An Application of the Scholes and Wolfson Model
to Examine the Relation Between Implicit and
Explicit Taxes and Firm Market Structure:
A Comment

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\textbf{ABSTRACT}

Callihan and White (1999) present a methodology for applying Scholes and Wolfson’s (1992) model of implicit tax rates to financial statement data. This methodology is aimed at addressing two issues: (1) measurement of implicit tax rates and (2) determination of the extent to which firms possessing market power can shift implicit tax burdens away from the firm. This paper examines Callihan and White’s empirically-driven definition of implicit tax rates and points to the pitfalls of using this definition for firms that may possess market power. In particular, it is shown that, since the Callihan and White measure assumes that firms do in fact operate in perfectly competitive markets, it cannot validly be used to measure the magnitude of implicit taxes in the presence of firm market power. Additionally, doubt is cast over the validity of Callihan and White’s finding that implicit taxes are lower for firms possessing market power.

\textbf{KEY WORDS}

Implicit tax, tax preferences, average ETR.

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Introduction

This paper reviews the methodology presented by Callihan and White (1999) for estimating implicit taxes from financial accounting data. Callihan and White (hereafter ‘C&W’) present a methodology aimed at resolving two important empirical issues relating to implicit taxes:

1. Measurement of implicit taxes using financial accounting data, and
2. Determining the extent to which firms possessing market power can shift implicit taxes away from their stockholders.

A major difficulty in the measurement of implicit taxes is the need to measure the (risk adjusted) expected return on a fully taxable asset. C&W surmount this difficulty by ‘differencing pre-tax returns within a firm to calculate that firm’s explicit and implicit tax rates rather than comparing a firm’s return to that of another benchmark investment which may have a different level of risk associated with it’ (p. 8).

The contribution of the present paper is two-fold. First, Callihan and White’s measure of implicit tax is examined. It is shown that, whilst the measure is entirely valid for perfectly competitive firms, caution must be used where the measure is applied to firms that may be capable of shifting implicit taxes away from stockholders. In particular, the measure is shown to be biased upward for firms possessing market power. It will be shown that C&W’s measure of implicit taxes is equivalent to \( \text{IMPRATE} = \frac{(t - \text{ETR})}{(1 - \text{ETR})} \), where \( t \) is the top statutory marginal tax rate and \( \text{ETR} \) is the corporate average effective tax rate. This measure reflects variations in firms’ average effective tax rates (and hence tax preferences), without regard to whether or not the firm shifts the implicit tax burden across to, for example, customers. Secondly, difficulties are revealed in the empirical examination of the
relation between implicit taxes and measures of market power. Recent studies examining implicit tax effects have typically examined differences in firm pre-tax return, and attempted to relate these differences to implicit taxes (E.g. Wilkie, 1992). This study highlights the need for caution in such an approach.

An initial assumption of the Scholes and Wolfson (1992) analysis of explicit and implicit taxes is that of perfectly competitive markets (Scholes and Wolfson (1992, ch.5)). Where a company, for example, is able to secure tax preferences, these savings are 'passed along' to its customers, in the form of lower prices. Scholes and Wolfson (1992) define the implicit tax rate as:

$$\text{IMPRATE} = \frac{R_b - R_a}{R_b}$$  \hspace{1cm} (1)

where $R_b$ is the risk-adjusted pre-tax return on a fully-taxed investment (investment b) and $R_a$ is the pre-tax return on the investment under consideration (investment a). They further define the explicit tax rate as:

$$\text{EXPRATE} = \frac{R_a - r}{R_b}$$  \hspace{1cm} (2)

where $r$ is the after tax return on the investment under consideration. The total tax rate, TOTRATE, is thus given by:

$$\text{TOTRATE} = \text{IMPRATE} + \text{EXPRATE} = \frac{R_b - r}{R_b} = 1 - \frac{r}{R_b}$$ \hspace{1cm} (3)

