Mutti, 2000), and

⁸¹ The ownership threshold to be counted as FDI is defined by country, but the OECD recommends a threshold of 10%. The Bureau of Economic Analysis defines FDI as “Ownership or control, directly or indirectly, by one foreign person, or entity, of 10 percent or more of the voting securities of an incorporated U.S. business enterprise or an equivalent interest in an unincorporated U.S. business enterprise.” This contrasts with foreign portfolio investment (FPI), which covers cross-border investment in stocks and bonds for portfolio reasons. There is less research on FPI, but studying the tax effects on FPI is an interesting and fast-growing area.

⁸² See Klassen and Shackelford (1998) and Gupta and Mills (2002) for examples.

⁸³ See Hines (1997) and DeMooij and Ederveen (2003) for summaries. DeMooij and Ederveen provide a wide range of elasticities. See Hartman (1984, 1985) for early work and Slemrod (1990) for modifications.

⁸⁴ Grubert and Mutti (2000) use micro tax return data of more than 500 U.S. returns to construct an aggregated data set of average effective tax rates. They estimate an elasticity of roughly -3.0 when the country has an open trade regime.

that cross-border merger and acquisitions are not as sensitive to host country tax rates as other types of investment (Swenson, 2001).⁸⁵

Hines (1999) estimates a significant negative tax elasticity and concludes that high tax rates may generate a significant loss of FDI and may contribute to governments' "race to the bottom" in competition for investment and that high home taxation may lead firms to relocate their tax home. Hines also suggests that too much research focuses on the responsiveness of FDI to taxes and that more is needed on the role of tax policy in affecting the form that FDI takes, the possible importance of tax policy credibility and enforcement, and the relationship between tax and non-tax determinants of FDI.

Traditional investigations of the link between taxes and FDI ignore the accounting treatment of taxes on foreign profits. However, Shackelford et al. (2010) argue that U.S. firms are more likely to invest abroad if they value flexibility in their tax *and* financial reporting. The additional flexibility in accounting is provided through APB 23 which allows firms to not recognize the incremental U.S. income tax expense on foreign source earnings (see Appendix A for more details). By designating earnings as permanently reinvested under APB 23, firms avoid an accrual for U.S. tax expense and increase reported after-tax accounting earnings. Using this logic, Shackelford et al. essentially introduce non-tax financial reporting costs as a possible determinant of FDI. Consistent with this prediction, evidence from a recent survey of tax executives by Graham et al. (2010a) indicates that 48 percent of publicly traded respondents with foreign earnings state that the accounting effect from the deferral of income tax expense under APB 23 is an important factor in their decision to locate operations overseas.

⁸⁵ See also Wilson (1993), Kemsley (1998), and Single (1999) for accounting research on investment location decisions. Wilson (1993) and Single (1999) examine other costs such as governance, customer location, and institutions. These are reviewed in Shackelford and Shevlin (2001).

4.1.5. *The reinvestment or repatriation decision*

A manager also faces a decision about whether to reinvest the earnings on the firm's foreign direct investments or repatriate the funds to the domestic parent. Throughout the literature on the repatriation decision, there is some debate about the relevance of a home country repatriation tax. For example, Hartman (1985) demonstrates that if the repatriation and U.S. taxation of foreign earnings is inevitable and tax rates are constant (and these are crucial assumptions), then U.S. repatriation taxes do not affect the decision of mature firms to either reinvest funds abroad or repatriate the earnings.⁸⁶ Others argue that firms can avoid the repatriation tax and thus the tax is not a constraint on repatriating funds (Altshuler and Grubert, 2003). Further, some estimates suggest that little U.S. tax is collected on foreign earnings (Grubert and Mutti, 1995; Altshuler and Newlon, 1993; U.S. Treasury, 2007; U.S. Government Accountability Office, 2008; and Dyreng and Lindsey, 2010).

However, the assumptions for the irrelevance of repatriation taxes in Hartman (1985) are very specific and do not apply in many contexts (e.g., rates of return and tax rates are not generally constant over time). In addition, Desai and Hines (2004) estimate that the U.S. tax burden on foreign income is in the range of \$50 billion per year, which they argue is significant. Tests of firm actions in a cross-section where the repatriation tax varies (Desai et al., 2001) and tests using specific matched tax return data for the parent and subsidiaries (Altshuler and Newlon, 1993) provide evidence that repatriations are sensitive to changes in the repatriation tax price. Further, Foley et al. (2007) provide evidence that repatriation taxes can explain large cash balances.

Accounting concerns appear to play a role in the repatriation decision as well. Repatriation of earnings on investments in low-tax jurisdictions triggers a U.S. tax liability and an increase in the

⁸⁶ See Hartman (1985) and Scholes et al. (2009) for a model and discussion of a firm's decision to reinvest or repatriate earnings.

reported income tax expense if the earnings were previously designated as permanently reinvested. In their survey of tax executives, Graham et al. (2010a) report that 55 percent of the respondents state that the income tax expense effect on the accounting income statement is an important factor in their decision to repatriate or reinvest earnings.⁸⁷

4.1.6. *Corporate inversions to tax havens*

The investment location discussion is not complete without a mention of tax havens. The OECD (1998) defines a tax haven as a jurisdiction that imposes no or only nominal taxes itself and offers itself as a place to be used by non-residents to escape taxes in their country of residence. The most notable examples are Bermuda, the Cayman Islands, Ireland, and the Virgin Islands. There are 35 such havens, 27 are island nations. These countries hold less than 1 percent of the world's population but host 5.7 percent of the foreign employment and 8.4 of the foreign property, plant, and equipment of American firms (Hines, 2005). There are many interesting questions about tax havens that are beyond the scope of our paper.⁸⁸ What is relevant here is that tax havens exist (and, more broadly, that tax rates vary across the world), and this has implications for investment location, debt location, accounting earnings, tax revenues and, as a result, public policy.

In the late 1990s through 2001, a cluster of U.S. firms moved their tax homes outside of the U.S. in a transaction known as a corporate inversion. Most firms claimed the inversions were designed to save U.S. taxes on foreign-sourced earnings. Ingersoll-Rand expected to save \$40

⁸⁷ The American Jobs Creation Act of 2004 granted a one-time dividend received deduction of 85 percent on repatriated foreign earnings for a specified time period. Several studies examine the Act and companies' responses to the Act. In general the results suggest that financially constrained firms used the cash to increase investment, and the remaining firms returning the repatriated funds to shareholders through share repurchases. See Blouin and Krull (2009), Dharmapala et al. (2009), and Faulkender and Petersen (2009). See Brennan (2008) for conflicting results. Because of the way the tax act and following interpretations and notices from the IRS were written, however, the Act cannot really be used to evaluate policy effects of specific tax incentives to increase investment, although it can be used to test the response to a cash flow shock as the studies above do.

⁸⁸ For example, some questions include 1) How do the economies of tax havens fare?, 2) How much investment do they attract?, and 3) What happens to neighboring countries? See Hines (2005), Desai et al. (2005a and 2005b), Dharmapala and Hines (2006), Desai and Hines (2004), Hines and Rice (1994), Desai et al. (2008), and Slemrod and Wilson (2009). These papers generally deal with macroeconomic tax policy effects, an area almost exclusively dominated by economists and in the interest of space we do not conduct a detailed review here.

million a year, and Cooper Industries expected to save \$55 million a year in U.S. income taxes (Cloyd et al., 2003).⁸⁹ However, policy makers were not only concerned about the opportunities to avoid U.S. tax on foreign earnings, but about firms' ability to shift domestic income out of the U.S. to the haven location. After the proposed inversion of Stanley Works around the September 11, 2001 terrorist attacks and the anti-patriotism backlash toward the company following its announcement, the U.S. government put stringent rules in place to prevent further inversions.⁹⁰ An even more recent set of inversions has occurred from the U.K to Ireland. For example, Shire and about a dozen other companies in the FTSE 100 moved to Ireland in 2008, and most suspect the moves were in response to taxes (Voget, 2009).⁹¹

These tax-motivated restructurings have led to claims of reduced shareholder rights and potential degradation of corporate governance.⁹² However there is very little evidence to support such claims.⁹³ With hindsight, there are questions about how these companies have fared after inversion, that is, did the restructuring lead to significant non-tax costs and implicit taxes, and have these firms' lobbying costs increased to regain political favor? Seida and Wempe (2004) report that

⁸⁹ There were several studies of this activity in terms of market reaction upon inversion announcement. The results of these studies were generally mixed (see Cloyd et al., 2003; Desai and Hines, 2002; Seida and Wempe, 2003).

⁹⁰ For example, IRC sec. 7874 treats an expatriated entity that is 80 percent or more owned by the former shareholders of the domestic company as a US company for tax purposes. In addition, the "Stop Tax Haven Abuse Act" included a provision that treats foreign corporations managed and controlled in the U.S. as U.S. corporations for tax purposes (with an exception for CFCs).

⁹¹ Relocation of a company's tax home can also occur as a result of a cross-border merger. Huizinga and Voget (2009) find that when cross-border firms merge, the surviving parent company locates in the country that imposes lower international double taxation.

⁹² Hanlon and Slemrod (2009) report statements from the press in this regard. For example, CalPERS (California Public Employees' Retirement System) threatened to divest and block state purchases of stocks and bonds of U.S. companies that make use of foreign tax havens. The CalSTRS (California State Teachers' Retirement System) website (<http://www.calstrs.com/Newsroom.What'spercent20New/callforvote.aspx>) contains an article about institutional investors taking out a full page ad in *USA Today* calling for Ingersoll-Rand (which had moved its headquarters to Bermuda for tax reasons) to move back to the U.S. citing a "substantial loss of shareholder rights that goes with off-shore incorporation." Further, a *Tax Briefs* article from Levin and Weiser, LLC (March 3, 2003, p. 6) states that "CalPERS believes Bermuda incorporation makes it more difficult for Tyco shareholders to hold the company, its officers and directors legally accountable in the event of wrongdoing."

⁹³ One exception is Durney et al. (2009).

effective tax rates do decrease for these firms.⁹⁴ However, to our knowledge, we have no evidence about any other long-term effects.

The inversion experience is still very relevant for understanding what lies ahead. Desai (2009) introduces the concept of the “decentering of the global firm,” where he asserts that the relationship between firms and nation states has been changing and continues to change in such a way that eventually it is plausible that firms will no longer be associated with a particular country. In other words, there will not be “U.S. multinationals” or “foreign multinationals.” As financial accounting researchers study the effects of increased regulation from the Sarbanes-Oxley Act of 2002 (SOX) and the effects on U.S. listings, onerous and expensive tax rules may similarly ship “tax homes” abroad and cause firms to separate the location of the legal incorporation from the location of the executives, the listing location, and/or the main centers of operations. This type of activity may have several implications. Desai (2009) argues that tax policies and some investor regulations may have to be restructured because in many cases these are predicated on firms having a nationality. Most certainly, the effects on corporate tax receipts will be an issue if many firms restructure or start-up with their tax homes outside of the U.S.

4.1.7. Summary and thoughts for future research

Whether and to what extent taxation affects investment remains an important area of study. Although it is inherently difficult to document aggregate shifts in investment in response to tax law changes, more evidence has been found documenting cross-sectional responses in the timing, location, and type of investment.

One area of research ready for more work is the examination of how financial reporting and tax incentives jointly influence the investment decision and a consideration of how this tradeoff or interaction affects tax policy. There is already some evidence that suggests accounting quality

⁹⁴ See also Dyreng and Lindsey (2010).

affects investment decisions (e.g. McNichols and Stubben, 2008; Biddle et al., 2009), but these studies generally ignore tax considerations. Moreover, there is some indication from cross-country analysis that conformity in book and tax reporting distorts investment decisions (Cummins et al., 1994). Furthermore, tax incentives to invest may be muted depending on how the investment and the tax incentives affect the financial statements, suggesting that accounting treatment of the tax incentive may be important (e.g. Edgerton, 2009d).

Foreign investment also continues to be an important area of research across accounting, finance, and economics. Survey evidence in Graham et al. (2010a) suggests that the deferral of tax expense under APB23 is important when firms make foreign investment decisions. Archival evidence to support this finding would be useful; however, the research design would need to be careful and convincing that the tax and non-tax effects can be separated using archival data.

The definition and measurement of investment and investment opportunities using accounting information are also important issues. Research in finance and economics argues that correcting for measurement error in q is important. Such measures, especially in finance, often wind up using some accounting measure of asset cost in the denominator and thus are potentially confounded by known biases such as accounting conservatism as well as the accounting methods for mergers and acquisitions. Moreover, investment in tangible assets, the measure of investment in many studies, misses a lot of investment in the current economy, including advertising, research and development, and other types of intangibles.

Finally, depending on the current and future administrations' tax policy changes, corporate tax homes may be established outside of the U.S. consistent with the decentering concepts in Desai (2009). A number of firms relocated their tax headquarters to tax havens, but evidence on the long-run non-tax costs of undergoing inversions is limited.

4.2. *Capital structure*

A long-standing question in corporate finance is the extent to which the corporate tax deduction for interest creates a first-order incentive to finance investment with debt. Modern attempts to address the question trace their roots to Modigliani and Miller (1958) who show that in a world with no taxes, agency costs, bankruptcy costs, or information asymmetries, the choice between debt and equity does not affect firm value. This means is that if capital structure does affect firm value, it must be because debt financing affects tax burdens, agency problems, the likelihood of bankruptcy and the information environment.

Modigliani and Miller (1963) recognize that corporate interest deductions can create incentives for firms to use debt, but Miller (1977) argues that personal taxes on interest income increase pre-tax yields on debt to the point where the corporate tax advantage is completely offset. While Miller assumes all interest costs are fully deductible, there are limits on the deductibility of interest payments. DeAngelo and Masulis (1980) show that when firms can exhaust their interest tax shields, a firm-specific optimal capital structure exists. This basic framework for thinking about debt and taxes leads to a number of testable predictions. In the time series, debt usage ought to be increasing in corporate tax rates, but decreasing in the relative tax cost to investors. In the cross section, leverage ought to be higher for firms that have higher expected corporate tax rates, fewer non-debt tax shields, and expect to be profitable in the future.

Auerbach (2002) and Graham (2008) provide comprehensive surveys of the empirical evidence on taxes and capital structure choice. They conclude that capital structure decisions appear to respond to corporate tax incentives, but agreement is not universal, especially with regard to the extent to which the tax incentives matter. Graham notes that some academics (e.g., Myers et al., 1998) contend that, “tax incentives are of ‘third-order’ importance in the hierarchy of corporate decisions.” The apparent weakness of the evidence is generally explained by a combination of

considerations. For example, existing theories can lead to tests with limited power because they yield only qualitative predictions.⁹⁵ In addition, the corporate tax benefit of leverage is potentially offset by the investor-level tax disadvantages of debt, and these offsetting tax effects are difficult to disentangle. Finally, debt issues have long stated maturities and thus *expected future* marginal tax rates, while ignored in the literature, are important.

An understanding of the relation between debt and taxes must also confront tax rate measurement issues and financial reporting issues which are the focus of our remaining discussion on capital structure. Empirical attempts to understand capital structure decisions rely on accounting-based proxies for marginal tax benefits that contain known shortcomings. In addition, accounting rules, managerial discretion, and financial innovation affect the measurement of financial instruments and contracts for book and tax reporting purposes. The non-reporting of many items may cause important measurement error in estimates of firm leverage.

