**The Interaction between Real Corporate Decisions and the Flexibility
of Tax Treatment and Financial Reporting**

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Not for quotation. Comments welcome.**

1.   The Intersection of Accounting and Economics in the Study of Taxation

1.1. Motivation

For several reasons the marriage of accounting and economics in the study of taxation is natural and, indeed, imperative. The most obvious reason is the central role played by information in each discipline. Information, and in particular information asymmetry, is at the core of the modern normative economics approach to taxation, known as optimal tax theory. According to this theory, if the IRS could costlessly observe everything about taxpayers, taxes could be collected with no excess burden because individual tax liability could be based on an *inalterable* correlate of individual well being, call it ability. It is because ability cannot be measured well that governments are left to consider taxing on the basis of *alterable* second-best correlates of well being such as income, consumption, or wealth. Because they are alterable, taxing them causes behavioral response and therefore inefficiency. Thus, measurement and information are at the core of the normative economics theory of taxation.

Information is also at the core of accounting because the purpose of accounting is to provide information about large, especially public, business organizations. This information is central to the management of public corporations, whose public nature means that effective control is not exercised by the legal owner(s) but instead by hired, professional managers. It is inevitable that these managers know much about the business that most shareholders do not, and potentially self-interested behavior by these managers necessitates pressure from external investors and perhaps formal and informal contracting arrangements to induce managers to pursue shareholder-value-maximizing behavior. Objective and verifiable accounting information facilitates shareholder monitoring of business operations, and supplies a wide array of contractible variables, which can be used in management compensation plans to align the interests of shareholders and managers.[1]

Publicly-owned companies have to say how they are doing twice, to two different audiences, each of whom has a stake in assessing how much income is being generated.

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[1] Other parties, including regulators, creditors, and rating services, also use financial reports and often get their own reports.

One is a public accounting, to shareholders, potential shareholders, creditors, and potential creditors. Rules are set by the Securities and Exchange Commission (SEC) directly and through SEC oversight of private standards setting bodies such as the Financial Accounting Standards Board (FASB). The other is a nonpublic accounting, to the Internal Revenue Service (IRS). Like most shareholders, the IRS takes a portion of income without participating in management, and to monitor that it is receiving its appropriate share, it receives confidential -- and possibly misleading -- reports on how the business is doing. Note that the IRS can see a corporation's financial statements, but the public cannot see the tax return. This helps the IRS to get an accurate sense of the true position of the firm; this has been enhanced by the new Schedule M-3 of the tax return, which requires the company to provide more information to reconcile the information on the financial statement to the information provided elsewhere on the tax return.

True income and income reported in financial accounts differ for two reasons. First, there are inherent difficulties in conveying and summarizing the profitability of ongoing operations and future prospects. Second, there may be an incentive to mislead the audiences about ongoing operations. Insiders might want to mislead outsiders, and both insiders and outsiders might want to mislead competitors. Presumably one reason for Generally Accepted Accounting Procedures (GAAP) and SEC rules is to prevent insiders from exploiting outsiders and, by so doing, facilitate efficient capital markets. The measurement of taxable income, while subject to different rules than financial accounting in the U.S--in part because of purposeful policies that use the tax system to induce or reward particular behaviors--is subject to the same kind of inherent measurement difficulties.[2]

Another reason for a bi-disciplinary analysis of taxation is that it is necessary for a comprehensive treatment of the behavioral response to taxation. A full understanding of the behavioral response to taxation is important not only for the analysis of efficiency, but also for the analysis of equity because the behavioral response affects the incidence of taxes—who really bears the burden, and whether the statutory burden is shifted through

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[2] Note that some argue that the recently enacted Sarbanes-Oxley rules are so onerous that they have affected the margin of which corporations are public and which are not. This parallels a fairly large economics literature about how the tax system affects what organizational form companies choose.

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price changes. This is especially important and difficult for corporate taxation, because it is not satisfactory to say that corporations bear the burden of taxes. Behavioral response matters for assessing efficiency because, in most situations, the responses that taxes induce are symptoms of economic waste.

Slemrod (e.g., 1992) argues that for some purposes it is useful to classify the behavioral responses to taxation into three types: (1) real responses like saving, investment, and labor supply, (2) responses that reshuffle, relabel, or recharacterize the real activities of the taxpayer, and (3) timing responses that take advantage of changing tax rules or rates. Furthermore, these responses generally form a hierarchy with respect to the magnitude, or elasticity, of behavioral response, with timing responses being the most elastic and real responses being the least elastic. Traditionally, economists have focused on the first (and, to a lesser extent, the third), while accountants have focused on the second, in particular how corporations report on their activities for both financial reporting and tax reporting purposes.