These definitions hold for all firms, under all kinds of market structure. Now under the assumption of perfect competition, the (risk-adjusted) after-tax rate of return will be equal across all investments, and this equalized after-tax return is denoted by Scholes and Wolfson (1992) as $r^*$. Thus, under perfect competition, the after-tax return to the tax neutral asset, b, is given by $r_b = r^* = R_b(1 - t)$, where $t$ is the top statutory corporate income tax rate. Substituting this into Equation (3) gives:

$$\text{TOTRATE} = 1 - \frac{R_b(1 - t)}{R_b} = t$$ \hspace{1cm} (4)

In other words, in a perfectly competitive market, the total tax rate suffered by a firm will always equal the statutory tax rate, $t$: explicit tax savings will be perfectly offset by implicit tax burdens. However, where markets are not perfectly competitive, companies may be able to retain tax benefits for their stockholders or management. Where this arises, the total tax borne by a firm need not sum to the statutory tax rate
This possibility is of vital importance to government policy-makers. The extent to which firms can retain tax benefits in this way will be evidenced by differences in their (risk-adjusted) pre-tax returns, and not so much by their explicit tax burdens. Thus, rather than being 'mainly concerned with explicit taxes', policy-makers should 'also consider implicit taxes to provide a complete picture of the total tax burden.' (Callihan and White, 1999, p. 2). Callihan and White (1999) adapt and apply the Scholes and Wolfson (1992) model, using financial statement data, to examine whether firms with market power are able to shift implicit taxes away from capital providers.

One of the empirical difficulties with the Scholes and Wolfson (1992) model of implicit taxes is the need to compare the risk-adjusted pre-tax return on the investment of interest with the risk-adjusted pre-tax return on a fully taxed investment. In order to do this, some sort of risk valuation model has to be employed, such as the Capital Asset Pricing Model. Callihan and White employ a novel method to circumvent the risk-adjustment problem. Their method centres upon estimation of the pre-tax return of the benchmark investment. They define the pre-tax return on the fully taxable investment as:

$$R_{bi} = \frac{(PTI_i - CTE_i) / (1-t)}{SE_i}$$

(5)

where $R_{bi}$ is the risk-adjusted before-tax return on a fully taxable investment; $PTI_i$ is the pre-tax (book) income of the $i^{th}$ firm; $CTE_i$ is the current tax expense of the $i^{th}$ firm; $SE_i$ is stockholders’ equity and $t$ is the top statutory tax rate.\(^2\) This is equivalent to

$$R_{bi} = \frac{r_a}{(1-t)}$$

(6)

Thus, $R_{bi}$ gives the pre-tax return that would have to be earned on an equivalent-risk fully taxed investment, in order that both investments earn the same after-tax return.

Before examining the efficacy of the resulting Callihan and White measure of implicit tax, it is instructive to review what it is that the implicit tax is intended to

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\(^2\) Callihan and White (1999, 7)

\(^3\) Throughout this paper, upper-case $R$ denotes pre-tax return, lower-case $r$ denotes after-tax return, and the subscript indicates the firm to which the return relates. Unless otherwise indicated, and consistent with the implicit tax literature, a reference to ‘return’ should be understood to mean ‘expected return’.
measure. In accordance with the original Scholes and Wolfson definition\(^4\) of the implicit tax rate, it could be defined to be that reduction from the fully taxable pre-tax return suffered because of the existence of tax preferences. This reduction occurs, in perfectly competitive markets, because risk-adjusted after-tax returns are assumed to be equal across investments. Thus, where perfect competition holds, the Callihan and White device is a valid method of estimating the benchmark pre-tax return. However if, as in Callihan and White (1999), attention is focused on whether or not firms with market power can decrease their implicit tax, then the method can lead to unreliable measures of the true implicit tax. To see this, consider a firm that makes supernormal profits, due to market power. The object is to measure the implicit tax rate, \(\frac{R_b - R_a}{R_b}\).