4.2.1. *Estimating the tax benefits of debt*

The tax benefits from incremental interest deductions depend on the firm's marginal tax rate, defined here as the present value of the corporate tax on an additional dollar of income or expense (Scholes et al., 2009). Firms with higher tax benefits from debt are expected to choose higher leverage ratios, all else constant. Early studies estimate the tax benefits using the existence of non-debt tax shields such as depreciation, investment tax credits, and net operating loss carryforwards (e.g., Bradley et al., 1984; MacKie-Mason, 1990; Dhaliwal et al., 1992). The idea, known as the substitution hypothesis, is that firms with substantial non-debt tax shields are less likely to finance with leverage. However, Bradley et al. (1984) find that leverage is positively associated with non-debt tax shields. This seemingly anomalous finding is due to the fact that firms

⁹⁵ Furthermore, there is considerable debate over the correct theoretical models of leverage decisions. The debate is largely focused on comparing the traditional trade-off model that grew from the work of Modigliani and Miller with the pecking order model that stemmed from the work of Myers (1984). See Frank and Goyal (2008) for a review and summary of this debate.

with high depreciation costs and investment tax credits likely have more assets in place and fewer growth options, and hence are more likely to finance with debt. MacKie-Mason (1990) and Dhaliwal et al. (1992) address some of the endogeneity issues by looking at incremental leverage choices and capturing the extent to which the firm has exhausted incremental tax benefits.⁹⁶

Another approach to derive estimates of tax status is to categorize firms based on their current year net operating losses (NOL) and income (for example, the dichotomous or trichotomous tax rates discussed in Shevlin, 1990 and elsewhere). This can be a reasonable first approximation (Graham, 1996b), but it ignores important dynamics of the tax code that treat income and loss asymmetrically. For example, this static measure would classify a firm that has both current losses and net operating losses as having a marginal tax rate of zero. But loss carryforward provisions allow the firm to retain some of the tax benefits into the future; the categorical variables cannot account for the effects of loss carryovers.

The most recent and most sophisticated estimates of marginal tax rates are derived from a simulation procedure that uses historical information about the firm's level and volatility of estimated taxable income to project a path of expected taxable income into the future (Shevlin, 1990; Graham, 1996a). Building in features of the tax code such as NOL provisions, investment tax credits, and the Alternative Minimum Tax (AMT), this approach calculates the present value of tax on an additional dollar of taxable income to estimate the marginal tax rate.⁹⁷ Most studies using the simulated tax rate find consistent evidence of a positive association between a firm's (pre-financing) marginal tax rate and the use of debt. The evidence also suggests that simulated marginal tax rates

⁹⁶ Also, Ayers et al. (2001) report evidence consistent with the substitution hypothesis with regard to owner-debt for taxable corporations and for non-owner debt across all types of organizational forms.

⁹⁷ Shevlin (1990) uses NOL dynamics in his simulation. Graham (1996a) extends Shevlin (1990) to incorporate the investment tax credit (ITC) and the AMT. Importantly, these simulated tax rates can be estimated for income before financing costs (that is, the marginal tax rate on the first dollar of debt, as in Graham et al., 1998) or after financing costs (the marginal tax rate on the next dollar of debt, as in Graham, 1996a).

outperform static estimates based on categorical variables or effective tax rates (Shevlin, 1990; Graham, 1996b; Plesko, 2003; Graham and Mills, 2008), however several caveats are in order.

First, estimating taxable income from the financial statements has known and probably unknown problems.⁹⁸ Shevlin's and Graham's simulations estimate taxable income as pre-tax book income less deferred tax expense grossed up by the statutory tax rate (i.e., pre-tax book income – [deferred tax expense/statutory tax rate]). Thus, any item that reduces taxable income but is not in book income and not already accounted for in the deferred tax expense will not be accounted for in estimated taxable income in the MTR estimation procedure. For example, prior to SFAS 123R, no expense related to stock options was recorded for financial accounting purposes and the difference between book and tax was not accounted for through deferred taxes, leading to overstated estimates of the marginal tax rate (Hanlon and Shevlin, 2002). Overstatement of the marginal tax rate potentially leads to the conclusion that firms do not use enough debt (e.g., Graham, 2000) and studies that recognize and adjust the estimate of marginal tax rates for known problems are better able to identify the effect, if any, of corporate taxes on leverage (e.g., Graham et al., 2004).⁹⁹

Additional sources of measurement problems include: 1) transactions that generate permanent book-tax differences, 2) research and development tax credits, and 3) tax rate differentials between domestic and foreign operations (see appendix A). The effects of these items could be large. For example, a significant portion of the income of multinational corporations is

⁹⁸ See Hanlon (2003).

⁹⁹ Unfortunately, the stock option deduction figures must be hand-collected for periods prior to SFAS 123R, which makes this adjustment costly on a large scale. However, the stock option deduction is less problematic under SFAS 123R. The amount of expense recognized for book purposes over the vesting period of the option will now create a book-tax difference that will be reflected in deferred tax benefit (for the future deduction related to the recognized expense; now it is a temporary difference). Thus, this portion of the deduction will be picked up by the typical simulation methodologies and will no longer need separate adjustment. However, it is also the case that there will likely be a difference in the book expense and the actual tax deduction in the future year because the book expense is an ex ante estimation of the future value of the option while the tax deduction is the actual difference between the stock price and the strike price on the date of exercise. This latter difference will essentially be accounted for as under the old rules. The extra tax deduction, if there is one, is not shown in book income or in the deferred tax expense and, thus, would not be incorporated into the conventional estimation of taxable income in the marginal tax rate computation.

sourced to foreign jurisdictions; thus, using the U.S. statutory tax rate in the MTR estimates may severely overstate the MTR the firm faces. In many cases, adjusting the simulated tax rate for these differences is currently impossible because of limited disclosure. Indeed, the MTR is estimated in the literature as a worldwide MTR, however, firms likely face jurisdiction specific MTRs based on local statutory tax rates and net operating losses in each jurisdiction.

Graham and Tucker (2006) address a potential source of measurement error: corporate tax shelters. They conjecture that sophisticated tax planning strategies (i.e., tax shelters) may reduce the true marginal tax rate but may not be captured by the simulated marginal tax rates if the tax shelter creates a permanent book-tax difference (a difference not accounted for in book income or deferred taxes, the two components used to estimate taxable income in the simulation procedure). Consistent with their prediction, Graham and Tucker find that firms accused of sheltering income from tax use less debt. In other words, tax shelter use is a non-debt tax shield that simulated rates may miss and could be a partial explanation for why firms appear underlevered in Graham (2000).¹⁰⁰

If the financial statements generate noisy measures of taxable income and true tax status, estimating the marginal tax rate using actual tax return data would seem to represent a substantial improvement. Using confidential tax return data, Graham and Mills (2008) find that the simulated tax rates using book estimates of taxable income appear superior to those based on taxable income reported on the U.S. tax return. One explanation is that for multinational firms, consolidated

¹⁰⁰ It is important to recognize the difference in this study and the option study noted above. Graham and Tucker use 44 firms that have received a notice of deficiency from the Internal Revenue Service. They examine whether firms accused of using tax shelters use less debt than a matched sample, but do not adjust the marginal tax rate for any effects of the tax shelter. They cannot really adjust the marginal tax rate for the effects of the shelter because for most firms in their sample they would not have the detailed data for which to make the adjustment and to the extent the shelters generate temporary differences no adjustment would be necessary. In contrast, note that Graham et al. (2004) in their study of the tax benefits of stock options directly adjust the MTR because during the time of their study the entire effect of the stock option benefits was not in book income nor in deferred taxes (the two components used in the MTR estimation) and the amount of the needed adjustment could be estimated. It is important not to adjust the MTR for items or transactions that affect book and tax differently but where the difference is captured by deferred tax expense because these items are already included in the MTR estimation procedure.

financial accounting reports give a better view of worldwide tax status relative to U.S. tax return data that excludes the income of foreign subsidiaries.¹⁰¹

Finally, the accuracy of simulated tax rates is subject to particular assumptions about the time series properties of taxable income. Shevlin (1990) and Graham (1996b) assume that changes in taxable income follow a random walk. This approach has recently been criticized in Blouin et al. (2010) as leading to biased estimates of the marginal tax rate. Blouin et al. argue that the bias in the rates explains Graham's (2000) conclusion that firms are underlevered, that a non-parametric approach is more appropriate for forecasting taxable income, and that once the estimates are done in this manner, firms are not nearly as underlevered as Graham (2000) suggests. In response, Graham and Kim (2010) argue that the non-parametric approach in Blouin et al. (2010) is problematic and contend that an AR(1) model provides the best estimates of simulated dynamic marginal tax rates. We look forward to a resolution of this matter and recognize these studies in their attempt to rethink and improve upon the marginal tax rate estimation process.¹⁰²

To summarize, many accounting and corporate finance studies rely on marginal tax rate estimates derived directly from accounting information in order to test and empirically document the effects of taxes on debt use. The development of the marginal tax rate estimation procedure (Shevlin, 1990 and Graham, 1996a) and its application to the corporate capital structure literature are clearly significant contributions. However, if the marginal tax rate estimates are incorrect and the errors alter inferences from prior research, then improvements to the measure or developments

¹⁰¹ Thus, even though the rate applied in the MTR estimation is likely erroneous when there is income in foreign jurisdictions (because the rate used is the U.S. statutory rate), using financial statement data includes the income from foreign jurisdictions whereas it is completely missing when looking at a U.S. tax return for the firm.

¹⁰² An additional point about the MTR estimation is that investment and financing decisions involve cash flows over multiple periods, but marginal tax rates estimate the tax benefit of an interest deduction taken today. Understanding how these rates evolve over time and the effect of future expected marginal tax rates on leverage are important issues.

of alternative proxies of tax status will be valuable in furthering our understanding of tax effects on corporate capital structure.^{103,104}

4.2.2. *Measuring leverage*

Nearly all firm-level analyses of capital structure decisions rely on the financial statement representation of the firm's financing sources. Leverage is often measured as long-term debt divided by book or market value of assets. However, accounting rules, and the managers' application of those rules, can lead to significant problems in measuring true financing structure that are largely ignored in empirical research. For example, the balance sheet ignores many economic liabilities, including operating lease commitments, debt of unconsolidated equity method investments, and until recently, pension obligations.¹⁰⁵

The classic framework that considers the tradeoff of tax and non-tax costs on the choice of financing breaks down when there is flexibility in how financial claims are classified for tax and non-tax purposes (Auerbach, 2002). Financial instruments can be designed to give corporations the best of all worlds for tax, accounting, and regulatory purposes. For example, structured financing activities can provide interest deductions for tax purposes, but not show up at all on the financial

¹⁰³ An alternative way to estimate taxable income might be to gross-up the current tax expense by the statutory tax rate. Which method would have more error is unknown, but using current tax expense would incorporate the effect of permanent differences and reflect that tax credits reduce the marginal tax rate. However, it would create other measurement problems because that method treats credits as book-tax differences and the use of current tax expense may include more of the tax contingency reserve than the use of deferred tax expense.

¹⁰⁴ One approach is to identify a set of firms whose marginal tax rate is known to be zero. A straightforward extension of Modigliani and Miller suggests that taxable corporations ought to hold more debt than their tax-exempt counterparts (see also Scholes and Wolfson, 1989), all else constant. Guenther (1992) and Gentry (1994) find that non-taxable organizational forms such as partnerships have lower leverage and changes in leverage. However, Omer and Terando (1999) present evidence consistent with some of that difference being attributable to risk and liability differences and not taxes. Barclay et al. (2010) find no difference in leverage between taxable real estate firms and REITs, suggesting that variation in corporate tax status does not affect the debt decision in that setting. See Barclay et al. (2010) and Ayers et al. (2001) for a discussion of the predictions regarding debt and taxes across organizational forms. A key concern in using organizational form as an instrument for tax benefits of debt is the endogeneity of the organizational form decision. Firms also choose organization form based on non-tax reasons. If those factors correlate with the variable of interest it becomes difficult to draw strong conclusions from the data. However, efforts to modeling this decision are likely to encounter substantial difficulties because the characteristics of the firm have likely changed since the choice was first made, and switching costs may prevent many firms from adopting an alternative structure. One way around the problem is to consider leverage trends for firms that switch forms.

¹⁰⁵ See Graham et al. (1998) who consider the effect of operating leases and Shivdasani and Stefanescu (2010) who consider the effect of off balance sheet pensions obligations.

statements. Mills and Newberry (2005) exploit confidential tax return data to show that firms often report higher interest expense on their tax return than in their financial statements. This difference is at least partially explained by the use of nonconforming financing methods such as R&D limited partnerships, synthetic leases, and securitizations.¹⁰⁶ Instruments like trust preferred securities were also used for a time because the firm could claim the tax deduction for interest, but report the liability between the debt and equity sections on the balance sheet. Engel et al. (1999) document a number of cases where firms incurred non-trivial issuance costs to retire debt by issuing trust preferred stock. In effect, many firms were willing to incur real costs merely to lower their reported leverage while keeping the tax treatment, and the underlying financial risk, intact.

Another measurement issue arises when firms can allocate debt within the firm to exploit differences in tax treatment across jurisdictions and activities; however, this allocation has no effect on the consolidated worldwide balance sheet. The evidence is consistent with U.S. multinationals allocating debt based on jurisdiction-specific tax-loss carryforwards and foreign tax credit considerations (Newberry and Dhaliwal, 2000). Similarly, Huizinga et al. (2008) provide evidence on tax-motivated debt shifting for European firms. There is also aggregate evidence that firms allocate debt across taxable and non-taxable activities within Real Estate Investment Trusts (REITs), a structure whose tax provisions allow the non-taxable parent to carry out certain activities within a taxable subsidiary (Matheson, 2008).

It is well known to those who teach financial reporting that accounting rules lead to misstatements of the firm's liabilities. One potential problem for research is that the link between debt and the marginal tax rate could in theory be driven by the choice between on and off-balance sheet financing rather than variation in real leverage. Because firms vary in their use of off-balance sheet financing for reasons tied to financial reporting incentives, understanding to what extent the

¹⁰⁶ See Altamuro (2006) and Zechman (2009) for further detail and evidence on incentives to use synthetic leases.

off-balance sheet financing affects the analysis of taxes on the choice between debt and equity is an open question.

4.2.3. *Summary and thoughts for the future*

The extent to which corporate taxes are important in the leverage decision and the extent to which firms leave tax benefits “on the table” are still open questions in which measurement and reporting issues are likely to play an important role.¹⁰⁷ Marginal tax rate estimates are affected by a variety of measurement issues. Moreover, accounting rules ignore many liabilities in the measurement of reported leverage. Innovation in financial instruments and the ability to structure financing within the firm creates valuable opportunities for tax arbitrage with limited nontax consequences. Finally, the recent credit crisis has reopened the classic debate about the tax code providing *too many* incentives for debt as well as our ability to measure this debt using current accounting standards. Research that addresses the issues above is clearly warranted.

4.2.4. *Payout policy*

Taxes, specifically investor level taxes, may also affect firm payout policy decisions. This important question has been widely researched, and recent reviews provide in-depth synthesis and analysis (e.g., Allen and Michaely, 2003; Poterba, 2004; Graham, 2008; Kalay and Lemmon, 2008; and DeAngelo et al., 2008). The basic conclusion from the literature is that investor taxes do not appear to be a first order determinant of firm payout policies. Even recent evidence from the substantial dividend tax cut of 2003 is mixed. To our knowledge, there is no tradeoff in terms of financial accounting since evidence suggests that repurchases offer not only lower individual level taxes but also more financial accounting benefits when managers fixate on increasing earnings per share (see Bens et al., 2003; and Graham et al., 2005).