This classification exercise obscures at least two important issues, however. First, it ignores the interactions among these responses. For example, a given tax policy aspect may induce a real activity that, in turn, facilitates an accounting response. This kind of interaction is the focus of the present paper. Second, as stressed by the modern literature on the elasticity of taxable income, at some level of generality all responses are symptoms of deadweight loss, and therefore the anatomy of the behavioral response is not relevant. However, this view ignores, among other things, the possibility of shifting across tax bases (e.g., from the corporate to the individual income tax base) or, more relevant for the matter at hand, shifting across time.

Recognizing the centrality of information to the analysis of public corporations touches on one of the principal justifications for the corporation income tax—that it is an efficient method for the remittance of tax liability due on the income of shareholders. There are many fewer corporations than there are shareholders or employees, and it is efficient for the government to collect revenue from the businesses that already have sophisticated accounting systems in place. In modern economies, it is corporations, and businesses generally, who are at the center of both remittance of funds to the tax authority and the transmittal of tax-related information from the private to the public sector. As

Richard Bird has put it so eloquently, "The key to effective taxation is information, and the key to information in modern economy is the corporation. The corporation is thus the modern fiscal state's equivalent of the customs barrier at the border."[3]

The apparent proliferation of corporate tax shelters challenges the notion that the corporation is the efficient node of collection of tax triggered by income. If there are economies of scale in the consumption of tax shelters, then collecting tax revenue from big, public corporations might not be much more efficient than collecting it from shareholders. Indeed, because of the possibility of information reporting by corporations regarding dividends and matching this information with shareholders' income tax returns, dividend receipts are arguably much easier to monitor than corporation income. Resolving this issue brings us back to the separation of ownership and decision making. Consider this question: would a corporation be as tax-aggressive if the tax remitted by the corporation was unrelated to the company's tax aggressiveness (related to book income?), so that any tax savings from aggressiveness accrued directly to the shareholders by lowering their personal tax liability? If the answer to this question is yes, they would be equally tax-aggressive, then the point of collection is immaterial to tax shelter policy. If, though, the answer is no, then tax savings that accrue directly to the shareholders would not, on average, be pursued quite as aggressively by public corporations, and devolving remittance responsibility to shareholders might inhibit aggressiveness. A similar issue pertains to the management of book earnings—do the benefits accrue to managers, or shareholders, or both? This has led to two perspectives on earnings management: it is opportunistic behavior by managers, or that it improves the quality of communication to shareholders by focusing on permanent earnings and smoothing out transitory fluctuations in earnings.

Of course, there is information asymmetry between corporate insiders and shareholders not only about the company's profitability and prospects, but also about how aggressive are the tax positions taken. Shareholders do not set accounting and tax policy directly. Instead, they influence these things indirectly through their agents, whether that is the chief financial officer or the vice president for taxation. In order to align the incentives of the decision makers and the shareholders, the managers are likely

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[3] Bird (2002).

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to have been granted stock options or other compensation arrangements that are tied to observable outcomes. This situation suggests some fascinating questions. How does the contract offered to the tax decision maker change when there are penalties imposed by the IRS or SEC? Does the contract change to offset the intended purpose of the penalties? From a normative point of view, what is the most appropriate cocktail of tax evasion penalties to be imposed on the company and directly on the managers within the corporation, knowing that the contract may very well adjust to the enforcement regime?[4]

Finally, empirical analysis of how corporations respond to the tax system that is based on financial reports is also greatly facilitated by close collaboration between accountants and economists, for reasons that have already been discussed here. First, the financial reports may be massaged to mislead the shareholders. Second, and more prosaic, is the fact that corporations do not in their financial reports have to reveal exactly what tax they pay to the IRS, much less what their "true" taxable income is. Some academics are lucky—and entrepreneurial--enough to get a peek at sanitized samples of corporate tax returns. These researchers are not so naïve as to take these reports as the unalloyed truth. Both the tax return and the financial statement are snapshots of what the corporation wants some audience — either the IRS or the investing public — to see. For example, many micro-level studies of the effect of taxation on investment have used the capital expenditure variable from companies' uses of funds statement., but no one (as far as we know) has addressed whether these figures are subject to systematic bias related to tax avoidance or accounting malfeasance, or, more importantly, whether any such misreporting biases the conclusions of empirical analyses about the effect of tax policy on investment.

1.2. Tax and Book Trade-offs

The largest body of tax research in accounting examines the coordination of taxes and other factors in business decisions. The tension surrounding these papers is that taxes cannot be minimized without affecting other organizational goals. A reoccurring theme in this literature is that tax minimization is typically not the optimal business strategy. This is fairly obvious in some contexts, such as the choice between taxable and

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[4] This issue is addressed in Crocker and Slemrod (2005).

tax-exempt bonds, where the tax advantages of some activity are reflected in its pre-tax return or price. Accountants generally study the role played by financial reporting considerations in tax optimization decisions.