If a firm makes super-normal profits, and is fully taxable, let its pre-tax return be \(R_b\). If, on the other hand, it gets tax preferences, then its pre-tax return, \(R_a\), will be lower than \(R_b\). However, if such a firm suffers no implicit tax, then, by definition, \(R_a = R_b\), and the firm, by paying less explicit tax due to tax preferences, increases its after-tax profits, relative to the fully taxed situation. But \(R_a \neq \frac{R_a}{(1-t)}\) because of tax preferences. Indeed, if tax preferences are positive, then for such a zero-implicit-tax firm, \(R_a = \frac{r_a}{(1-ETR)}\), where ETR is the average effective tax rate of the firm (ETR < t), defined as \(ETR = \frac{CTE}{PTI}\), where it will be recalled that CTE is current corporate income tax expense and PTI is pre-tax book income. This implies that \(\frac{R_a}{(1-t)}\) is an overestimate of \(R_b\). Thus, use of such a measurement procedure will show a positive implicit tax rate where the true rate is zero.

Consider now the case of a firm in a perfectly competitive market earning normal profits, and utilizing tax preferences, which also suffers implicit tax due to its tax preferences. If it suffers full implicit tax, relative to the equivalent fully taxable firm, then after-tax returns are equal to \(R_b (1-t)\)\(^5\). In the case of this firm, using \(\frac{R_a}{(1-t)}\)

\(^4\) Scholes and Wolfson (1992, 87) define the implicit tax rate as \((R_b - R_a)/R_b\), where \(R_a\) is the pre-tax return on the investment under scrutiny.

\(^5\) “Full” implicit tax here means that implicit tax which will reduce pre-tax returns to the extent that after-tax returns are equalized across the investments.
as a measure of $R_b$ is correct. Thus, use of this measurement device is tantamount to assuming that the firm suffers full implicit tax: the measure so derived is a measure of the implicit tax that would be expected under conditions of perfect competition. Callihan and White (1999) acknowledge this fact when they state (p. 8):

... IMPLICIT is the theoretical amount of implicit tax (decrease in pre-tax returns) that would be observed in a perfectly competitive and frictionless economy to offset the explicit tax savings ($X_t$) [sic] realized due to the use of tax preferences ($X$).

Unfortunately, this fact undermines Callihan and White’s first stated objective:

The first objective [of the study] is to estimate a firm’s implicit tax rate based on the S&W (1992) model using financial statement information.

When examining firms with market power, Callihan and White (1999) find that such firms have lower implicit tax rates, and that implicit tax rates are negatively related to pre-tax book returns. They define the implicit tax rate as (p. 7):

$$IMPRATE = \frac{(PTI - CTE)/(1-t) - PTI}{(PTI - CTE)/(1-t)}$$

(6)

This can be re-written as:

$$IMPRATE = 1 - \frac{R_a}{R_b}$$

(7)

Using Callihan and White’s (1999) measure of $R_b$ shows, however, that $R_b$ and $R_a$ are linked by the equation $R_a = \frac{R_b(1-t)}{(1-ETR)}$. Thus, substituting into Equation (7):

$$IMPRATE = 1 - \frac{(1-t)}{(1-ETR)} = \frac{(t-ETR)}{(1-ETR)}$$

(8)

In other words, if a firm pays full implicit taxes, due to its tax preferences, then its actual implicit tax rate will depend on the statutory tax rate and the firm’s level of tax preferences (measured via its average ETR). However, and perhaps more importantly, the Callihan and White (1999) measure of the implicit tax rate will be rendered unaltered by violation of the assumption that the firm suffers full implicit tax; the measure reflects variations in firms’ average effective tax rates (and hence tax preferences), without regard to whether or not the firm shifts the implicit tax burden across to, for example, customers.

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6 This relation stems from the assumption of equal after-tax returns across the comparable investments.