¹⁰⁷ Investor level taxes are also expected to play a critical role. See Dhaliwal et al. (2006), Graham (1999), Green and Hollifield (2003), Graham (2008), and our discussion of investor level taxes and asset pricing in a later section for more detail.

4.3. *Organizational form*

In this section, we focus on the role of taxes on the organizational form choice of start-up and existing businesses, as well as the interaction between organizational form, taxes, and the sale of the firm. Organizational form is a fundamental issue for businesses and is discussed at length in Scholes et al. (2009).¹⁰⁸

4.3.1. *The choice of organizational form*

The entrepreneur's choice of legal structure determines how it is taxed and thus, taxation is a factor in the choice of organizational form. The available alternatives and the tax and non-tax considerations are well summarized in accounting, legal, and entrepreneurial finance texts.¹⁰⁹ Some forms are not separately taxed; business income flows through to the owners and is taxed in the same period at the investor level. These flow-through options include sole proprietorships, partnerships, limited liability companies, and S corporations. Most publicly traded entities are C corporations organized under subchapter C of the Internal Revenue Code.¹¹⁰ In a C corporation, a tax is first assessed on the taxable income of the corporation and distributions to shareholders are then taxed at the shareholder level. This creates the oft-cited "double-tax" penalty of the corporate form. However, not *all* distributions are taxed as dividends at the individual level.¹¹¹

¹⁰⁸ Throughout, we are referring to organizational form for tax purposes. Organizational form can represent a broader set of decisions such as whether to operate in a single industry or many industries, to have centralized or decentralized management, to operate in a single jurisdiction or many jurisdictions, and so on. The non-profit is an important organizational form in many industries such as education and health care. Although we focus our attention on alternative for-profit structures, we acknowledge a number of recent accounting studies looking at the role of taxes and agency problems in the modern non-profit, such as Yetman (2002), Yetman (2003), and Sansing and Yetman (2006).

¹⁰⁹ Scholes et al. (2009) provides a thorough discussion and a basic mathematical framework for thinking about analyzing the effect of taxes on returns to operating in corporate versus flow-through.

¹¹⁰ Exceptions include publicly traded partnerships and Real Estate Investment Trusts (REITs). Currently, a partnership can be publicly traded only if its income is passive in nature. See IRC §7704. A REIT must distribute 90 percent of its income to shareholders. Technically, the 90 percent threshold is required to maintain REIT status. REIT status allows the REIT to deduct dividends paid from taxable income. Dividends are treated as deductions, so the firm must actually distribute 100 percent of taxable income to avoid corporate tax. Under recent IRS rulings, stock dividends count toward the 90 percent threshold as long as the investor is taxed. Finally, we note that non-C corporations can elect to be taxed as corporations under "check-the-box" regulations. See IRC § 301.7701-3 for more details.

¹¹¹ Distributions in excess of the earnings and profits of the corporation are taxed as capital gains or not at all (i.e., return of basis), repurchases and liquidating distributions are treated as capital gains, and many shareholders are tax

Much of the research concludes that taxes affect organizational form choice, but the evidence also suggests that non-tax factors often dominate the decision (Guenther, 1992; Ayers et al., 1996; MacKie-Mason and Gordon, 1997).¹¹² Empirical tests often exploit time-series changes in relative tax rates between corporations and individuals. For example, after the enactment of the Tax Reform Act of 1986, the corporate form became much more tax-disadvantaged relative to forms that imposed a tax only at the individual level, providing incentives to undertake investment through non-corporate form. Scholes and Wolfson (1991) document an explosion of S corporation elections surrounding the end of 1986. Seventy-five thousand elections were made throughout all of 1985, while 225,000 were made in the five weeks surrounding year-end 1986.¹¹³

Because the organizational form choice made at start-up can be revisited throughout the firm's life, firms that switch form present an alternative method to identify the role of taxes. Aggregate level data suggests that important non-tax reasons exist for using corporations and that the cost of switching forms is non-trivial (Gordon and MacKie-Mason, 1994; MacKie-Mason and Gordon, 1997; Goolsbee, 1998b).¹¹⁴ Indeed, most public firms simply cannot switch out of C-corporation form and still remain widely held. However, real estate firms can and do change form. The conversion of a taxable real estate corporation to a REIT requires the firm to distribute

exempt. See the Internal Revenue Code and the regulations there under (and applicable case law) for more detail. For the basics, see IRC sections 301-302 and section 331.

¹¹² Ownership structure is also important when considering the importance of taxes on organizational form choice. For example, private equity firms are organized as partnerships and not corporations, at least in part, because of the tax rules (Bank and Cheffins, 2008). The partnership's tax status currently affords the carried interest portion of the partner's compensation to be taxed as a capital gain rather than ordinary income. For a brief summary of tax and governance effects on ownership structure and patterns more generally, see Desai and Dharmapala (2008).

¹¹³ See Plesko (1995) for cross-sectional tests and Omer et al. (2000) for evidence on the choice in the natural resource industry (specifically other tax provisions - built in gains are especially prevalent in that industry - that offset the rate changes) during this time period. See also Ayers et al. (1996) for evidence on small business organizational form choices.

¹¹⁴ MacKie-Mason and Gordon (1997) find that reducing the tax burden on the non-corporate income leads taxpayers to shift assets out of corporate form, but the sensitivity of organizational form changes to the tax disadvantage of the corporate form is economically small. Goolsbee (1998b) estimates the deadweight loss of the corporate income tax to be around 5 percent based on data from 1900 through 1939. Goolsbee's data begin nine years before the first corporate income tax and 13 years before the first individual tax, which means that non-tax factors were the only driver of organizational form decisions for a large fraction of the sample. Gordon and MacKie-Mason (1994) focus on estimating the non-tax benefits of the corporate form by estimating the incremental tax cost of the corporate form to shareholders. Based on estimates using aggregate data, non-tax benefits average 3.8 percent of equity value.

accumulated earnings and profits (the tax reporting analog of retained earnings) as a taxable dividend. Damodaran et al. (1997) document that tax savings are important in switching to REIT form; however, for financially distressed firms, the ability to retain flexibility in investment and payout policies dominates the decision.¹¹⁵

Another dimension is how organizational form interacts with decisions to expand or finance certain activities. For example, Petroni and Shackelford (1995) provide evidence consistent with property-casualty insurers structuring their cross-state expansion, through licensing or subsidiary, in a manner to mitigate both state taxes and regulatory costs. Shevlin (1987) and Beatty et al. (1995) examine how firms finance research and development activities – through a separate partnership jointly owned with another party or in house financed by debt or equity – and consider taxes, accounting effects, and agency costs as part of the decision making process. Examining the organizational form decision for banks, Hodder et al. (2002) extend of the tradeoff decision to include financial accounting considerations, specifically the effect of accounting for income taxes, on the organizational form decision. Banks with deferred tax assets appear less likely to convert away from C-corporation status (to flow-through S-corporation status) because the write-off of deferred tax assets potentially exposes the banks to regulatory capital issues. The authors also examine how banks that change organizational form undertake real actions, such as selling assets and strategically setting dividends, to offset non-tax costs. Detailed studies such as this not only contribute to the academic literature, but could be useful in policy debates. Knowing how

¹¹⁵ A 2001 IRS ruling opened the door for taxable industrial firms to effectively reorganize their real estate assets as REITs via a REIT spin-off. Goolsbee and Maydew (2002) estimate the tax savings to firms with large real estate holdings to be non-trivial. The upside of the transaction is that shareholders can own the real estate through a tax-advantaged entity without triggering accumulated gains. However, for any taxable real estate firm, stand-alone or subsidiary, the switch to REIT status is not free. There may be a one-time dividend depending on accumulated earnings and profits (which determines the amount of payout that constitutes a dividend), the interest on debt financing is not tax deductible, and limitations are placed on real estate sales. Matheson (2008) reports that the use of taxable REIT subsidiaries grew four-fold to \$68 billion in 2004 following the REIT Modernization Act of 1999 which permits many REITs to earn so-called "tainted" income within a Taxable REIT Subsidiary (TRS) without jeopardizing their REIT status.

companies respond to tax law changes and which factors make them respond differently in a cross-section, e.g., financial accounting concerns, is important for estimating the economic effects of a tax law change (and in documenting how important financial accounting earnings are to firms).¹¹⁶

4.3.2. *Summary and thoughts for future research*

There has been a sizable body of research on the effects of taxation on choice of organizational form and how that organizational form decision is related to other decisions of the firm such financing and payout policies. Taxation appears to be an important factor, but limited liability, transactions costs, and operational flexibility are also important and reflect fundamental economic tradeoffs discussed by Scholes and Wolfson. Extending the literature to consider agency costs, the accounting for income tax effects, and the real adjustments firms make to mitigate tax and non-tax costs ex post have been among the recent contributions.

A number of interesting organizational form issues remain unanswered. For example, whether the tax system helps or impedes firms that must adapt their organizational form to compete with new firms is an open question. An interesting empirical observation is that many large, public corporations have ownership interests in flow-through entities. What are the costs and benefits of this organizational form choice?

In addition, there is a growing literature in finance, economics, and accounting that seeks to understand the causes and consequences of entrepreneurial activity, the structure of financial contracting between entrepreneurs and capital providers, the design of the monitoring and control system in new ventures, and the exit decision.¹¹⁷ Taxes on operating income and upon exit of the

¹¹⁶ For excellent discussions of the importance of the accounting for income tax effects with respect to tax policy choices see Neubig (2006a,b).

¹¹⁷ See, for example, Cumming (2008), Hellman (2006), Hellman and Puri (2002), Kaplan et al. (2009), Kaplan and Strömberg (2004), and Maksimovic and Phillips (2008). In addition, a recent stream of literature in accounting focuses on new venture activity and the reporting systems of the firm (Davila and Foster, 2005; Allee and Yohn, 2009; Cassar, 2009). In the law literature, see Bankman (1994) and Bankman and Gilson (1999).

business are one factor to consider in the decision to undertake entrepreneurial activity.¹¹⁸ More research on the effect of taxes in the start-up and venture capital-backed firm would be useful, especially given the magnitude of this activity in the economy. For example, why are so many start-ups organized as C-corporations? How do taxes affect the structure of compensation contracts and financing policies in venture capital-funded firms? Does the monitoring provided by tax authorities interact with other control mechanisms in the venture capital market (e.g. Desai et al., 2007)?

Finally, as the U.S. considers various tax reform proposals, one possible scenario includes an increase in individual level tax rates and a decrease in corporate tax rates. Under such a scenario the tax incentives to be a C-corporation will increase and the incentives to be a flow-through will decrease. To what extent will this affect organizational form choice? Will the changes have a measurable effect on the activities of start-ups? We look forward to future research on these topics should the U.S. adopt such a policy.

4.4. *Taxes and other decisions: transfer pricing, mergers and acquisition, compensation, and trading*

There are many other manager or corporate decisions that interact with taxes, financial reporting, or other non-tax costs. In the interest of space, we briefly highlight selected issues in the areas of transfer pricing, mergers and acquisitions, compensation, and trading by insiders. The research in each of these areas is more limited relative to the decisions discussed above which presents opportunities, but perhaps more challenges as well.

¹¹⁸ Gentry and Hubbard (2004) argue that asymmetry in tax treatment of gains and losses and progressivity of tax rates causes even risk-neutral investors to demand higher returns to invest in assets with riskier returns. Thus, taxes affect aggregate risk-taking/entrepreneurial activity. (Graham and Smith, 2000, discuss the benefits of hedging in this scenario.). Gilson and Schizer (2003), who argue that taxes have a substantial effect on the use of convertible preferred equity securities by VC investors. Cullen and Gordon (2007) show that taxes can affect entrepreneurial activity by changing the trade-off between business and wage income, by changing the effects of asymmetry in the tax code (through progressive rates and organizational form), and by risk sharing with the government. See also Poterba (1989) and Guenther and Willenborg (1999).

4.4.1. *Transfer pricing*

Transfer pricing is the pricing of goods and services transferred between two or more units of the same company. There are a myriad of issues involved including source of income and deductions for tax purposes, division performance measurement within the firm, and customs. In 2001, 40 percent of U.S. international trade and 20 percent of world trade was intrafirm trade making the economic significance of transfer prices substantial (Tang, 2002).

Tax issues arise when transfers are between units located in different jurisdictions – sales between a unit in a low tax jurisdiction and one in a high tax jurisdiction (whether state or country). Beyond the pricing of traditional inventory items between divisions, transactions include the recent tax saving strategies where one company establishes a foreign subsidiary or entity (partnership or corporation) in a low tax jurisdiction to own an intangible asset such as a patent or trademark. The other divisions of the entity, usually in more highly taxed jurisdictions, pay a fee for the use of the patent or trademark.¹¹⁹

There is a relatively large literature on transfer pricing including studies of the effect of tax rates and regulation on production and pricing decisions, investment incentives, allocation distortions, and distributional effects. Most of these studies document that tax rates are a significant factor in the transfer price established (Capithorne, 1971; Horst, 1971; Samuelson, 1982; Halperin and Srinidhi, 1987; Harris, 1993; Jacob, 1996; Harris and Sansing, 1998; Sansing, 1999; Smith, 2002; Bartelsman and Beetsma, 2003; Clausing, 2003; and others). Baldenius et al. (2004) contend that a central issue for firms is a tradeoff of the tax considerations of the entire company with the internal divisional performance measures.¹²⁰ Possible alternatives for dealing with the issue are to compensate division managers on firm-wide performance, use separate prices for tax purposes and

¹¹⁹ Transfer pricing can apply to rent of property between divisions as well.

¹²⁰ Arguably transfer pricing is not a “real” decision but merely a relabeling to internally price a real intracompany transaction. However, the pricing decision potentially affects performance measurement within the company and is an important decision given the tax consequences.

internal purposes, or implement some adjustment procedure for internal evaluation and control purposes. Baldenius et al. derive solutions for the optimal transfer price under different scenarios for a multinational firm.¹²¹

Chan et al. (2006) extend the examination to relate firm organization, agency costs, and tax compliance. Chan et al. study the effect of management centralization on tax compliance for foreign owned subsidiaries in China. The results suggest that managers with autonomy over transfer prices (and who are evaluated by division performance) have fewer tax authority audit adjustments to transfer prices than managers where the transfer price is set by the parent company. The authors reason that the managers act in their self-interest, consistent with agency theory when given the autonomy to do so resulting in greater tax compliance (i.e., less tax-motivated transfer pricing).

Transfer pricing issues have led to some of the largest tax settlements in U.S. history. Data obtained via survey or some other source in the future could provide insights on many outstanding questions. For example, what are the cross-sectional determinants of the various transfer pricing arrangements and how the transfer pricing issues have changed, if at all, following the introduction of the advanced pricing agreements with the IRS where firms and the IRS can agree to transfer prices and avoid dispute. How do firms balance divisional performance measurement and company-wide tax objectives? In addition, how does the ability to set (tax motivated) transfer prices affect firms' real investment, investment location, and repatriation decisions, if at all?

¹²¹ Tang (2002) uses survey and case study evidence and concludes that in his sample, there are generally few conflicts between tax and control objectives because many companies use some adjustment mechanism to minimize the conflicts between the two objectives. Baldenius et al. (2004) acknowledge this and show in their models that when the product is sold to external parties and market prices are used to establish the arm's length price for tax purposes, internal transfers should be subjected to intracompany discounts that increase with the tax rate differential between the divisions. Most managerial accounting textbooks say balancing the two objectives is an issue but due to the paucity of evidence stop there. As the IRC increases collection efforts and focuses on transfer pricing the balancing act may become more delicate.