Scholars have examined the coordination of taxes and financial reporting in a wide range of settings. Common themes in these papers are that the coordination is complex. Non-accountants typically cannot understand why firms would forgo cash to enhance reported accounting earnings. At the risk of oversimplification, financial reporting costs are those costs, real or perceived, related to reporting lower income or shareholders' equity. They are important to effective tax planning because tax-minimizing strategies often result in lower reported income. Many financial contracts with creditors, lenders, customers, suppliers, managers, and other stakeholders use accounting numbers to specify the terms of trade, influencing managers' willingness to report lower income. Thus, many choices in accounting, financing, marketing, production, and other business functions involve weighing the tax incentives to lower taxable income against the financial reporting incentives to increase book income.

Although tax accounting and financial accounting often differ in revenue recognition and other important concerns, tax plans often result in reporting lower book income. Thus, it is not surprising that tax planning affects financial accounting choices and that financial accounting considerations affect tax plans.

The accounting literature on this topic has generally concluded that financial accounting management and tax management are not independent, and neither consideration consistently dominates the other in decision making. A key implication from these studies is that financial accounting considerations may be an important omitted correlated variable in many tax studies, and tax considerations may be an important omitted correlated variable in many financial accounting studies.

The classic book-tax studies evaluate the "last-in, first-out" (LIFO) inventory accounting conformity requirement. This literature grew out of interest in two questions, which continue to be the fundamental question in tradeoff studies. First, do stock prices change in an efficient or unsophisticated manner at releases of information about LIFO adoptions? A functional fixation view of investors would predict that LIFO adopters would experience negative stock price changes when they announce lower LIFO-based

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earnings. In contrast, an efficient market view of investors predicts they would disregard the lower book earnings and value the LIFO tax benefits, so that LIFO adopters would experience positive stock price changes at adoption announcements. In the case of LIFO adopters, we find that share prices fall. However, studies have concluded that the reason for a fall in price is not functional fixation but rather that, when a firm elects LIFO, it is signaling that inflation is a problem and thus share prices fall on the news about costs, not earnings or taxes.

Second, do managers choose the inventory accounting method that minimizes the present value of the firm's current and expected future tax payments, or avoid LIFO because its use lowers reported earnings in the short-term? The LIFO literature is mixed, but tax considerations appear to dominate financial reporting considerations. Scholars have conducted similar tests in a wide variety of settings. Sometimes taxes seem more important and other times financial accounting considerations seem to dominate. For a comprehensive analysis of the trade-off literature, see Shackelford and Shevlin (2001).

2. A Unifying Framework
2.1. Motivation

In this paper we discuss, model and provide examples that illustrate how flexibility in accounting rules and tax law influences real business decisions, including but not restricted to investment. We provide a unified model that accommodates trade-offs between book and real income (e.g., LIFO accounting), timing shifts in paid taxes (e.g., bad credit write-offs), timing shifts in book taxes (e.g., permanently reinvested earnings, or PREs), and other manipulation of advantages in tax and book rules (e.g., stock options).

We propose a definition of flexibility that emphasizes timing and choice. A real decision is said to produce tax or book flexibility if it gives a firm choice over when to pay or expense its tax obligation. Write-offs and PREs are our principal examples of flexibility. Stock options and LIFO do not produce flexibility in this sense. Choosing LIFO accounting allows firms to tradeoff book and income earnings, but it does not expand the future options of a firm. Stock options take advantage of the tax and accounting rules, but the existence of stock options does not create slack. By providing a

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model that encompasses these examples, we are able to make clear distinctions among them.

We focus on settings where the impact of tax and financial reporting on real decisions is interwoven, that is where taxes affect real decisions *and* financial reporting affects real decisions--where changes in either would affect the other's impact. Cases where the effects are separable have been extensively treated in the existing accounting and economics literature. Our contribution is a model that simultaneously treats book and tax flexibility, allowing for an appreciation of how the realms interact and simultaneously determine real decisions. Its objectives are to provide a unifying framework (language, if you will) within which to discuss both the accounting and economic aspects of taxation, and by so doing to generate testable insights from a rigorous modeling of these issues.

2.2. A Model

Having begun this paper by noting the crucial role of information asymmetries in both the accounting and economics of taxation, we need now to acknowledge the difficulty of formally modeling related issues. Why, and under what circumstances, are public companies willing to expend real resources to enhance the "book" profitability of a given "real" profitability situation?

For the moment, we skirt these issues, and simply assert that a typical firm's objective function includes both true after-tax profits (π_R) and book after-tax profits (π_B). A two-period objective function that recognizes both book and real income can be written as

$$M(\pi_R^0 + \delta\pi_R^1, \pi_B^0, \delta\pi_B^1)$$

where M is some function, which we assume to be twice differentiable, and δ is the discount factor.

The setup allows the firm to trade off book and real income. It also accommodates the possibility that firms value an additional dollar of book income in one period more than in another. This may be the case, for example, if a manager seeks to smooth earnings or create an upward trend in earnings.[5] In contrast, the setup assumes that managers care only about the present value of real earnings.