7 A firm with no tax preferences has $ETR = t$, and thus $R_a = R_b$ consistent with no implicit taxes.
**Numerical Examples.**

The following example is based on Callihan and White’s (1999) first numerical example given in the Appendix to their paper (Callihan and White (1999,17)). They consider a firm with book pre-tax income (PTI) of $100, and tax depreciation in excess of book depreciation by $37.50, giving a taxable income of $62.50. It is assumed that the statutory tax rate is 40 percent, giving a Current Tax Expense (CTE) of $(0.4 \times 62.50) = $25. Stockholders’ equity equals $1,000. The pre-tax return is thus

\[
R_a = \frac{100}{1000} = 10\%.
\]

Callihan and White (1999) assume perfect competition, by imposing the constraint of equal after-tax returns across investments. Accordingly, C&W estimate the benchmark return as:

\[
R_b = \frac{(PTI - CTE)/(1-t)}{SE} = \frac{(100 - 25)/(1 - 0.4)}{1000} = 0.125 \text{ (12.5\%)}
\]

where SE is stockholders’ equity (Callihan & White (1999,7,Equation (4))). They state that ‘if the firm had invested in fully taxable assets, its PTI would have had to equal $125 ($R_i = (100-25)/(1 - .4)$) to yield the same after-tax income as it had under its current investment strategy.’ They further estimate the implicit and explicit tax rates as

\[
\text{IMPRATE} = \frac{R_b - R_a}{R_b} = \frac{0.125 - 0.1}{0.125} = 20\% \quad (\text{Callihan & White (1999, 3, Equation (2))})
\]

and

\[
\text{EXPRATE} = \frac{R_a - r_a}{R_b} = \frac{0.1 - 0.075}{0.125} = 20\% \quad (\text{p.3, Equation (3)})
\]

for a total tax rate of 40\%, which is equal to the statutory rate. In this case, no problems arise with Callihan and White’s measure of $R_b$.

Now consider a second firm, with the same values for stockholders’ equity and tax preferences. However, it is now assumed that, instead of operating in a competitive market, this firm is a monopolist, and is able to ‘capture’ its explicit tax savings for its stockholders. In other words, the competitive adjustment process, which would ‘bid away’ supernormal after-tax returns due to tax preferences, is not available due to the non-contestability of the market in which it operates. Thus, pre-tax return to the tax-preferred monopolist is equal to the pre-tax return that it would

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8 Assuming the firm does not alter its factor input proportions to utilize more of the tax preferred asset. This assumption is relaxed below.
have earned had no tax preferences existed: the monopolist, facing the same demand curve, does not alter its output price and quantity. Thus, $R_b = R_a$. For this example, suppose that the firm’s pre-tax income is $200. With tax preferences of $37.50 and a statutory tax rate of 40%, the monopolist pays tax of $(200 - 37.50) \times 0.4 = 65$, and thus has pre-tax return of 20%, and after tax return of 13.5%. By construction, the actual implicit tax rate is zero. However, using Callihan and White’s measurement method, $R_b$ is estimated as:

$$R_b = \frac{(PTI - CTE)/(1 - t)}{SE} = \frac{(200 - 65)/(1 - 0.4)}{1000} = 22.5\%.$$ 

The implicit tax rate is then estimated as:

$$IMPRATE = \frac{R_b - R_a}{R_b} = \frac{22.5 - 20}{22.5} = 11.1\%.$$ 

Additionally, $EXPRATE = \frac{20 - 13.5}{22.5} = 28.9\%$ for a total tax rate of 40%.

The measured value of IMPRATE is thus equal to the implicit tax rate that would be expected under perfect competition. This implicit tax rate, being simply $(t - EXPRATE)$, does not effectively measure the true implicit tax rate. Rather, it measures the potential implicit tax rate that would obtain in a perfectly competitive market.