4.4.2. *Mergers and acquisitions*

Taxes are potentially important in merger and acquisition activity because 1) a tax can be generated on the transaction, 2) tax attributes, such as net operating losses, can be acquired and used to offset the acquiring firms' tax liabilities (subject to limits e.g., IRC Section 382), 3) there can be new tax planning opportunities post-acquisition, and 4) the target's tax risk (e.g. the potential tax liability from prior aggressive tax avoidance) may affect deal negotiations. There may also be financial reporting interactions, for example, when allocating purchase price to the acquired assets.

The empirical literature on mergers and acquisitions is well established and covers an array of topics including the pricing of acquisitions, the role of deal competition, information asymmetry, and agency problems in the negotiation process, and the effect of industry shocks and regulation on merger activity. We refer the reader to a number of comprehensive surveys of the literature including Jensen and Ruback (1983), Jarrell et al. (1988), Betton et al. (2008) to provide a balanced background to those interested in this area. The most successful advances on the link between taxes and mergers and acquisition will find their motivation and contribution to the broader literature on mergers and acquisitions. Our coverage is largely focused on understanding the role of taxes at the transaction level.¹²²

Evidence on the valuation of NOLs in M&A activity is largely mixed. Auerbach and Reishus (1988), Hayn (1989), and Erickson (1998) document little evidence that NOL benefits matter. Much of the evidence is "older", but perhaps the growing number of loss firms could provide sufficient power to detect the existence or absence of such effects. Because the valuation of a target's tax assets is idiosyncratic, a useful approach is to model the acquirer-target choice in a world where there are alternative potential bidders that have different valuations of target's tax

¹²² Research on aggregate merger activity is centered on the role of market timing (e.g., Rhodes-Kropf et al., 2005) and industry shocks (e.g., Harford, 2005). With the exception of a work by Ayers et al. (2000) who find that the effect of goodwill tax deductions did not affect the level of M&A activity, although it did affect the prices in applicable transactions.

assets (e.g., by estimating pseudo-mergers as in Auerbach and Reishus, 1988). Indeed, anecdotally, it seems some firms are better at making acquisitions to obtain tax benefits. For example, when the IRS unexpectedly lifted some of the loss limitation rules for financial institutions during the recent financial crisis there was an increase in competition for and valuation of targets with NOLs.¹²³

There is also some evidence that acquisitions create synergies by increasing tax planning opportunities. Huizinga and Voget (2009) find that when two firms from different countries merge, the new parent's tax home is more likely to be in the country with the lower total tax burden. In addition, Erickson and Wang (2007) predict that organizational form matters and estimate that S-corporation shareholders can sell for higher prices because the sale can be structured to increase future tax deductions for the buyer.¹²⁴ Huizinga and Voget (2009) notwithstanding, much of the literature on deal structuring is based on domestic acquisitions. An open question is how taxes affect acquisitions across borders. Do some countries provide more favorable tax treatment of a corporate sale than others? Does this explain patterns in cross-border merger activity and foreign investment?

The evidence on shareholder taxation and merger pricing is mixed.¹²⁵ Erickson (1998) finds no evidence that target shareholder tax liabilities affect acquisition price, which he attributes to

¹²³ See Crowell Moring Financial Services Alert dated October 6, 2008 "Tax Notice Drives Wachovia Takeover Turmoil" about the IRS changing the loss limitation rules for banks and the immediate entrance of Wells Fargo as the acquirer of Wachovia at a much higher price than the agreed price for the same acquisition by Citigroup.

¹²⁴ An important implication of this analysis is that the owners consider the method and timing of exiting the investment when choosing an organizational form.

¹²⁵ The pricing impact is almost always measured by looking at premiums. Yet that requires an implicit assumption about the role of taxes on stock prices in the absence of a merger. More generally, we need a more careful treatment of the relation between equilibrium pricing of investor taxes in securities markets and the price demanded by a marginal seller in an acquisition. An acquisition also converts the entire tax liability of the seller to capital gains. Can we learn anything about the pricing of dividends (discussed in a later section) from mergers and acquisitions? An important assumption with valuation predictions under new view is that the cash flows to an investment are treated entirely as dividends. Yet the merger converts those dividends to capital gains? Does an acquisition change any of the fundamental predictions? The notion of equilibrium is somewhat different in this context because the price-setting shareholder is the investor whose reservation price is met to obtain control of the target. When institutions own more of the target, individual capital gains taxes matter less, and ownership merely reflects the relative shape of the supply curve faced by the acquiring firm seeking to gain control of the target. Thus, knowledge of the underlying tax attributes of target shareholders could be important in determining the price paid.

marginal shareholders having high bases in target stock (or low potential tax liability). Ayers et al. (2003) find that cash acquisition premiums are increasing in individual capital gains liabilities (using institutional ownership to identify this effect) and show that the effect is absent for tax-free deals. See Landsman and Shackelford (1995) for evidence from the takeover of RJR Nabisco.¹²⁶

There are a number of unexplored areas where tax and non-tax incentives are likely to intersect in the takeover market. First, agency problems can be important in the context of merger negotiations (e.g., Wulf, 2004), and target firm CEOs and directors have substantial power to block acquisition attempts. It is not uncommon for large shareholders such as family founders to constrain the buyer's payment method to stock if they want to defer taxation. Research that addresses the role of tax preferences of the CEO or other controlling shareholder on acquisition structure and price would be interesting. Second, evidence in Officer (2007) suggests that purchase prices are lower for unlisted firms and argues that the discount arises because the seller demands liquidity. Interestingly, the unlisted targets in Officer's sample are largely subsidiaries, overlapping with Erickson and Wang (2000) who find a correlation between the tax structure of a subsidiary acquisition and the purchase price. To what extent tax structuring affects the estimates of the discount is an open question. Third, many studies including Ayers et al. (2004) consider publicly traded buyers. Because private company buyers almost always use cash, it is important to understand how capital gains taxation affects the total mix of deals, not just those with public buyers. Evidence in Bargeron et al. (2008) documents that private buyers offer lower premiums than public ones. Does this have a tax explanation? Moreover, are there any book-tax interactions in takeovers that need to be

¹²⁶ Ayers et al. (2004) find that the likelihood of a stock deal is increasing in the capital gains rate over the sample period, but is mitigated when targets have greater ownership by institutions. Dhaliwal et al. (2004) find evidence that a taxable owner of a hospital demands a higher price than a tax-exempt owner of a similar asset, consistent with taxable sellers demanding compensation for incurring an immediate tax liability. Later, we discuss the validity of the various approaches to market equilibrium in the context of long-run pricing and dividend taxes. The issue is somewhat different in this context because the price-setting shareholder is the investor whose reservation price is met to obtain control of the target. When institutions own more of the target, individual capital gains taxes matter less, and ownership merely reflects the relative shape of the supply curve faced by the acquiring firm seeking to gain control of the target. Thus, knowledge of the underlying tax attributes of target shareholders could be important in determining the price paid.

considered? Finally, as mentioned in more detail above, how the target's existing tax risk factors into the acquisition price or merger negotiations is completely unknown.

4.4.3. *Executive compensation*

Taxes also play a role in the design of compensation plans, including the choice between cash and equity compensation, between different forms of equity incentives, and between current and deferred compensation. Because Shackelford and Shevlin (2001) and Graham (2008) review this literature in detail, we keep our discussion brief and draw the following observations. First, it is not uncommon for studies on executive compensation to control for the tax status of the firm (e.g. Core and Guay, 1999), but there is little evidence that corporate tax rates affect the choice between cash and stock compensation. Second, there is some evidence that companies alter the mix of incentive stock options and non-qualified stock options around corporate and individual tax rate changes but firm-specific evidence is less convincing (see Shackelford and Shevlin, 2001). There is a financial accounting tradeoff considered in limited settings. For example, Matsunaga et al. (1992) examine disqualifying dispositions of incentive stock options by firms and in a very detailed manner incorporate the financial accounting costs and benefits as a factor in firms' decisions to disqualify the options to obtain tax benefits.¹²⁷ Finally, the literature still lacks evidence on deferred compensation plans despite the more restrictive provisions of IRC 409A which became law in 2005 following the American Jobs Creation Act of 2004.¹²⁸

¹²⁷ See McDonald (2003) and Blouin and Carter (2010) for research on firm and employee decisions to make an IRC Section 83(b) election to accelerate tax on share-based compensation.

¹²⁸ This is, in part, due to the lack of data on deferred compensation plans. Sundaram and Yermack (2007) point out that, while almost all companies have deferred compensation plans, disclosure of amounts deferred by executives is generally not required under SEC disclosure rules. Recently enacted deferred compensation rules under IRC 409A reduce the flexibility of structuring deferred compensation arrangements by requiring that deferral elections be made further in advance, that the process be well documented, etc. Failure to meet the requirements leads to immediate taxation as well as a 20 percent excise tax. Given the extensive use of deferred compensation plans, it would be helpful for researchers to identify new data sources. Such an analysis would also improve understanding of how deferred compensation arrangements are structured. For example, some deferred compensation arrangements require the employee to reimburse the firm for the present value of the deferred corporate tax deduction.

4.4.4. *Executive trading*

Although the executive's decision to trade stock is typically not a firm decision, we briefly discuss some of the recent literature on individual level tax incentives and executive trading for the following reasons. First, if executives exercise options or sell or hold shares as a result of taxes, portfolio incentives to maximize returns and take risky projects change, possibly leading directors to adjust the compensation package.¹²⁹ For example, like other taxable investors, the manager faces a lock-in problem if the stock has appreciated. That is, the insider will face significant tax costs from selling, but not selling will only worsen the under-diversification problem. Evidence in Jin and Kothari (2008) suggest that managers that face the greatest tax burden from selling equity divest fewer shares.¹³⁰ This line of inquiry can be expanded a number ways to consider alternative measures of the tax cost of selling, the effect of financial contracts that allow the executive to diversify while deferring the tax on the gain, whether the effect is different for shares divested by gift, and the effect of changes in the capital gains tax rates in 1997 and 2003.

Second, there is also evidence that individual tax incentives caused some executives to backdate stock option exercises, and this has consequences for the firm. Briefly, the exercise of a non-qualified stock option generates an ordinary income tax liability for the employee to the extent of the option's intrinsic value on the day of exercise. If the employee holds the shares to sell at a later date, any subsequent appreciation would be taxed as capital gains (and any loss available to offset capital gains or to deduct to the extent of \$3,000). For shares held long-term, the manager has a tax incentive to time these exercise-and-hold transactions on days when the stock price is as low

¹²⁹ We recognize there are many non-tax issues involved. See, for example, Seyhun (1986), Heath et al. (1999), Ofek and Yermack (2000), Core and Guay (2001), Muelbroek (2001), and Malmendier and Tate (2005).

¹³⁰ It is possible that opportunities exist to get the benefits of the sale without the associated tax cost. Jagolinzer et al. (2008) document insiders' use of prepaid variable forward contracts (PVFs) to cash in on their holdings while at the same time deferring tax liability. Basically, PVFs provide discounted cash proceeds to the insider in return for some future settlement that depends on firm performance. While the insiders' claim to future appreciation is capped, they were generally able to defer capital gains liability until sale.

as possible. This converts ordinary income to lower-taxed capital income.¹³¹ These tax incentives appeared strong enough to lead some executives to backdate the exercise date. Before the enactment of SOX, Dhaliwal et al. (2009) find that almost 14 percent of exercise-and-hold transactions by CEOs were on the day with the lowest closing price of the month. The percentage increases to 22 percent among CEOs of firms implicated in option grant backdating.

The accelerated insider filing requirements mandated by SOX appeared to have largely curbed backdating of grants and exercises (Heron and Lie, 2007; Dhaliwal et al., 2009), but a number of questions remain about the CEO's personal tax decisions. First, are CEOs who are aggressive in personal tax matters more or less aggressive with the firm's tax planning? Second, given the rather small estimated tax savings from backdating documented by Dhaliwal et al. (2009), what does this suggest about the expected costs of tax compliance? Third, why do executives exercise options and hold the shares instead of immediately selling them? Exercising to start the clock rolling for capital gains treatment is generally thought to be suboptimal (McDonald, 2003; Scholes et al., 2009). We have little understanding of the incentives and constraints that drive the decisions of executives to exercise and hold shares.

Taxes may also provide incentives to gift shares, changing the executives' equity holdings. CEOs and other executives often have substantial wealth invested in their own company stock, and can give their shares away to family and non-profit organizations. There are well-recognized tax benefits to donating appreciated stock. The gift is deductible at fair market value (but escapes the capital gains tax that would be due if the stock were sold for cash and the after-tax cash donated).

¹³¹ Evidence in Goolsbee (2000) suggests that executives were more likely to exercise and hold their shares following the 1997 reduction in capital gains tax rates.

An insider that commits to a fixed-dollar donation has an incentive to time the transaction when stock price is high to minimize the number of shares he has to give up.¹³²

Consistent with a tax-based incentive to time stock gifts when stock price is high, Yermack (2009) finds that the firm's stock price subsequently declines by over 3 percent during the 20 days following large CEO stock gifts to their own family foundation. He documents that \$17.4 billion worth of stock was donated in a total of over 1,000 gifts over a two and one-half year period ending in 2005. Of the \$17.4 billion, \$14.2 billion represented gifts to trust funds and other entities controlled by the CEO. Gifts to donees not disclosed in SEC filings received \$2.43 billion in CEO stock.¹³³ Tax considerations are likely to have a first-order effect on the the timing and structure of gifts by executives and individuals more broadly.¹³⁴

5. Investor level taxes and asset prices

The link between investor level taxes and asset prices is perhaps the most widely studied area of common interest; however, the underlying motivation for the research is often different across economics, finance, and accounting. In public economics, for example, there has been longstanding debate over the effect of dividend taxation on economic growth and on firms' marginal investments financed with retained equity. In finance, the goal is more often to understand

¹³² But if an executive is interested in transferring control to descendants, he may want to transfer shares when stock price is low so as to maximize the number of shares that can be transferred without triggering gift tax. Such a strategy would need to take place within broader estate tax planning objectives.

¹³³ Stock gifts represent an important means of disposing of shareholdings and must be disclosed to the SEC, but there is significant opacity about the recipient which limits the potential usefulness of the disclosures.

¹³⁴ The incentive contracting literature measures a CEO's incentives as the sensitivity of CEO wealth to a change in stock price (Jensen and Murphy, 1991; Core and Guay, 1999). These incentives are usually expressed on a pre-tax basis. However, incentives from equity portfolios come from stock options, restricted stock, and unrestricted shares. For unrestricted shareholdings, gains and losses are taxed at the long-term capital gains rate, and can be deferred until death. Appreciation in restricted shares is effectively taxed at ordinary income rates. Options gains are taxed at the ordinary income tax rate and cannot be deferred past the expiration date. Ignoring the convexity in option payoffs, the after-tax incentives provided by a share of unrestricted stock is likely higher than that provided by a stock option or share of restricted stock. This variation across incentives has been largely ignored in the governance literature, and mis-measurement should vary systematically across CEOs based on the mix of stock and options in the portfolio and their ability to avoid the tax. In the end, it would be useful to understand the extent to which measuring portfolio incentives on an after-tax basis, rather than a before-tax basis, makes a difference in interpreting prior results.

the implications of dividend and capital gains taxation for capital structure, payout policy, and portfolio allocation. In accounting, the primary focus is studying whether investor level taxes affect asset prices. We first review research on the effect of investor level dividend taxation and then move to the effects of the capital gains tax.