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[5] Graham, Campbell and Rajgopal (2005) provide evidence that managers are willing to sacrifice to smooth earnings over time.

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Next, let D refer to some (continuous) decision made by a firm, and, for each period, let

$$\pi_R = F_R(D) - T(F_T(D)) - \Omega(F_B(D) - F_T(D))$$

$$\pi_B = F_B(D) - T(F_B(D)) - \Omega(F_B(D) - F_T(D)),$$

where the F function denotes net revenue (production value minus costs), T taxes paid, and Ω audit-related costs (all in dollars). The subscripts on the functions indicate that any given action may change real (R), taxable (T) and book (B) income differently. The (potentially non-linear) tax function, T, is the same for tax and book.

The tax system enters twice. First, T is the direct cost of taxation, the amount paid to the IRS. Second, $\Omega(F_B(D) - F_T(D))$, represents costs of the tax system that arise from a divergence between book and tax income. Under the Sarbanes-Oxley rules, firms must reconcile book and tax income differences on Schedule M-3, which may be costly. More generally, since book income is public information available to the IRS, divergence in tax income and book income may draw costly attention from the IRS. Note that, even though the tax function is the same, the marginal tax rate on an additional dollar of income in each may differ if, for example, book income is higher than tax income. Our examples below do not directly deal with this dual signaling problem, but we think it is another way in which there is a genuine interaction between tax and book decisions.

Flexibility is the capacity to shift taxes (real or book) across time periods. The role of flexibility is made clear in the firm's constrained optimization problem:

$$\underset{D,S_T,S_B}{Max}\ M(\pi_R^0 + \delta\pi_R^1, \pi_B^0, \delta\pi_B^1)$$

such that

$$\pi_R^0 + \delta\pi_R^1 = F_R^0(D) - T\big(F_T^0(D) - S_T\big) - \Omega\ \big(F_B^0(D) - S_B - \big[F_T^0(D) - S_T\big]\big)$$

$$+\delta\big(F_R^1(D) - T\big(F_T^1(D) + S_T\big) - \Omega\ \big(F_B^1(D) + S_B - \big[F_T^1(D) + S_T\big]\big)\big)$$

$$\pi_B^0 = F_B^0(D) - T\big(F_B^0(D) - S_B\big) - \Omega\ \big(F_B^0(D) - S_B - \big[F_T^0(D) - S_T\big]\big)$$

$$\pi_B^1 = F_B^1(D) - T\big(F_B^1(D) + S_B\big) - \Omega\ \big(F_B^1(D) + S_B - \big[F_T^1(D) + S_T\big]\big)$$

$$|S_T| \leq \overline{S_T(D)}$$

$$|S_B| \leq \overline{S_B(D)}$$

$$A[S_T - S_B] = 0.$$

where S_T and S_B, which are choice variables, represent real and book income subject to tax that can be shifted across periods, and $\overline{S_T(D)}$ and $\overline{S_B(D)}$ are constraints on the amount of shifting that is possible. A is a parameter equal to either zero or one.

Before proceeding, a few notes are in order. This set of equations appears more complicated than it is. The π terms are placeholders that can be substituted out. This means that the first three equations can be substituted into the objective function (but only at further loss of visual clarity). Only the last three are truly constraints. Here and throughout the paper, we denote functions with parentheses and groups of terms with brackets. Hence, A is a scalar, not a function taking $S_T - S_B$ as an argument. Finally, the visual representation is cluttered by the fact that we write each F term as a function of D. We think it is important, however, to be clear about which terms are functions of D and which are choices.

Flexibility is captured in the notion that, given any particular set of decisions made by the firm, some amount of slack is created in the timing of (real and/or book) taxable income. Given the maximum available slack ($\overline{S(D)}$), the firm chooses a level of shifting (S) to maximize M. As written, a positive S represents a deferral of taxable income. Flexibility allows the firm to move taxable income, but does not change the undiscounted total of taxable income. Investments and other real decisions determine the amount of slack in the system, but the firm separately chooses the amount of slack to be utilized. Note also that, at present, the model allows firms to manipulate book income only through changes in the timing of book taxes, not the timing of book revenue or costs. Flexibility in book revenues and costs can be introduced as a third shifter that acts like the other two.

The model accommodates the idea that flexibility may or may not be valuable. If an action creates additional flexibility, this is only valuable if that flexibility is to be used. Mathematically, flexibility has value, on the margin, only if the S constraints are binding. In the first-order conditions, this will be synonymous with a positive Lagrange multiplier.