It was stated above that the existence of tax preferences, in the case of the monopolist, would not alter its pre-tax return: the monopolist sets marginal cost equal to marginal revenue, in order to maximise profits. This equality of pre-tax return assumes that both demand and marginal cost curves faced by the monopolist do not change in the face of the appearance of tax preferences. However, if tax preferences shift the marginal cost curve to the right, the monopolist will increase output, and thus lower prices, to achieve a higher before-tax profit level. Additionally, in the longer run, factor intensities may change, with the monopolist utilising more of the tax-preferred factor. Again, the result will be higher pre-tax profit levels. Thus, it is possible that, with market power, pre-tax returns to tax-preferred firms will be higher than the equivalent tax-neutral returns, $R_b$. In this case, a negative implicit tax will be observed. As already shown above, Callihan & White’s (1999) measure will, in the case of firms with market power, give rise to an overestimate of implicit taxes. If

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9 If the tax preference is considered likely to continue, then the supply curve of providers of the tax-preferred asset may also change in the longer run.
market power firms alter their output levels and/or input intensities, this bias will be exacerbated.

**Empirical Findings.**

The second objective of Callihan and White’s (1999) study was expressed as follows:

The second objective is to investigate the relation between a firm’s estimated implicit tax and two factors: (1) the firm’s pre-tax rate of return, and (2) the market power of the firm as measured by market concentration and firm market share. (p.2).

In order to examine these relations, they employ a monotonic least squares regression model of the following form:

\[
\text{IMPLICIT}_i = \beta_0 + \beta_1 \text{PTROE}_i + \beta_2 \text{CR}_4 + \beta_3 \text{MS}_i + \beta_4 \text{PTROE}_i \text{CR}_4 + \beta_5 \text{PTROE}_i \text{MS}_i + \beta_6 \text{YEAR87}_i + \beta_7 \text{YEAR88}_i + \varepsilon_i
\]

where: PTROE = pre-tax rate of return, SE = standard error

IMPLICIT = implicit tax, as previously defined
CR4 = four-firm market concentration ratio
MS = firm’s market share, defined as the firm’s sales divided by the total sales of the firm’s industry

YEAR87, YEAR88 = dummy variables corresponding with the years 1987 and 1988

PTROE*MS, PTROE*CR4 = interaction terms between pre-tax return and market power measures

\[\varepsilon\] = stochastic, mean-zero error term

and subscript i indicates firm i.

C&W formulate five hypotheses regarding the expected signs of the coefficients \(\beta_1\) to \(\beta_5\) in their model, as follows. First, they hypothesize a negative relation between IMPLICIT and a firm’s pre-tax rate of return, PTROE. This is because, in perfect frictionless markets, tax preferences (decreases in explicit taxes) lead to decreases in pre-tax returns, and thus to increases in implicit taxes (C&W (1999,9)). Secondly, a negative relation is hypothesized between the four-firm market concentration ratio of a firm’s industry and the firm’s estimated implicit tax. This is due to the fact that firms in more highly concentrated industries generally have a greater ability to influence prices in the market. In the limiting case of a monopoly, no competition exists in the market, and the monopolist sets the price and output combination that maximises his profit; this price/output combination will be such that the monopolist’s marginal cost of producing the product equals his marginal revenue.
Because of this ability to affect price, firms with market power will suffer less implicit tax than their counterparts in a perfectly competitive market structure. Indeed, monopolists will suffer zero implicit taxes, and may even reap a negative implicit tax (as already mentioned). Similarly, C&W hypothesize a negative relation between the estimated implicit tax and the firm’s market share within its industry.

Finally, C&W include two interaction terms in their model, one to capture interaction effects between pre-tax return and market concentration, and the other to capture the interaction effect between pre-tax return and market share. The rationale given for these two terms is as follows. Under perfect competition, an increase in tax preferences, leading to a decrease in pre-tax return, will give rise to an increased implicit tax, sufficient to offset the reduction in explicit taxes. Under less-than-perfectly competitive market structures, this offset will be less than perfect: firms will retain some of the explicit tax savings for themselves. Thus, the relation between pre-tax return and the estimated implicit tax will be weakened. The interaction terms are thus included to provide for this hypothesized weakening of the implicit tax / pre-tax return relation; the corresponding coefficients are hypothesized to be positive.