5.1. Dividend taxation

We begin with a brief discussion of the underlying theory surrounding dividend taxation and asset pricing from the public economics literature. We then discuss the various methods of testing the effects of investor level dividend taxes on asset prices in the context of long-run returns, event studies, ex-dividend day pricing, and valuation models. We follow with a summary of some of the key issues, including the ongoing debate over market equilibrium assumptions.

5.1.1. The economic effects of dividend taxation: A brief introduction

For the past several decades, research on the economics of dividend taxation has centered on three basic models: the irrelevance view, the traditional view, and the new view. At the core, the views are based on valuation models that, as a result of different assumptions, offer competing predictions about how dividend taxation affects investment and dividend policies through the firm's cost of capital. Public economists' interest in these models is to understand whether the dividend tax distorts firm investment and payout decisions, and to understand the effects of moving to a dividend exemption or imputation system. The different views offer different answers to each of those questions. We offer a brief introduction to the competing views.¹³⁵

¹³⁵ This discussion does not touch on the more complicated issues. Extant theory typically ignores what happens when firms can finance with debt. Because projects are evaluated based on their net present value using a discount rate that factors in capital structure, a project financed with new debt is implicitly financed with a combination of debt and internal equity. A firm with existing debt that raises new equity may be closer to the traditional view. But because dividend taxation does not affect the cost of debt, at least directly, the investment decisions of firms with more debt are likely to be less sensitive to dividend taxation. This general proposition is not surprising if firms with extreme debt levels are compared. Further, the reality of tax law changes makes a determination of what is temporary and what is permanent difficult, although this distinction is crucial for the new view model's implications for firm behavior.

To be clear, we are not advocating that accounting research take up the task of trying to distinguish which of the views holds empirically. However, we describe the alternative views to provide a background of the underlying theory of dividend taxation.

Under the *tax irrelevance* view, taxable individuals are infra-marginal, meaning a non-taxable entity (e.g. a pension fund) or symmetrically taxed investor (e.g. a securities dealer) is the relevant price-setter (Black and Scholes, 1974; Miller and Scholes, 1978 and 1982). Thus, changing the tax rate on dividends does not affect expected returns, and so investment, payout, and financing decisions are unaffected.¹³⁶ In contrast, the following two views implicitly or explicitly assume that the individual level tax on dividends affects the price of corporate equity.

Under the *traditional view*, there are non-tax benefits from paying dividends, such as investor preferences for dividends (Gordon, 1963), controlling agency problems (Jensen, 1986), or signaling performance (e.g., Bhattacharya, 1979). The manager sets dividend policy at the point where the marginal benefit of an extra dollar of dividends equals the marginal tax cost. Reductions in the dividend tax rate can lower the required rate of return, lead to greater investment, and higher dividend payouts.

Economic models of the traditional view make two key assumptions: dividends are paid for non-tax reasons and the marginal source of funds for investment is new equity issues (assuming no debt). Under the traditional view, reductions in dividend tax rates increase share values and increase investment incentives for dividend-paying firms because they lower the pre-tax required rate of return. In addition, a reduction in the tax lowers the marginal cost of paying dividends, leading to higher dividend payouts. These so-called efficiency consequences of dividend taxation lend support

¹³⁶ Note the irrelevance view is consistent with a Modigliani and Miller world of no taxes. Modigliani and Miller (1961) show that in perfect and complete capital markets (including no taxes) dividend policy does not affect the value of the firm. This implies that if dividend policy does affect firm value, it does so because dividends signal manager's private information, dividends reduce agency costs of free cash flow, or dividend policy affects investors' tax liabilities, which in turn affects price. See DeAngelo and DeAngelo (2006) for a discussion of the relevancy of MM.

to proposals to reduce or eliminate dividend taxation because, if eliminated, there would be fewer distortions.

In contrast, under the *new view* of dividend taxation, dividend taxation has no effect on investment financed with retained equity or on payout decisions and hence has no distortionary effects (Auerbach, 1979; Bradford, 1981; and King, 1977). The assumptions of this model are that retained earnings are the marginal source of investment funds and all retentions will eventually be distributed as taxable dividends. The market value of equity capitalizes all expected taxes on current and future dividends, even for non-dividend-paying firms. In addition, dividends are viewed as a residual after investment, implying that dividend payouts should fluctuate year to year. The model predicts that an increase in the dividend tax rate leads to lower equity prices, but dividend yields per se do not explain firm value (because *all* taxes are already impounded into price, even for non-dividend paying firms) and investments and payout decisions are not affected. These implications apply when a dividend tax rate change is expected to be permanent. Temporary changes could distort investment and payout decisions by changing payout policy preferences. The assumptions of a constant tax rate, constant rate of return, and full distribution of earnings as taxable dividends means that shareholders can get a dividend now or let the firm reinvest at a constant rate of return and pay a bigger dividend later. The present value of the dividend tax is the same.¹³⁷

Thus, under the irrelevance view and new view, dividend taxation does not cause distortions because it does not affect the investment or payout decisions of the firm. Under the new view existing shareholders would, however, receive a “windfall gain” upon a reduction in the dividend tax.¹³⁸ Because each theory relies on strict assumptions that are unlikely to hold in reality (see

¹³⁷ The new view is also referred to as the “trapped equity view” or “tax capitalization view.” A basic premise of this view is that earnings cannot be distributed out of the corporation without incurring the dividend tax; repurchases are not allowed. This view is generally thought to apply to more mature firms. In addition, recent studies relax the assumption that all retentions are distributed as dividends and still yield new view results of no distortions.

¹³⁸ See Table 2 for a summary of implications of the various views.

Zodrow, 1991 for a good discussion), they should be viewed as benchmarks and tools that assist in designing and interpreting empirical analysis.¹³⁹ We next discuss the various methods used to examine the effect of dividend taxes on asset prices: long-run return studies, event studies, ex-day pricing studies, and valuation models.¹⁴⁰

5.1.2. Long horizon returns: The effect of dividend yield on expected returns

Following the theoretical structure of Brennan (1970), a common test of the effect of dividend policy and dividend taxes on long-horizon asset prices follows the relation between expected return on dividend yield, controlling for systematic risk, e.g.:

$$E[R_j] = \alpha_0 R_f + \alpha_1 \beta_j + \gamma d_j \quad (1)$$

where R_j represents firm returns, R_f is the risk-free rate, β_j is the covariance between firm and market returns, d is the expected dividend yield of the firm, and γ represents the “price” of dividends. That is, γ denotes the compensation demanded by investors to buy shares that pay tax-disadvantaged dividends.

One way to see the effect of dividends on expected returns is to first assume that the non-tax benefits of paying dividends are zero and that firms must eventually distribute all excess cash flows as dividends. These are key assumptions of the new view that allow the interpretation of γ to be

¹³⁹ Both the new and traditional views are subject to some commonly mentioned criticisms. For example, firms can repurchase shares or be taken over and hence never pay dividends, a result that seems inconsistent with new view assumptions. Dividend policy is sticky, which is inconsistent with the new view implication that dividends are merely the residual. The traditional view has its own issues. It assumes that new equity is the marginal source of financing, but not many firms issue equity after the initial offering. The traditional view also depends on the validity of non-tax explanations for dividends.

¹⁴⁰ Shackelford and Shevlin (2001) discuss a line of research based on price level regressions and the incorporation of investor level taxes into an Ohlson (1995) type valuation model. These studies were written in an attempt to identify whether dividend taxes are capitalized into price and adopt the assumptions of the new view. Harris and Kemsley (1999) and Collins and Kemsley (2000) interpret their model and results as evidence of dividend tax capitalization at the highest individual statutory tax rates on firms’ level of retained earnings. At the time, Shackelford and Shevlin (2001) stated that future analysis would be needed to determine if the studies were revolutionary or implausible. Dhaliwal et al. (2003) and Hanlon et al. (2003) show that the findings are implausible and the models used are non-diagnostic with respect to dividend tax capitalization. While the research did serve to stimulate a lot of thinking about the issues, it is important to note that this debate did not settle whether the new or traditional views apply empirically to dividend taxation. The only end result of the debate is the conclusion that the models and tests used in the original studies cannot inform us about the pricing of dividend taxes.

isolated from non-tax explanations. Let the after-tax required return, r , for a given riskless security equal $(1 - t_d)d + (1 - t_{cg})g$, where t_d is the tax rate on dividend income, t_{cg} is the effective tax rate on capital gains that accounts for benefits of deferral, d is the dividend yield, and g is the net appreciation in share price. The pre-tax return, R , is the sum of d and g . After substitution, we get

$$R = \frac{r}{1 - t_{cg}} + \frac{t_d - t_{cg}}{1 - t_{cg}} d \quad (2)$$

That is, the pre-tax return is simply the after-tax required return grossed-up for expected capital gains taxes plus a premium that compensates shareholders for receiving a portion of these returns as dividends. In more structured asset pricing models such as Brennan (1970), Gordon and Bradford (1980), and Poterba and Summers (1985), the term $(t_d - t_{cg})/(1 - t_{cg})$ is the theoretical dividend tax premium reflected in expected returns. In this simple setting, the dividend yield coefficient (γ) reflects the tax rates of investors.

Interpreting the empirical evidence is more complicated if we assume there are non-tax reasons firms pay dividends, a key assumption under the traditional view and the subject of a substantial body of research in finance (see DeAngelo et al., 2008 for a recent survey). Under this view, the prediction for γ depends on how these non-tax benefits of dividends show up in returns. If the non-tax benefits of paying dividends are linearly related to expected dividend yield, are not adequately controlled for by the other variables in the model, or if the dividend yield proxies for some unobservable risk factor, then it may be impossible to definitively interpret the γ as a tax effect. Extant research offers little intuition as to how the non-tax aspects of dividend yield should show up in either prices or returns (see Fama and French, 1998 for a discussion). Creative identification strategies are needed to isolate the effect of investor taxes.¹⁴¹

¹⁴¹ Importantly, it is nearly impossible to use evidence from long-run horizon return evidence to distinguish between the new and traditional views. As Poterba and Summers (1985) note, the predictions are similar as long as one can isolate

In an early empirical study, Black and Scholes (1974) find no association between dividend yields and stock returns, leading them to conclude that dividend policy has no permanent effect on firm value. Litzenberger and Ramaswamy (1979) claim to find evidence of dividend tax pricing using short-horizon returns, but Miller and Scholes (1982) argue that the findings are driven by information effects, not taxes.

Later studies document a positive association between dividend yields and long-horizon returns. But such yield effects are difficult to attribute to dividend taxes (Chen et al., 1990). Naranjo et al. (1998) find that the positive association between returns and dividend yields is too large to be explained by taxes alone and does not vary with changes in the statutory tax rate on dividends. The breadth of the findings leads Naranjo et al. to conclude, “First, a yield effect clearly exists. Second, we find no evidence that it is attributable to taxes.”¹⁴²

In contrast, Dhaliwal et al. (2003) document evidence that suggests the significant association between dividend yield and expected returns is driven by taxes. They assert an equilibrium in which prices depend on the tax status of some identifiable marginal investor.¹⁴³ Further, they argue that institutional ownership percentage captures meaningful variation in the identity of this marginal investor. In their tests, the association between dividend yields and expected returns is weaker when institutions own more, leading Dhaliwal et al. to conclude that the positive coefficient on dividend yield is attributable to investor level taxes.¹⁴⁴ Dhaliwal et al. (2004)

the effect of taxes from non-tax explanations. On the other hand, the evidence does provide meaningful inferences on the validity of the irrelevance view.

¹⁴² Chen et al. (1990) add a bond risk premium measure to the model and form portfolios based on both yield and firm size. They measure dividend yield using the sum of dividends over the prior year divided by beginning of year share price, and use a variety of structural models. Naranjo et al. (1998) use an updated measure of dividend yield (based on most recent dividend and share price data) and the three-factor capital asset pricing model.

¹⁴³ If there is cross-sectional variation in the tax status of the marginal investor, then having a reliable proxy for tax status potentially improves the power of tests designed to detect tax effects. Drawing on support from prior studies (e.g., Dhaliwal et al., 1999), they argue that institutional ownership is a proxy for the likelihood that the marginal investor is not an individual and hence is less affected by any dividend tax penalty.

¹⁴⁴ Interestingly, Dhaliwal et al. (2003) cast their findings as evidence of “dividend tax capitalization,” a term that Poterba and Summers (1985) and others use to describe the new view. But they also interpret the evidence as consistent

present similar evidence using ex ante estimates of expected returns that are based on derivations of the Ohlson (1995) model (e.g. Gebhart et al., 2001; Claus and Thomas, 2001; and others). Sialm (2009) examines the association between expected returns and the tax yield, measured as the component of expected return attributable to investor level dividend and capital gains taxes. His findings suggest that shareholder taxes increase expected returns on nearly a one-to-one basis.

These recent studies provide some of the first evidence from long-run returns that dividend taxes are priced, but their findings raise a number of questions. For example, how important is the issue economically given the historical difficulty of documenting this effect?¹⁴⁵ Is the identification strategy using institutional ownership both consistent with theory and sufficiently powerful to detect differences across firms? How should the results from an asset pricing model be interpreted in the presence of non-tax benefits? Finally, how does the evidence inform the debate on the links between dividend taxation and investment or payout policy? We return to these issues below.

5.1.3. Event study predictions: The valuation of a dividend tax rate change

Event studies, usually surrounding a change in tax law, offer a potentially more powerful test of the valuation of investor taxes. It is arguably easier to control for risk, agency costs, and information effects that are not expected to change significantly over a short window of time. However, not all events are created equal. An ideal event should involve an economically significant change in tax rates, be unexpected by market participants, be permanent in nature, and not run concurrent with other tax or non-tax policy changes or other events that might affect price.

There is evidence to suggest that asset prices are affected by changes in investor tax rates. For example, stock prices declined surrounding the 1993 announcement of an increase in top

with the traditional view. In fact, their results could be consistent with both views and they cannot distinguish between them.

¹⁴⁵ For example, Naranjo et al. (1998) find no evidence that statutory tax rates explain the yield effect, while Dhaliwal et al. (2003) find mixed evidence. Sialm (2009) presents some of the strongest evidence that tax rates affect expected returns, but his measure of tax burden commingles tax rates and dividend payouts. Ironically, the strongest evidence on dividend tax pricing comes from periods when tax-exempt investors made up a larger fraction of shareholders and the personal tax-disadvantage of dividends was lowest.

ordinary income tax rates from 31 percent to 39.6 percent and prices declined more for firms with high dividend yields and less for firms with higher institutional ownership (Ayers et al., 2002). In addition, Erickson and Maydew (1998) document significant price declines in preferred stock, but not high yield common stock, following a 1995 Treasury proposal to cut the dividends received deduction from 70 to 50 percent.

The Jobs and Growth Tax Relief Reconciliation Act of 2003 significantly reduced the top individual statutory tax rate on dividends from 35 percent to 15 percent, and included an expiration, or “sunset”, date that has varied over time. Auerbach and Hassett (2007) examine stock price reactions to events leading up to the bill’s uncertain passage and find that firms with high dividend yields and firms that paid no dividends had the most positive price reactions.¹⁴⁶ Dhaliwal et al. (2007) document a decrease in accounting-based cost of capital estimates surrounding passage of the 2003 tax cut, which they attribute to the reduction in dividend tax rates. Similar to Auerbach and Hassett, they also find that non-dividend paying firms benefited substantially from the tax cut.¹⁴⁷

The evidence from price changes around tax law announcements is consistent with dividend taxes being capitalized into price, albeit at low rates, and with the capitalization varying with dividend yield and ownership structure.¹⁴⁸ The weight of the evidence from the papers discussed above seems to refute the irrelevance view, however, Amromin et al. (2007) question whether the

¹⁴⁶ However, because both the traditional and new views predict an increase in share prices in reaction to such a tax change, a test of the price reaction will not distinguish between the views (see a similar discussion in Poterba and Summers, 1985). Auerbach and Hassett use cross-sectional variation in yield in an attempt to design a distinguishing test. The authors contend that zero dividend paying firms having such a strong price reaction is consistent with the new view because these firms have the most future dividends to pay.