The final constraint introduces an additional parameter, A. A is a zero-one dummy variable indicating whether or not tax and book transfers must conform.[6] If the

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[6] Technically, the A variable concerns what one might call "marginal conformity,' i.e., whether shifts from baseline "unmanipulable" measures of book and tax income must be equal.

government requires conformity, then A=1, and the transfer of book income must match the transfer of tax income. PREs, as discussed below, have this feature. If the government does not require conformity, then A=0, and the tax shift is free to differ from the book shift. Write-offs are an example of this type of flexibility. Conformity generates interaction by linking the values of book and tax flexibility. Additional flexibility in book income, for example, might be valuable, even if a firm is indifferent to the timing of book earnings, because it allows the transfer of tax income across periods.

At present, the model assumes perfect certainty. In reality, uncertainty is part of the story. Firms make choices about flexibility and timing based on their beliefs about the future. In an uncertain world, a firm might produce flexibility that, in the end, has no value. For example, a firm may suspect that its marginal tax rate next period will be lower than it is today, perhaps because it expects a net operating loss in the next period. As a result, it may choose one investment project over another because the former produces slack in the timing of tax income and the firm would like to shift taxable income forward. Next period earnings, however, may be surprisingly strong, meaning that the marginal tax rate is unchanged. In such a case, slack was created, perhaps at a cost, but it produced no benefits for the firm. We can formally recast our two-period model to allow uncertainty about production and taxes in period 1. At present, we believe that this modification would introduce more notational complexity than it would add new insight. Nevertheless, we believe it is appropriate to think about our results as describing a world of probabilistic decision-making.

The model introduces several non-traditional terms into the equation for the optimal investment decision. The first-order condition for a decision D is

$$
0 = M_1 \left[F_R^{0'} - T_0' F_T^{0'} - \Omega_0 \left[F_B^{0'} - F_T^{0'} \right] \right] + \delta M_1 \left[F_R^{1'} - T_1' F_T^{1'} - \Omega_1 \left[F_B^{1'} - F_T^{1'} \right] \right]
$$

$$
+ M_2 \left[F_B^{0'} - T_0' F_B^{0'} - \Omega_0 \left[F_B^{0'} - F_T^{0'} \right] \right] + \delta M_3 \left[F_B^{1'} - T_1' F_B^{1'} - \Omega_1 \left[F_B^{1'} - F_T^{1'} \right] \right]
$$

$$
+ \lambda_T \overline{S_T}'
$$

$$
+ \lambda_B \overline{S_B}',
$$

where each prime indicates the derivative of a function with respect to the decision D. M_1, M_2 and M_3 are the derivatives of M with respect to its three arguments (present-

value real after-tax income, period 0 book after-tax income, period 1 book after-tax income). T' is the marginal tax rate and Ω' is the marginal audit cost, both of which may vary across terms because the point at which they are evaluated varies. To capture this difference across periods, subscripts indicate the period in which the functions are evaluated. The λ terms are the Lagrange multipliers on the S constraints.

If neither flexibility nor book income are of concern (including that $\Omega' = 0$), the FOC includes only the first two terms. In this case, D should be set so that at the margin the present value of after-tax revenues equal zero, as follows:

$$\left[F_R^{0'} - T_0' F_T^{0'} \right] + \delta \left[F_R^{1'} - T_1' F_T^{1'} \right] = 0$$

This is the standard case.

When book income is also a concern, then the first four terms may be non-zero. First, consider a firm that values book income but is unconcerned about the timing of a given present value of book income. If we continue to ignore the problem of divergence ($\Omega' = 0$), in this case $M_2 = M_3$, and the FOC becomes

$$\frac{-M_2}{M_1} = \frac{\left[F_R^{0'} - T_0' F_T^{0'} \right] + \delta \left[F_R^{1'} - T_1' F_T^{1'} \right]}{\left[F_B^{0'} - T_0' F_B^{0'} \right] + \delta \left[F_B^{1'} - T_1' F_B^{1'} \right]}.$$

The trade-off between book income and real income comes through the ratio M_2/M_1, the relative value at the margin of the present value of real versus book income. The decision to use LIFO inventory accounting, for example, is a decision that raises book income and the lowers real income. The greater is M_2, the more likely it will be that a firm chooses LIFO. Note that analysis of the trade-off between real and book income does not require the use of the flexibility parameters.

If a divergence between book and tax income is costly at the margin, then $\Omega' \neq 0$. In this case, the value of decisions that raise book income more than tax income will be eroded by increased IRS scrutiny. Algebraically, all of the Ω' terms become relevant.

The final two terms reflect the value of flexibility. If a decision does not affect flexibility, then $\overline{S_T(D)}' = \overline{S_B(D)}' = 0$, and the final terms drop out. If a decision does raise flexibility, but flexibility has no value on the margin, then $\lambda_T = \lambda_B = 0$ and, again, the

final terms drop out. If a firm values flexibility at the margin, then the optimal amount of a decision D that raises flexibility will be higher than it would be in the absence of flexibility concerns. Equivalently, we can say that the cost of capital for assets that produce (valuable) flexibility is lower than assets with the same real returns that do not create flexibility.

Our primary focus is on how real decisions are affected by flexibility considerations, but it is also valuable to consider the first order conditions with respect to S_T and S_B. The FOC for S_T is

$$0 = M_1 \left[T_0' - T_1' \right] - [M_1 + M_2]\Omega_0' + \delta[M_1 + M_3]\Omega_1' - \lambda_T + \mu A,$$

where μ is the Lagrange multiplier on the conformity condition. If $\Omega' = 0$ and the multipliers are both zero, then income is shifted until the marginal tax rates in each period are equal. If divergence in tax and book income is costly, then this tax arbitrage may be incomplete. If the constraint on S_T is binding, then the tax arbitrage will occur only up to the value of λ_T. Finally, if conformity is an issue (A=1), then shifting tax income may have an additional benefit (or cost), depending on whether it aids or hinders book shifting. There is an analogous first-order condition for S_B that represents the same trade-offs in terms of book income.

Firms may wish to move book income because they value book income in one period more than in another. Firms may wish to move tax income because they may face different marginal tax rates in different periods. They do so by utilizing the slack in GAAP and tax rules which are created by their investment decisions.

In the next section, we discuss permanently reinvested earnings, bad credit write-offs, LIFO and stock options. Our model accommodates all of these examples and highlights how they differ. Investments that produce PREs increase flexibility in the timing of book income. In terms of the model, PREs raise $\overline{S_B(D)}$. Investments that produce write-offs generate flexibility in the timing of real taxes, raising $\overline{S_T(D)}$. LIFO is an example of trading off book and real income. In the model, this works through the curvature of M, not through the S variables. Stock options are a more traditional example. In the model, stock options are encouraged by the fact that they do not affect real and taxable income in the same way; mathematically, $F_R' \neq F_T' \neq F_B'$.

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3. Some Examples

3.1. Permanently Reinvested Earnings: An Example of an Investment Decision Affected by the Flexibility of Financial Reporting, where the Tax Law is the Source of the Flexibility

Foreign subsidiaries of U.S. companies pay tax in the jurisdictions where they operate. Their parent companies generally do not pay any residual taxes owed to the U.S. government until the profits are repatriated as dividends. In contrast, for financial reporting purposes, firms have a choice about when they expense the residual U.S. tax. They can expense an estimate of the eventual tax liability when the income is earned, or they can defer the expense until the U.S. tax is actually paid (more precisely when uncertainty about repatriation is resolved). If the former is chosen, then the expense is matched to the income recognition, but there is no (tax) charge to earnings at repatriation. If the latter is chosen, income is reported without a corresponding tax expense, but after-tax book income is reduced at repatriation by the amount of the U.S. tax.

If the firm chooses to defer recognition of the tax expense, then the income is termed "permanently reinvested earnings." "Permanently" means that the firm does not intend to repatriate the profits in the immediate future. Intentions, however, can change at any time. When the firm decides to repatriate, they then expense the anticipated residual tax, reducing income at the time of the change in expectations.

In a sense, the deferral of U.S. tax liability on the earnings of foreign subsidiaries provides the parent company financial reporting flexibility. That is, because the tax is deferred until repatriation, firms have the option of expensing the tax when the profits are earned, when the profits are repatriated, or at any time between these dates by changing their minds after the timing of repatriation. If deferral were eliminated or if the U.S. shifted to a territorial system, then the financial reporting flexibility from deferral would be lost. This may provide one reason many U.S. companies seem to prefer deferral as a policy option.

The model of Section 2 formalizes the idea that the incremental flexibility in the timing of the tax expense provides an incentive for some firms to invest in low-tax

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countries. The lower the foreign tax rate, the larger the residual tax in the U.S. and consequently, the greater the earnings management potential. This type of foreign investment, in addition to the contribution to real earnings, increases S_B, which has expected value depending on the situation of the firm; equivalently, one can think of the increased book flexibility as reducing the effective cost of capital for this type of investment.

3.2. Write-offs: An Example of an Investment Decision Affected by the Flexibility of Tax Law where GAAP is the Source of the Flexibility

Our next example concerns write-offs. Although for purposes of this discussion we will focus on accounts receivable, similar accounting exists for bank loans, obsolete inventory and equipment, and other accounts. At the time of a sale, firms estimate for calculation of book income an expense for bad debts that will arise from credit sales (based on prior experience and the creditworthiness of the buyer) and set up a reserve account. Specifically, firms debit a "bad debt expense" and credit an "allowance for doubtful accounts." Later, when actual accounts are identified as uncollectible, they are written off the books, i.e., there is a debit for an allowance for doubtful accounts and a credit for "accounts receivable." In short, an expense for a portion of the sales price that will probably never be received is booked at the time of a credit sale. Thus, no charge to earnings occurs when the asset is removed from the books through a write-off. Conversely, firms cannot deduct bad debts until they write off the receivable, i.e., remove the asset from their "tax" books.