¹⁴⁷ Note that under the new view any positive impact of the dividend yield on short window returns around a tax rate reduction is attributable to the timing of the path of future dividends, with a higher yield corresponding to a greater share of the firm’s future dividends being paid before the tax rate reduction (Auerbach and Hassett, 2007). Thus, the zero dividend firms having a higher response is consistent with the new view, even though it seems somewhat counterintuitive. However, Amromin et al. (2007) argue that the positive return on non-dividend paying firms is not related to taxes since the prices of non-dividend paying firms around the world increased over the same period. See also Edgerton (2009a) for evidence from real estate investment trusts.

¹⁴⁸ In addition to price response, see Desai and Dharmapala (2009a) for a study of individual portfolio allocation in response to the Jobs and Growth Tax Relief Reconciliation Act of 2003 (JGTRRA). This study reports a statistically and economically large response in terms of international portfolio allocation of U.S. investors to equity holdings in foreign countries affected by the tax act.

2003 tax cut in particular had any aggregate effect on prices. In addition, tax regime changes are endogenous and highly correlated with other developments in the economy, past, present and future (Romer and Romer, 2008). The potential concerns that arise from treating tax rate changes as exogenous need to be considered in light of the research question, tests, and results.

5.1.4. *Ex-dividend day studies*

A third approach to identifying the pricing of dividend taxes is to look at stock returns surrounding the ex-dividend day. After the announcement of a dividend, an investor can purchase the shares with rights to the dividend. Beginning on the ex-dividend day, the shares will sell without rights to the dividend. In the absence of taxes, transaction costs, and other imperfections, the stock price is expected to decline on the ex-day by the amount of the dividend. However, when dividend and capital gain income are taxed differently, a taxable buyer facing a penalty on dividend income prefers to wait until after the stock goes ex-dividend, while a taxable seller prefers to accelerate the sale to just before the ex-day to avoid paying ordinary income tax on the dividend. A well known empirical fact is that the decline in stock price on the ex-day is less than the full amount of dividend. Elton and Gruber (1970) argue that taking the ratio of the ex-day price decline to the dividend, often known as the price-drop ratio, reflects the tax status of the marginal investor.¹⁴⁹ A large and growing stream of literature provides both support and challenges to Elton and Gruber's proposition. We discuss only a small sample of studies here and refer readers to Allen and Michaely (2003) and Kalay and Lemmon (2008) for more comprehensive surveys.

That the ex-day price drop is consistently less than the amount of the dividend is an empirical regularity in the U.S., although it was closer to the full dividend amount in the U.S. before

¹⁴⁹ The price drop ratio can be derived by first stating the condition under which the investor would be indifferent between buying before or after stock goes ex-dividend (ignoring adjustment for risk). Let P_0 and P_1 be the stock prices before and after the stock goes ex-dividend, B is the basis in the shares, D is the dividend amount, and t_d and t_{cg} are the tax rates on dividends and capital gains. The indifference condition is $P_1 - (P_1 - B)t_{cg} + Dt_d = P_0 - (P_0 - B)t_{cg}$. After rearranging terms, we get an expression for the price drop ratio in terms of taxes, specifically, $\frac{P_0 - P_1}{D} = \frac{t_d}{1 - t_{cg}}$.

the income tax (Barclay, 1987). The smaller-than-dividend price decline has been attributed to transactions costs (Kalay, 1982) and market microstructure effects (Bali and Hite, 1998). In addition, Eades et al. (1994) find that variation in ex-day behavior is unrelated to changes in the tax regime and Frank and Jagannathan (1998) find evidence of ex-day price drop ratios less than one in Hong Kong, a country with no investor taxes.

If the ex-day price drop findings are driven by individual taxes, the effect should weaken following the 2003 tax cut, making this an ideal setting to test the ex-day tax explanation. Chetty et al. (2007) find a large shift in ex-day pricing around the time of the tax cut. However, they also document large year-to-year volatility in ex-day returns that is fundamentally unrelated to taxes. Because of this extreme volatility, they conclude that they are unable to make any inferences on the relation between dividend taxation and stock returns surrounding the 2003 tax cut. The time-series volatility documented in Chetty et al. could have significant implications for any study using time-series changes in tax rates to identify tax effects in prices or returns.¹⁵⁰

Can ex-day return patterns provide any information on how investor taxes affect the long-run pricing of stocks? In the static clientele view of Elton and Gruber (1970), the ex-day return merely reflects the tax status of a marginal investor in the security. However, in addition to the non-tax explanations cited above, Allen and Michaely (2003) challenge this ex-day interpretation by arguing that volume increases over time and the presence of heterogeneously taxed investors suggest dynamic clientele effects in which ex-day returns are unlikely to provide any information about the effect of taxes on equilibrium pricing. Thus, they argue that ex-day pricing effects are more likely to represent the tax incentives of short-term traders.

¹⁵⁰ Chetty et al. (2007) argue that more work employing trading data is needed to identify the effect of taxes and tax arbitrage on stock prices. A study that might serve as an example here is Dhaliwal and Li (2006) who provide evidence that trade-level proxies for heterogeneity in investor tax status are associated with ex-day trading volume.

5.1.5. *Evidence from valuation models*

An alternative way to test whether stock prices are discounted for dividend taxes is to test the association between dividends and value. Fama and French (1998) report a positive relation between yield and firm value and conclude that substantial non-tax factors drive the yield effect and that dividends appear to be an informative signal about profitability. Their evidence does not suggest that taxes do not matter, but that any tax effect is swamped by other factors because of the inability to isolate information content, agency costs, and risk explanations of dividends.¹⁵¹

5.1.6. *Summary*

Across the various methods of testing the implications of dividend taxation, the evidence is still mixed. There is growing evidence that the irrelevance view does not hold and that taxes matter in the pricing of stocks. However, taxes generally appear to be capitalized at low rates in event study tests, long-run return studies depend on cross-sectional variation using a proxy of institutional ownership (discussed further below), and recent evidence in Amromin et al. (2007) suggests that aggregate effects from a substantial dividend rate cut may have been trivial. While the documentation of any association between dividend taxes and returns or prices has been difficult, empirical tests to distinguish between the traditional view and the new view have been nearly impossible because of the endogenous nature of tax law changes and the fact that temporary tax law changes makes the predicted results under the new view and traditional view very similar.

5.1.7. *Remaining issues and questions for future research*

5.1.7.1. *How relevant is the marginal investor?* It is often assumed that the equilibrium price of the firm is characterized by a single marginal investor whose identity determines the pricing of taxes (Miller and Scholes, 1982; Collins and Kemsley, 1999; Ayers et al., 2002; Dhaliwal et al., 2003). In

¹⁵¹ See Gentry et al. (2003) and Li and Weber (2009) for evidence on dividend pricing in REITS. See Sialm (2009) for evidence on the association between his measure of tax yield and market-to-book.

that case, dividend tax effects depend on the tax rates of that marginal investor.¹⁵² This approach is plausible if we consider two securities whose returns are perfectly correlated and that differ only with respect to their tax treatment. For example, the Miller (1977) equilibrium is possible because he assumes that the two securities (debt and equity in his case) have identical risk (see Schaefer, 1982 for a good discussion). But in general, an investor is unlikely to find a pair of securities with identical risk that vary only on the tax treatment of the returns (yield and rates). Because diversification is important to investors, an alternative approach that accounts for risk-sharing incentives is likely more appropriate.

The alternative is the after-tax capital asset pricing model (CAPM) approach developed by Brennan (1970) and Gordon and Bradford (1980). In the after-tax CAPM, heterogeneously taxed investors form portfolios to maximize after-tax return. In a nutshell, taxable individuals hold dividend-paying stocks because they cannot replicate their risk exposure with non-dividend-paying stocks, they just hold slightly less because of the tax penalty (see also Long, 1977). Thus, equilibrium asset prices reflect the aggregate preferences of investors and investors with the greatest wealth and least risk aversion have the greatest influence on price. All investors are marginal in the sense that a change in the taxation of any group potentially affects asset demand and prices.

Unlike the after-tax CAPM approach, the marginal investor approach suggests a potentially unstable equilibrium. Under the marginal investor view, a change in the tax rates on an infra-marginal investor has no impact on securities prices as long as they remain infra-marginal. Obvious clienteles should form according to tax status. However, if prices reflect the tax preferences of one group, individuals for example, then tax-based arbitrage opportunities arise for other groups such as

¹⁵² Under the irrelevance view, investors that are indifferent between dividends and capital gains are the marginal investors. Taxation of individuals does not affect price.

tax-exempt entities, and vice versa.¹⁵³ Arbitrage opportunities may prevent stability in prices among close substitutes. Long (1978) provides an interesting example of this based on the relative prices of differentially taxed shares issued by Citizens Utilities.

Recent research reiterates the importance of understanding the underlying equilibrium. Poterba (2007) states that it is not clear which approach better describes market equilibrium. Guenther and Sansing (2006 and 2009) point out that framing the discussion in terms of some hypothetical marginal investor is unlikely to lead to useful insights because it is inconsistent with the portfolio theory predictions of Brennan (1970) and Gordon and Bradford (1980). Greater understanding of equilibrium will ultimately lead to more powerful empirical tests and more useful inferences. Future work must be clear about which approach is assumed and why and whether the empirical evidence has anything to say about the validity of the marginal versus after-tax CAPM approaches.¹⁵⁴

5.1.7.2. Are dividend taxes priced differently across firms? The dividend premium (γ) in eq. (1) is in essence an exchange rate between dividends and capital gains. Poterba (2007) notes that both the marginal investor and after-tax CAPM approaches predict that the relative pricing of dividends and capital gains is the same across all stocks assuming no short-sale restrictions. In other words, $(t_d - t_{cg}) / (1 - t_{cg})$ is an economy-wide constant that renders cross-sectional tests based on a measure of firm-specific ownership irrelevant.

An open question is whether this exchange rate can actually be defined at the firm level. The issue applies to both the marginal investor and after-tax CAPM approaches and is critical because

¹⁵³ Transactions costs have historically been used as a counter to this argument, i.e., that tax arbitrage opportunities are limited by transactions costs born differently by the different investor groups. Based on trade-level evidence in Sias and Starks (1997), the fraction of institutional ownership is a proxy for the likelihood that the marginal investor is indifferent between dividends and capital gains, at least over short horizons.

¹⁵⁴ Theoretical discussions of the traditional and new views usually assume that the relevant investor is a taxable individual, but they are silent on how tax heterogeneity among investors affects price. Both views are compatible with either a marginal investor or after-tax CAPM world while the irrelevance view appears based on a marginal investor approach.

recent studies that attempt to identify dividend tax effects using institutional ownership data assume the dividend tax premium varies across firms (Ayers et al., 2002; Dhaliwal et al., 2003). This latter way of thinking is based on the following reasoning: If the relative tax preference of dividends to the price-setting investors varies across firms, then variation should be observed in the price of dividends across firms partitioned by the investors' tax status.

The use of institutional holdings as an identification strategy has produced the most consistent evidence that dividend taxes affect security returns (Ayers et al., 2002; Dhaliwal et al., 2003 and 2004). But there are important theoretical and empirical issues. First, it is unclear what conditions are required for the true dividend premium (γ) to be larger in some firms but not in others. Brennan (1970), which many empirical asset pricing studies rely on for theoretical motivation, derives the result that the dividend premium is unaffected by the fraction of shares held by the tax-neutral investors in a given firm.

Second, one must also confront the empirical validity of using institutional ownership and its variants as the appropriate proxy for the tax status of the price-setting investor. For example, institutional investors invest in different ways than individuals for reasons that have nothing to do with taxes (see, e.g., DelGuercio, 1996; Gompers and Metrick, 2001; Bennett et al., 2003; Blouin, 2009).¹⁵⁵ This suggests the need to consider the determinants of institutional holdings before making inferences about tax effects. Moreover, raw institutional ownership is at best an extremely noisy proxy for the tax status of a firm's investor base. Chetty and Saez (2005) argue that raw institutional ownership is clearly not a valid proxy for nontaxable status because institutions include pension funds, insurance companies, corporations, endowments, and mutual funds. Some are clearly tax-exempt, while others such as mutual funds flow through to fully taxable individuals. Because there is substantial heterogeneity in the tax characteristics across institutions (and across non-

¹⁵⁵ Guenther and Sansing (2009) argue that if institutional investment is constrained more than non-institutional investment, then γ can theoretically be defined at the firm level.

institutions), drawing meaningful inferences about taxes per se is very difficult. See Desai and Jin (2009) for a good discussion of the meaning of institutional ownership and an attempt to refine the measure in their analysis of tax clienteles.

5.1.7.3. Asset pricing in the open economy. As the securities markets become more global, identifying the effect of dividend policy and dividend taxation based on U.S. tax rates alone becomes increasingly difficult. It may simplify our lives to assume that the only investor is a taxable individual subject to U.S. tax rules. However, theory and evidence could become nebulous when we consider the fact that not only is there substantial heterogeneity in the tax attributes of U.S. investors, but that investors located in foreign jurisdictions face tax rules that may be completely different. This means that an attempt to infer tax effects based on cross-sectional and time series variation in U.S. taxes may mischaracterize the effect of taxation if foreign investors and foreign investment matter (Carroll et al., 2003). On the other hand, data that crosses jurisdictions provide more variation in tax rates. The challenge is how to leverage off that variation.

5.1.8. Thoughts for future research

In summary, several issues about the evolving literature on dividend taxes and asset prices appear relevant. First, we do not have a good explanation for the inconsistent evidence on the association between dividends and expected returns; more work is needed to understand why. Second, it is critical to recognize the role of portfolio theory in generating predictions for equilibrium asset prices. The marginal investor approach appears inconsistent with portfolio theory, so recognizing the implications for past and future research is vital. Third, it is highly likely that changes in tax rates are correlated with changes in other tax and non-tax policies such as foreign trade policy, antitrust regulation, and so on. Thus, the extent to which other concurrent or expected government policy changes could be driving the observed results is an important issue, especially in event studies. Fourth, recent research documents extreme volatility in ex-dividend day pricing that

has nothing to do with taxes, raising questions about the ability of ex-day tests to identify tax effects. Fifth, many asset pricing studies rely on cross-sectional tests using an ownership proxy to identify tax effects. More work, or at least more clarity, on why this is or is not a valid approach will enhance our understanding on this topic, as will a consideration of how endogeneity of ownership structure affects inferences. Finally, tests on the role of international equity markets in asset pricing are important and can extend the literature in new ways.

5.2. *Capital gains taxation: Capitalization and lock-in*

In the U.S., an individual that holds shares for a sufficient length of time before selling (currently 12 months) traditionally faces a significantly lower tax rate on realized gains relative to ordinary income.¹⁵⁶ Even when statutory dividend and capital gains tax rates are similar, the capital gains tax can be deferred to reduce the effective tax rate faced by the investor. An individual can escape capital gains tax altogether by holding the shares until death and passing along stock to heirs or by donating the shares to a charitable organization.¹⁵⁷ However, capital losses are only deductible to the extent of capital gains (although individuals can deduct an additional \$3,000 of short term capital losses per year against ordinary income).