Technically firms should maintain a separate set of books for tax. Thus, in theory they could write off the asset for tax purposes (using whatever rules for write-offs in the code) at a different time than they write off the asset for books. In practice, however, our understanding is that (a) firms do not maintain separate tax books and (b) write-offs for books are presumed to be prima facie evidence for tax purposes that the account is lost. Thus, book write-offs serve to trigger tax deductions. Of course, the decision to write off a debt involves a judgment call, and thus provides flexibility on the firm's part.

Write-offs represent a case in which the flexibility in GAAP governs the deduction for tax purposes. This enables firms to time their deductions. Besides the

usual incentive to accelerate deductions (represented by the δ term in the model), this "tax" flexibility would be valuable when NOLs or credits are expiring. In the model, NOLs or credit expiration is a reason why marginal tax rates may vary across periods ($T_0' \neq T_1'$).To the extent that write-offs are associated with unprofitable ventures (e.g., a bank's profitability is inversely correlated with loan losses), this flexibility is ex ante particularly valuable, because it reduces the probability of being in a NOL position. By timing the write-offs of loans, banks may be able to maximize the tax savings from operational losses and loan write-offs; they also gain flexibility in the recognition of book income. Because the timing for tax and book purposes must be the same, the value of flexibility is the sum of the two shadow values, λ_B and λ_T .

The added flexibility implies that high-risk ventures (e.g., banks lending to developing countries) are more attractive than otherwise for those companies for which either tax and/or book flexibility has value.   There may, of course, be general equilibrium price effects that dampen the effects we have been discussing. For example, if the supply of these assets is not perfectly elastic, the increased demand for high-risk ventures may increase their relative price, dampening but not eliminating the enhanced attractiveness the book and tax flexibility offers.

3.3. LIFO

LIFO, an inventory costing method rarely available outside the U.S, arose because companies wanted an inventory costing method that resulted in lower taxes. In response to pressure for tax relief, U.S. accountants created a tax-favorable costing method for books. With the blessing of accountants as a proper way to account for book inventory, it was successfully argued that LIFO was acceptable for tax purposes. One consequence was LIFO conformity, i.e., LIFO is only permitted in the calculation of tax if it is used to calculate book income, as well. Moreover, if a firm were to drop LIFO for tax, it surely would not do so for book purposes. For present purposes, the question is whether LIFO provides flexibility that affects investment choices.

One angle is that LIFO provides an incentive to invest in the U.S., rather than countries where LIFO is not available. In theory, a foreign subsidiary of a U.S. parent could maintain its home country books in FIFO (or a non-LIFO method) and then convert

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to LIFO for worldwide consolidated financial statements. However, we doubt that this is a common practice, because LIFO requires costly tracking procedures. Thus, we doubt that many companies provide two sets of inventory costing in their foreign subsidiaries. They probably combine the U.S. LIFO numbers with the foreign subsidiary's FIFO numbers in constructing worldwide inventory. In most circumstances this implies the after-tax cost of holding inventory is lower for U.S. operations compared to foreign operations. Moreover, this advantage may obtain only for the domestic operations of U.S.-controlled domestic firms. If U.S. subsidiaries of foreign parent companies cannot use LIFO in their worldwide financial statements, they may conclude that the practical costs of tracking LIFO in the U.S. for U.S. tax purposes only may dominate the U.S. tax advantages. If so, then LIFO provides an advantage for U.S.-controlled domestic companies relative to foreign-controlled domestic companies. The decision to use LIFO accounting is a choice that lowers real taxes paid at the expense of book earnings. In terms of our model, the value of this tradeoff is determined by the ratio M_2/M_1.[7]

3.4. Stock Options

Until recently, stock options have been book-advantaged, compared with other forms of compensation; they remain a tax-advantaged form of compensation. These advantages induce firms to provide more compensation in the form of stock options than they would otherwise. Furthermore, because the returns to holding stock options differ from other forms of compensation (in particular, the payoffs are asymmetric with less downside risk), compensation packages that are more weighted toward stock options may increase the willingness of managers to undertake riskier investments than otherwise.

By compensating employees with stock, firms attempt to align the interests of employees with the interests of shareholders (i.e., share prices). During the 1990s, stock options, one form of stock compensation, became an increasingly popular form of stock compensation, far exceeding the use of other forms of stock payments, such as direct

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[7] In addition, firms can manage the erosion of LIFO "layers", which produce unusually large book profits and unusually large tax costs. This provides another flexibility for both book and tax that does not exist with other inventory costing methods.

issuance of stock. Because the way that firms compensate their managers affects their behavior, the shift toward stock options affected corporate investments.

The tax and financial accounting advantages of stock options relative to direct issuance of stock attributed to their popularity. Although stock options may dominate direct issuances of stock for other reasons (e.g., inducing more risky behavior), the tax and financial accounting advantages of stock options undoubtedly made stock option compensation more attractive than it would have been otherwise.

From a tax perspective, stock options create a tax deduction upon their exercise that equals the share price at exercise less the strike price. Thus, the deduction increases with the share price of the firm. Since stock prices generally rise with earnings and earnings are positively correlated with taxable income, stock options are a form of a revenue (or income) bond, where the firm receives a deduction that increases with taxable income.

In contrast, direct issues of stock provide a tax benefit at the time of issuance, equal to the difference between the value of the stock and the price that the employee pays for the stock. Thus, the tax benefit is fixed, regardless of the firm's taxable income.

Until recently, stock options also dominated direct issuance of stock from a financial accounting perspective because stock options were not expensed on the income statement. Thus, from a book standpoint, stock options dominated other forms of compensation because, unlike all others, it never created a charge against earnings. Direct issuance of stock creates an expense that equals the tax deduction.

Thus, besides any benefits from aligning managers' incentives with shareholders' interests, stock options also provide tax and financial reporting benefits that are unavailable through other forms of compensation. These tax and accounting advantages of stock options undoubtedly played an important role in their ascension as a form of compensation and a much more popular form than direct stock compensation. In terms of our model, the preference for stock options is due to the asymmetrical effects on real, taxable and book income $\left(F_R{}' \neq F_T{}' \neq F_B{}' \right)$.

Another difference between stock options and direct stock compensation is that the returns to stock options are asymmetric. That is, stock options are never exercised if

the share price loses value. Conversely, if he holds shares and the price falls, then the employee suffers a wealth loss. That said, the tax and financial accounting benefits of stock options induce firms to issue more options than would be optimal and thus encourage firms to undertake more risky investments than they would if the tax and financial reporting treatment was neutral (i.e., identical to other forms of compensation).

Note, though, that the effects of the book and tax treatment of stock options on compensation and, ultimately, investment are separable in the sense that the positive tax effects on investments would be unchanged if the advantageous book treatment were eliminated (as recently occurred). Likewise, the positive book effects on investments would have been unchanged if the advantageous tax treatment had been eliminated. One exception to that separability would occur if the divergence between income for book and tax purposes attracted extra examination attention of the IRS, as represented by the $\Omega(.)$ function in our model.

4. Conclusions

As long as book income has value to public corporations, real decisions that facilitate book earnings management are more attractive than otherwise, and especially so to companies for which this flexibility has relatively high value. Decisions that enhance the flexibility of tax payments may also be more attractive than otherwise, especially to companies that are more likely to otherwise face time-varying marginal tax rates. The source of this flexibility may be either the accounting rules or the tax law. It is critical to know whether the book and tax accounting either must by law be conformed, or will be conformed by choice because of the private costs of maintaining separate accounting systems. When they are not conformed, divergence between the two may be costly to the extent that it alerts the IRS to possibly aggressive tax planning.

The formal model of this paper is offered in the hope that it will facilitate discussion of these types of issues in a rigorous, general framework. We recognize that the framework is still not general enough to capture potentially important aspects of the interaction between accounting and real decisions. For example, it does not model the nature of the information asymmetry between corporate insiders and (actual and

potential) shareholders to explain *why* book income enhances shareholder value. This may, or may not, affect the conclusions the model implies. Ideally one would like to integrate a model of the kind offered here with a model of the institutions that arise (e.g., performance-based executive compensation, audited financial reports, and other governance mechanisms) to address the information symmetry between shareholders and the managers of the corporation.

Nor does it place the corporation decisions within a general equilibrium setting that recognizes that tax code and accounting rule changes may affect the prices a corporation faces, and that U.S. public corporations compete against unincorporated U.S. businesses and foreign companies, including foreign multinationals. This prevents the model from addressing issues such as whether the information requirements of public corporations affect the decision of a business to *be* a public corporation. Nor does the model satisfactorily integrate the type of legitimate tax planning and earnings management stressed here with the use of aggressive—and possibly illegal-- tax shelters and outright evasion. A similar question arises in that context--is the gain from corporate tax avoidance inframarginal, or does it reduce the marginal effective tax rate on new investment? The answer depends on whether the real decision is what Slemrod (2001) calls *avoidance-facilitating*. If more investment (i.e., scale) allows the corporation to effectively "get away" with more sheltering, then there is an implicit subsidy to investment.

Ideally, an overarching conceptual framework can help to integrate the findings of the active empirical research in this area. It would, for example, be helpful to know whether the goal of a given empirical exercise is to provide estimates of the tradeoff between real and book income, and what mediates that tradeoff, or whether the goal is to measure the value of an accounting constraint and how much the loosening (tightening) of the constraint reduces (increases) the effective cost of a real decision. Accomplishing that task will raise the likelihood that new research will build upon itself to produce a coherent, empirically fleshed-out picture of the interactions among the policy choices of tax and accounting regulatory authorities and the real and accounting decisions of corporations.

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