There are two big questions driving the existing research on asset pricing consequences of capital gains taxation: First, does a potential future capital gains tax reduce the price an investor is willing to pay for the asset? Second, does the capital gains tax deter an investor from selling their shares and thus lead to reductions in supply and possible effects on price? There are many questions within these broad queries, but all investigate the effect of the capital gains tax on economic

¹⁵⁶ Corporations, however, do not have a preferential rate for capital gains. Corporations instead have a tax preference for dividends. See Erickson and Maydew (1998) for a paper exploiting this preference.

¹⁵⁷ The asset basis is increased to the value of the asset upon death for appreciated assets (i.e., basis step-up), and no capital gains tax is due upon this increase. For estates large enough to be subject to the estate tax, the value upon death is the value included in the estate, and this is then taxed at estate tax rates. A discussion of the estate tax is beyond the scope of this paper.

behavior and firm value. The literature appears to provide increasingly convincing evidence that capital gains taxes matter.¹⁵⁸

5.2.1. *Capital gains taxes and expected returns*

One stream of literature suggests that the capital gains tax depresses stock prices because taxable investors demand compensation for the anticipated tax due upon a future sale of the shares. This tax capitalization argument assumes that price-setting investors are taxable and expect to realize capital gains in the future. The null is that capital gains taxes are irrelevant; taxable investors have no effect on prices, can realize their capital gains through tax-advantaged vehicles, or intend to hold the shares indefinitely.

Most asset pricing studies using long-run returns tests focus on dividends, but implicit in the asset pricing regression is an allowance for a potential capital gains tax. For example, Poterba and Summers (1985) model a simple expected return in a risk-free security over a given period as

$$R = \frac{r}{1 - t_{cg}} + \frac{t_d - t_{cg}}{1 - t_{cg}} d$$
. The first term serves to gross up the after-tax required return for the

expected capital gains tax (a function of the tax status of investors, tax rates, and holding period).

The second term is the compensation for receiving a dividend as discussed earlier. Most asset pricing tests focus on the implications of dividend policy, and capital gains taxes are assumed to be irrelevant or to act only as a scalar. Because of the difficulties identifying capital gains tax effects using long-horizon returns, event studies offer a potentially more powerful setting.

Using event study methodology, Lang and Shackelford (2000) document significant price increases following the announcement of a cut in capital gains taxes in 1997. Moreover, they find that the mean return for non-dividend-paying stocks was 12.9 percent versus 6.1 percent for

¹⁵⁸ There are also studies that demonstrate cases in terms of investor trading behavior in which tax considerations are swamped by non-tax considerations or behavioral aspects. For examples, see Seyhun and Skinner (1984), Shefrin and Statman (1985), Odean (1998), and Barber and Odean (2000, 2004).

dividend-paying stocks, which is expected since firms that pay dividends leave less to be taxed at the more favorable capital gains rates.¹⁵⁹ Guenther and Willenborg (1999) find that the initial public offering prices for small firms were significantly higher following a 1993 tax law change that reduced the capital gains tax on shares of qualified small businesses.

5.2.2. Stock market realizations and the lock-in effect

The theory and empirical evidence on how capital gains taxes affect the decision to sell and whether that in turn affects price is more developed.¹⁶⁰ Given current and expected prices, the decision to sell is a function of what the investor paid for the shares (their basis), the returns to alternative investments, the benefits of portfolio rebalancing, the expectation of discrete “jumps” in tax rates (e.g., crossing the long-term holding window, donating the security, death, etc.), and the asymmetry in the treatment of gains and losses. Basic lock-in theory predicts that the probability of selling at current prices is decreasing in the capital gains tax rate and increasing in basis.

Evidence on the role of capital gains taxes on selling behavior includes Feldstein et al. (1980) who find that investors are less likely to sell and realize gains when capital gains burdens, a function of tax rates and stock bases, are high. Ivkovich et al. (2004) document strong evidence of lock-in effects in individual taxable trading accounts, but not in tax-deferred accounts. Landsman and Shackelford (1995) document that the RJR Nabisco shareholders holding out for higher prices had lower bases in their stock, consistent with lock-in predictions. Klein (2001) develops a long-horizon asset-pricing model that allows for a lock-in effect in returns. He shows that firms with greater past appreciation have lower future expected returns, which he interprets as investors having

¹⁵⁹ Blouin et al. (2009) extend the analysis of the 1997 tax cut to foreign firms with American Depository Receipts (ADRs) traded in U.S. markets. In their setting, foreign firms have two sets of otherwise identical securities traded on two different markets, a nice control for risk. They compare the reaction in the U.S. ADR market to the price reaction in the foreign “home” market, and they report evidence on tax effects through a difference in ADR versus home country returns after the tax cut announcement, especially when arbitrage costs are high.

¹⁶⁰ Important theoretical work by Constantinides (1983, 1984), Dammon and Spatt (1996), and Dammon et al. (2001) has advanced our understanding of the effect of capital gains tax rules on optimal trading decisions. Poterba (1987) and Odean (1998) show that investors do realize substantial capital gains.

a disincentive to sell and incur capital gains liabilities, even when they outweigh that stock. Klein argues this is an explanation for the long-horizon return reversal phenomenon. However, the ability of such an analysis to isolate capital gains effects is very much an open question.¹⁶¹

Compounding the lock-in story is the fact that individuals must hold a capital asset “long-term” to qualify for preferential capital gains tax treatment. A sharp drop in statutory rates could change investor behavior by accelerating sales of stock with losses and delaying sales of stock with gains around the point holding period becomes long-term. Shackelford and Verrecchia (2002) label this an “intertemporal tax discontinuity” and argue that it leads individuals who are subject to short-term rates, but are overweighted in the firm’s stock, to sell less following a good news disclosure, pushing prices above where they would have been in the absence of such an effect. Blouin et al. (2003) test these predictions around earnings announcements. They find that the taxes saved by holding the shares until the long-term rates apply leads to higher announcement returns, which they argue supports the interpretation that tax discontinuities lead to higher prices.¹⁶²

The effect of capital gains taxes on expected returns works through the demand side and depresses prices whereas the effect on selling behavior through lock-in enters on the supply side and increases prices. Few studies have considered their joint effect on asset prices. The issue is important because, depending on the theory, capital gains taxes can both increase and decrease asset prices. Dai et al. (2008) argue that a decrease in the capital gains tax rate shifts the demand curve up, reflecting the increase in prices buyers are willing to pay, and shifts the supply curve down, reflecting the drop in the reservation prices necessary to entice current owners to sell. The authors

¹⁶¹ It should be recognized that documenting capital gains tax price effects in equilibrium is not simple. First, there is no universally accepted theory on how capital gains taxation ought to relate to equilibrium returns. Second, theories generate predictions of different direction, in which capital gains taxes either increase required returns if investors demand higher pre-tax returns to compensate for anticipated capital gains taxes or, when there is substantial appreciation in the stock, decrease returns if lock-in effects push the market-clearing price higher today leading to lower expected returns in the future. In any case, it is invariably difficult to identify whether or not capital gains taxes affect the prices of assets traded in secondary markets, and in which direction. See Sinai and Gyourko (2004) for evidence from REITs.

¹⁶² In a related study, Jin (2006) provides evidence that the documented price effects could result from more general lock-in effects.

find that following the announcement of the 1997 tax cut, but before its effective date, the tax capitalization effect dominates as in Lang and Shackelford (2000) and does not appear to arise from a “seller’s strike”.¹⁶³ Importantly, they document that following the effective date of the lower capital gains tax rates, stock price movements among firms with large past price appreciation and high individual ownership were consistent with relief in the lock-in effect leading to increased supply and lower prices. The unique features of the 1997 tax code allow Dai et al. to separate out the effects of tax capitalization and lock-in surrounding such an act and contribute to the literature by explicitly explaining how the price effects can operate in both directions.¹⁶⁴

6. Conclusions

Has tax research progressed since Shackelford and Shevlin (2001)? Undoubtedly, it has. However, there is much to be done. Although the effects of taxes on “real” corporate decisions are at times difficult to document, they are important to examine, especially given the focus on tax policy in federal stimulus efforts that compound growing budget deficits. Research in this area, especially using accounting researchers’ knowledge of financial statements and institutional details, will provide important contributions over the next era. In addition, further study of the tradeoff or interaction between tax reporting and financial reporting will be important to understand why some tax policies are more or less effective than economists and policy makers might expect.

¹⁶³ Of issue to some extent is the magnitude of the tax effects and whether these are relatively consistent across studies or whether differences can be explained. For example, Lang and Shackelford (2000) estimate effects that may appear implausibly high to be due from capital gains taxes alone. Future research may focus more on the extent to which capital gains tax matters.

¹⁶⁴ In related studies, Reese (1998) examines samples of IPO holdings over different time periods, he finds that investors delay the sale of appreciated assets to realize long-term capital gains and accelerate the sale of depreciated assets to lock in short-term losses when short-term and long-term gains are taxed differently. Poterba and Weisbenner (2001) show that capital gain tax rule changes induce investors to realize tax losses at year-end and that this tax-loss trading contributes to turn-of-the year return patterns. Dammon et al. (2004) provide evidence consistent with the step-up at death and resulting avoidance of the capital gains tax having real asset allocation effects. Despite the common theory that equity holdings should decrease with age, these authors find in their model that the optimal equity holding increases well into a investor’s lifetime due to the forgiveness of the capital gain at death.

The literature on the informational role of the accounting for income taxes needs refinement and clarification at this stage. It is a relatively new area that has grown significantly over the last 10 years and has been a contribution to the tax and financial accounting literatures (e.g., beyond documenting whether taxes matter as called for in Shackelford and Shevlin, 2001). Given that many of the basic relations have been established, the quickly spreading literature will benefit from a more detailed examination of the sources of book-tax differences and their implications for financial statement analysis. Progress along the lines of distinguishing types and sources of book-tax differences (Ayers et al., 2009, Blaylock et al., 2009, Seidman, 2009) may be useful to further identify why many of the associations in the literature exist. In addition, a detailed examination of when total book-tax differences have implications for financial statement analysis relative to when temporary book-tax differences hold information would be useful in understanding some of the documented results and as a guide to future research efforts.

The relevance of tax avoidance research will increase as governments try to close the tax gap, increase compliance, and collect more revenue. Meaningful extensions of the theoretical foundation of tax avoidance in a principal-agent setting should contribute to this growing literature. In addition, there is a need for creativity in empirical design to test these theories and those regarding the interactions between the tax authority and corporate governance system as proposed by Desai et al. (2007). We predict this area will generate many interesting studies.

We provide a detailed discussion of the various empirical measures that have been used to measure tax avoidance. We encourage researchers to think carefully about the measures given their research question and, just as importantly, consider the inferences a reader should draw from the results given the measurement used. There are too many points on this issue to reiterate here. But we cannot overemphasize how important it is to validly motivate and measure proxies for tax avoidance and interpret results within the various limits of these measures (e.g., conforming versus

nonconforming tax avoidance and the use of temporary or permanent book-tax differences in the research design). We do not mean to stop research on tax avoidance; rather, we intend to provide guidance for future work. Finally, more theory and evidence on the causes and consequences of tax avoidance certainly has the potential to significantly contribute to our understanding of the role of taxes in the organization.

A significant focus of our paper is on the role of taxes in business decisions. Investment and financing policy, organizational form, transfer pricing, mergers, and compensation decisions are all affected by taxes. The important point here is that taxes are one factor that enters into managers' cost-benefit tradeoff decision, but it is often not the most important factor. Understanding how important taxes are provides evidence useful for policy decisions. The bulk of the development of these literatures has progressed in economics and finance. However, there is increasing reliance on financial statements to measure these effects as well as growing interest in the interaction between tax and accounting costs. Accounting researchers have a lot to offer through their understanding of financial reporting and managerial incentives in the reporting process.

In the long-standing literature on the effects of dividend and capital gains taxes on asset prices, there is a lot we do not know. Recent studies suggest dividend taxes affect expected returns; however, the use of institutional ownership to parse out these tax effects is subject to debate. Research that provides future guidance on the appropriate use and interpretation of institutional ownership and other proxies for investor level taxes in asset pricing studies will contribute to the literature.

One issue that has been raised is that tax research in accounting needs more theory.¹⁶⁵ This is likely true; almost every applied field could benefit from a stronger theoretical foundation. Recent work on tax avoidance in a principal-agent setting (Crocker and Slemrod, 2005) and the role of the

¹⁶⁵ These calls are not asking for papers with math models that provide a counter example case in a specific setting but rather an overall theory or framework to direct our research efforts.

tax authority as an external monitor of management (Desai et al., 2007 and Desai and Dharmapala, 2006) are excellent beginnings. Recent theoretical advances also help us understand the nature of book-tax tradeoffs and the importance of financial accounting incentives for tax policy (see Edgerton, 2009d and Shackelford et al., 2009). Theories about how investor-level taxation affects asset prices (i.e., the new view, traditional view, and irrelevance view) have led to a lot of confusion and disagreement, and little in the way of solutions or empirically testable predictions. However, work by Brennan (1970), Gordon and Bradford (1980) and Guenther and Sansing (2009) provide a more rigorous foundation for thinking about how taxes affect asset prices, portfolio allocations, and other investment decisions when the simplistic marginal investor model falls short.

The tax area is exciting and big contributions can still be made that will advance our understanding of corporate and individual decisions (both reporting and “real”), and perhaps more importantly, inform managerial decisions and tax policy. As we write, the U.S. is (and other nations are) potentially approaching a major crossroads in tax policy. As administrations propose changes to the tax rules, tax researchers in accounting should not sit on the sidelines. They should position their research and inquiry in a manner that can inform debates and inject much needed data with regard to firm behavior, real effects, and, to the extent possible, macroeconomic implications. We look forward to working on and reading studies on these topics and more in coming years.

Appendix A

Accounting for Income Taxes

(SFAS 109)

U.S. companies are required to compute income separately for financial accounting and tax purposes.¹⁶⁶ The two different sets of rules result in two different income measures. As part of the computation of accounting income under GAAP, companies are required to record an income tax expense.¹⁶⁷ However, it is important to note that this is not the actual expenditure for income tax liabilities. Under the current rules for the accounting of income taxes, the Financial Accounting Standards Board (FASB) applies an accrual accounting-based balance sheet approach consistent with the rest of the financial statements. Thus, the tax expense on the income statement is not the actual cash tax paid but an accrual accounting estimate of the taxes incurred on the financial accounting earnings reported in a specific period (either due now, to be paid in the future, or paid in the past). In the notes to the financial statements, there is separate disclosure for the income tax expense. This includes an estimate of what is actually due during the period – the current tax expense – as well as an accrued expense (or benefit) for the estimated taxes due in the future or paid in the past related to current year transactions – the deferred tax expense (or benefit). However, the amount reported as current tax expense includes some tax accruals and is affected by items accounted for through equity, and thus does not strictly equal the actual taxes paid on the current year's earnings.¹⁶⁸

There are many differences between the computation of pre-tax accounting earnings and the computation of taxable income. The differences are classified as temporary or permanent.

Temporary differences are the most common. They reflect differences in the timing of recognition

¹⁶⁶ Because tax and accounting rules vary around the world, the degree to which firms report separate numbers for accounting and for tax purposes also varies across countries. We discuss this issue further below.

¹⁶⁷ Most of the principles of FAS 109 are similar under International Financial Reporting Standards.

¹⁶⁸ See Hanlon (2003) and McGill and Outslay (2004) for further details on problems with using current tax expense to approximate cash taxes paid. However, some of the items they discuss have changed to some degree (e.g., the accounting for stock options and the accounting for the tax contingency reserve).

that will reverse in the future. For transactions that generate these differences, the same amount is ultimately deducted for tax reporting as is expensed for financial reporting (or the same amount of income is includible under each system) but the deduction/expensing (revenue recognition) happens at different points in time. Some common examples include depreciation, warranty and bad debt expense, and deferred revenue. Because the accounting standards take a balance sheet approach, the objective in the accounting for these items is to ensure that the correct liability (asset) is recorded on the accounting balance sheet for any liability (future benefit) the company has incurred to date. Thus, as an example, where tax deductions occur earlier than accounting expenses (e.g., depreciation), a deferred tax liability is recorded along with a deferred tax expense. So the expense incurred this period is matched with the accounting earnings recorded this period and, more importantly from FASB's perspective, the correct amount of deferred tax liability is recorded on the balance sheet.¹⁶⁹

Other differences between the book and tax treatment are permanent and by definition do not reverse (e.g., municipal bond interest is included in book income but not in taxable income).¹⁷⁰ However, permanent differences are rare relative to the frequency of temporary differences.¹⁷¹

¹⁶⁹ Technically, the balance sheet approach is implemented as follows. Suppose a piece of equipment that cost \$1,000 is depreciated in its first year \$100 for accounting and \$250 for tax purposes. Technically, FASB requires the computation of the deferred tax assets and liabilities, and the annual changes in these generate the deferred tax expense. Thus, in the example, the book basis in the asset is \$900 and the tax basis in the asset is \$750. This difference in asset bases is computed cumulatively over all years (here is just one year) as a \$150 difference in bases. From this subtract the cumulative bases difference at the beginning of the year, in this case zero, to yield the current year change of \$150. Multiply the change in current year bases difference by the tax rate, 35%, to yield a \$52.50 deferred tax liability increase and a \$52.50 deferred tax expense.

¹⁷⁰ Technically, the term "permanent difference" is not used in SFAS 109. The concept of permanent differences under SFAS 109 is limited to events recognized in the financial statements that do not have tax consequences, such as tax-exempt interest. This type of permanent difference continues to impact the calculation of current tax expense under SFAS 109 (KPMG, 1992).

¹⁷¹ At least we think this is the case. A descriptive-type examination of what the common permanent differences are and how common or uncommon in both frequency and amount they are would be interesting. Specifically, such a study would be useful in interpreting the literature that uses total book-tax differences or ratios of taxable income to book income in financial statement analysis studies and in thinking about research that claim permanent differences are so important in tax avoidance strategies (e.g., just how frequent are these types of differences?). We discuss these studies and this gap in the research further below.

These temporary book-tax differences and permanent book-tax differences constitute the total difference between taxable income and *pre-tax* book income.

There are also accounting accruals related to taxes that do not exist for tax purposes and thus create additional differences between taxable income and *after-tax* book income (but do not affect pre-tax income). For example, a valuation allowance is a contra-asset account that must be established if a deferred tax asset (e.g., the future tax savings related to a net operating loss carryforward) is *more likely than not* to not be realized. To accomplish this reduction in the deferred tax asset, there is an increase in the reported tax expense. In another example, a tax contingency reserve (now renamed unrecognized tax benefits), must be established to accrue tax expense for potential future tax authority adjustments.

Furthermore, the consolidation rules for book purposes and tax purposes are different, often resulting in different entities being consolidated for the annual report to the SEC than the tax return filed with the tax authority.¹⁷² For example, for tax purposes companies can elect to consolidate domestic subsidiaries owned 80 percent or more whereas for financial accounting, all subsidiaries greater than 50 percent owned are required to be consolidated.

There is an additional complexity with regard to foreign subsidiaries that is important in recent literature and thus we provide a somewhat detailed discussion of the tax and accounting rules for foreign subsidiary earnings of a U.S. multinational. Although the U.S. has a worldwide tax system, operating income from foreign subsidiaries of U.S. multinationals is not included in the computation of taxable income in the U.S. This rule of not taxing these earnings currently is called “deferral” - the taxation of the earnings is deferred until cash is actually (or effectively) repatriated to the U.S. parent. To illustrate, assume a U.S. multinational earns \$1,000 (for book and tax purposes) in a wholly owned subsidiary in a foreign jurisdiction where the foreign tax rate is 10

¹⁷² Details are beyond the scope of this paper, but see Hanlon (2003) for details. Also see Graham and Mills (2008) for a discussion of problems linking tax return data to company financial statement data.

percent. The company will include the \$1,000 in the financial statements filed with the SEC because the subsidiary is greater than 50 percent controlled and is thus consolidated for financial reporting purposes. The company will also include the \$1,000 of income on its foreign tax return and pay \$100 of tax to the foreign jurisdiction. The U.S. consolidated company will, for financial accounting purposes, record a foreign current tax expense of \$100 and a U.S. current tax expense of \$0 on these earnings (since the earnings are not repatriated and no U.S. taxation is assessed currently). Because the foreign earnings will be taxed in the U.S. when repatriated back to the U.S., a temporary difference is created and a deferred tax liability is recognized. However, APB 23 provides an exception to this general rule of accrual accounting for income taxes. First, company management must make a decision: are the foreign earnings permanently reinvested in the foreign jurisdiction, or does the company intend to repatriate the earnings? If the company does not intend to bring the cash back to the U.S., they are to designate the earnings as permanently reinvested for accounting purposes (under APB 23). As a result of this designation, a deferred tax liability (and deferred tax expense) is not recorded for the amount of residual U.S. income taxes that will be owed upon repatriation (in this case, \$250, the incremental U.S. tax liability assuming a U.S. tax rate of 35 percent). Thus, the income tax expense recognized on those foreign earnings is only the foreign taxes at the lower foreign tax rate. In such a case, the total tax expense for the company is lower and after-tax income is higher, all else constant, than if the earnings were earned and taxed in the U.S.

There are also tax credits for items such as research and development expenditures and credits for foreign taxes paid that reduce the tax owed but do not affect either taxable income or pre-tax accounting income. Because the credits reduce the taxes owed, they reduce the current tax expense. A common way of estimating taxable income from financial statements is to gross-up the current tax expense by the statutory tax rate. The existence of tax credits is problematic in this

method because the credit is essentially converted in the estimation to a book-tax difference and leads to an understatement of taxable income.¹⁷³

The effective tax rate for accounting purposes (hereafter called the GAAP ETR) is defined as the worldwide total income tax expense divided by worldwide pre-tax accounting earnings. Under U.S. GAAP, companies must reconcile the expected tax expense (computed as accounting pre-tax earnings multiplied by the statutory tax rate) to the actual tax expense (or the statutory tax rate to the effective tax rate).¹⁷⁴

Some items in the financial statements are reported net of tax, such as extraordinary items, discontinued operations, and items in other comprehensive income. While these are taxes incurred, they are not part of the effective tax rate computation and do not factor into any of the measures of tax burden that are generally estimated from financial statements (because many firms do not disclose enough details to obtain the tax amount separately).

One important point of clarification is what does and what does not affect the GAAP ETR. A company whose investment qualifies for accelerated depreciation (or bonus depreciation provisions) will *not* have a lower GAAP ETR relative to companies that do not take advantage of accelerated depreciation, assuming the level of investment is the same across the firms. Accelerated depreciation creates a temporary difference that reduces the current tax expense (and taxes paid) but increases the deferred tax expense by the same amount (assuming constant tax rates) and, thus, the GAAP ETR is unchanged. Most temporary differences will operate in this same manner. While

¹⁷³ Thus, a common sensitivity test when conducting studies using that approximation is to examine results after excluding firms with foreign income or research and development expense. This helps mitigate any concern that measurement error in the computation of taxable income from the firm having tax credits is driving the results.

¹⁷⁴ The GAAP ETR is different from the marginal effective and marginal tax rates. The GAAP ETR is an average of two accounting numbers. It is not on the margin and does not take into account the time value of money (i.e., deferred tax expense gets as much weight as the current tax expense). A current effective tax rate can also be computed that is the current tax expense divided by pre-tax earnings. Also, each of these can be converted to U.S.-only or foreign-only. However, if a residual U.S. tax is paid or accrued on foreign earnings, then the numerator (federal tax expense) will include those U.S. taxes paid on the foreign earnings, but the denominator will include only the U.S. earnings if one is doing a “U.S. only” rate (U.S. tax divided by domestic pre-tax book income), which will make the U.S. rate look higher than it is.

many teach this in intermediate accounting classes, it often seems misunderstood in research (and referee reports). In addition, items that create no book-tax difference at all (and are not subject to a rate differential and do not create a tax credit) do not decrease or increase the GAAP ETR. A commonly misunderstood example is interest expense. A company that has debt and records interest expense in the same amount for financial accounting purposes and tax purposes will not have a lower GAAP ETR because of this interest expense and deduction.¹⁷⁵ The GAAP ETR is not affected by temporary differences, but is affected by permanent differences, tax credits that directly reduce the taxes owed on a given income but do not change taxable income, items that have a rate differential such as foreign earnings that are permanently reinvested, the incremental effects of state taxes, and changes in the valuation allowance and many changes in the tax contingency reserve.

¹⁷⁵ The effective tax rate might change because of mathematical proportions. For example, if the company's GAAP ETR is less than 35 percent for other reasons and the firm then increases the level of debt, the GAAP effective rate will be reduced slightly because now the proportion of income taxed at a lower rate is a greater percentage of the total (because there is less taxable income after the interest deduction). However, the interest expense itself does not create a deduction that directly reduces the GAAP ETR; if reduced, it is a mathematical outcome --if the company's pre-interest GAAP ETR is 35%, it will continue to be 35% after the interest expense (deduction).

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Table 1 – Measures of tax avoidance							
Measure	Computation	Description	Impact accounting earnings?	Reflect deferral strategies?	Reflect non-conforming avoidance?	Reflect conforming avoidance?	Computable by jurisdiction?
GAAP ETR	$\frac{\text{Worldwide total income tax expense}}{\text{Worldwide total pretax accounting income}}$	Total tax expense per dollar of book income	Yes	No	Yes	No	Yes [#]
Current ETR ⁱ	$\frac{\text{Worldwide current income tax expense}}{\text{Worldwide total pretax accounting income}}$	Current tax expense per dollar of book income	No	Yes	Yes	No	Yes [#]
Cash ETR ⁱⁱ	$\frac{\text{Worldwide cash taxes paid}}{\text{Worldwide total pretax accounting income}}$	Cash taxes paid per dollar of book income	No	Yes	Yes	No	No
Long-Run Cash ETR ⁱⁱⁱ	$\frac{\Sigma(\text{Worldwide cash taxes paid})}{\Sigma(\text{Worldwide total pretax accounting income})}$	Sum of cash taxes paid over n years divided by the sum of pretax earnings over n years	No	Yes	Yes	No	No
ETR Differential ^{iv}	Statutory ETR – GAAP ETR	The difference of between a firm's GAAP ETR and the statutory ETR	Yes	No	Yes	No	No
DTAX ^v	Error term from the following regression: ETR differential*Pre-tax book income = a + bControls + e	The unexplained portion of the ETR differential	Yes	No	Yes	No	No
Total BTD ^{vi}	Pretax book income – ((U.S. CTE+ Fgn CTE)/U.S. STR) – (NOL _t – NOL _{t+1})	The total differences between book and taxable incomes	Yes for a portion, no for a portion	Yes	Yes	No	Yes (U.S.)

Table 1 – Measures of tax avoidance							
Measure	Computation	Description	Impact accounting earnings?	Reflect deferral strategies?	Reflect non-conforming avoidance?	Reflect conforming avoidance?	Computable by jurisdiction?
Temporary BTD	Deferred tax expense/ U.S. STR		No	Yes	Yes	No	Yes (U.S.)
Abnormal total BTD ^{vii}	Residual from BTD/TA _{it} $= \beta TA_{it} + \beta m_i + e_{it}$	A measure of unexplained total book-tax differences	Yes for a portion, no for a portion	Yes	Yes	No	No
Unrecognized tax benefits ^{viii}	Disclosed amount post-FIN48	Tax liability accrued for taxes not yet paid on uncertain positions	Yes	No	Yes, some	Yes, some	No
Tax shelter activity ^{ix}	Indicator variable for firms accused of engaging in a tax shelter	Firms identified via firm disclosures, the press, or IRS confidential data	Depends on the type of shelter	Depends on the type of shelter	Not overall-measure is transaction based	Not overall-measure is transaction based	Unlikely
Marginal tax rate ^x	Simulated marginal tax rate	Present value of taxes on an additional dollar of income	No	Yes	Yes	Yes	No

ⁱ The Current ETR is lower than the GAAP ETR, on average.

ⁱⁱ A more direct measure of taxes actually paid but numerator and denominator may be unaligned. The measure is more volatile year-to-year than the two measures above. Can also deflate by pretax income adjusted for special items.

ⁱⁱⁱ See Dyreng et al. (2008). Measured generally over 3 – 10 years. Longer may be better but fewer available firms. Eliminates the volatility in Cash ETR. Can also deflate by pretax income adjusted for special items.

^{iv} If using the same U.S. statutory tax rate for all firms, comparing GAAP ETRs yields similar inferences.

^v The terms on the right hand side can vary depending on the research question. Model is only as good as the variables included as determinants. What variables to include depends on how one interprets the actions of the manager with regard to that construct— action taken to reduce taxes or the reduction of tax is a byproduct.

^{vi} Grossing up current tax expense by the statutory tax rate to estimate taxable income is subject to well-known measurement error (Hanlon, 2003). Subtracting the change in the NOL is intended to capture changes in taxable income that are not captured by the current tax expense because the firm is a tax loss firm and current tax expense is thus reported as zero (or a negative if they have NOL carrybacks). Researcher should conduct sensitivity tests for the cases where measurement error is likely the highest as in Hanlon et al. (2005).

^{vii} See Desai and Dharmapala (2006). A variety of other right-hand side variables could be included depending on what the research question calls for in terms of “controls.” TA (Total Accruals) intended to control for earnings management incentives.

^{viii} The measure is a financial accounting accrual subject to the conservative or “aggressive” nature of the firm for financial accounting purposes.

^{ix} The measure will not include firms that are not caught nor will it include firms that can otherwise avoid tax successfully and do not engage in shelters.

^x See Shevlin (1990), Graham (1996), Blouin et al. (2010), Graham and Kim (2010). This measure is not really a measure of avoidance but may provide information when comparing firms with varying importance for financial accounting earnings (e.g., private companies versus public companies).

Table 2 - The predicted economic effects of dividend taxes			
	<u>New view</u>	Traditional view	Irrelevance view
Effects of a tax rate increase on investment, payout, and share value			
$\frac{\partial Investment}{\partial t_d}$	0 (< 0 if temporary)	< 0	0
$\frac{\partial dividend}{\partial t_d}$	0 (< 0 if temporary)	< 0	0
$\frac{\partial Value}{\partial t_d}$	< 0	< 0	0
$\frac{\partial Value}{\partial t_d \partial d}$	0 (< 0 if temporary)	< 0	0
Effect of dividend payout and taxes on expected returns			
$\frac{\partial R}{\partial d}$	> 0	?	0
$\frac{\partial R}{\partial d \partial t_d}$	> 0	?	0

R is the expected pre-tax return, d is the dividend yield, and t_d is the tax rate on dividends.