As previously noted, C&W’s definition of IMPLICIT may be interpreted as the maximum potential implicit tax that would be suffered by a firm in a perfectly competitive market. However, C&W’s empirical hypotheses appear to treat IMPLICIT as measuring the actual implicit tax burden borne by the firm. This is particularly evident in the explanations C&W give for each of their hypotheses (C&W, 1999, 9). This fact clouds the correct interpretation of their model. In what follows, each of C&W’s five hypotheses will be considered in turn.

Hypothesis 1: The hypothesised negative relation between pre-tax return (PTROE) and IMPLICIT. This relation can best be elucidated by ignoring terms containing market power variables, and considering firms operating in perfectly competitive markets. In this case, C&W’s model becomes:

\[ \text{IMPLICIT} = \beta_0 + \beta_1 \text{PTROE} \]

(ignoring the stochastic disturbance term, and year dummies).

C&W’s explanation of this relation suggests that, ceteris paribus, increased tax preferences lead to decreased pre-tax returns and hence to increased implicit taxes. In the perfect competition case, since potential implicit tax = actual implicit tax, C&W’s IMPLICIT variable can be interpreted as the right-hand side of their model.
equation. However, in accordance with Scholes and Wolfson’s (1992) definition of implicit tax, implicit tax depends not only on PTROE, but also on the tax-neutral pre-tax return, \( R_b \). Thus, for perfectly competitive firms, C&W’s relation should be:

\[
\text{IMPLICIT} = \beta_0 + \beta_1 (R_b - \text{PTROE})
\]  

(10)

However, for firms in perfect competition, \( R_b \) will not differ across firms of equal risk. Thus, omission of \( R_b \) from the model will not bias the estimated beta coefficients.  

Hypotheses 2 and 3. There is a negative relation between measures of market power and IMPLICIT. If IMPLICIT measured actual implicit tax, these hypotheses would make clear sense. However, interpreting IMPLICIT as potential implicit tax, the relation is not so clear. This is because potential implicit tax, by definition, does not depend on market power. As market power increases, actual implicit tax decreases; however, potential implicit tax (IMPLICIT) depends, not on market power, but on the average Effective Tax Rate (ETR) of the firm (see Equation 8).

Hypotheses 4 and 5. There is a positive relation between the interaction of market power variables and PTROE, and IMPLICIT. Again, if IMPLICIT were measuring actual implicit taxes borne, then this relation would make clear sense, and C&W’s explanations of hypotheses 4 and 5 would be correct. However, as above, IMPLICIT measures potential implicit tax. From Equation (8), it can be seen that the measured value of IMPLICIT depends, not on the observed PTROE value \textit{per se}, but merely on the corporate average ETR and the top statutory marginal tax rate, \( t \). So if firms have the same ETR, their measured IMPLICIT value will be the same, irrespective of differences in market power variables. Differences in measured IMPLICIT will depend, not on differences in market power variables / PTROE themselves, but on differences in ETR. But to the extent that firms possessing market power systematically have different tax preferences (and hence ETRs) than competitive firms, measured IMPLICIT will vary in relation to market power.

It thus appears that C&W’s finding of a relation between IMPLICIT and market power, and IMPLICIT and interaction terms stems not from implicit tax shifting, but from an observed systematic relationship between market power variables and tax preferences (and hence ETRs). An additional confounding influence.

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10 If all variables were observable, then, for perfectly competitive firms, this relation would amount to regressing IMPLICIT on itself.
on C&W’s results is the omission of the (unobservable) tax neutral return, $R_b$, from their regression equation. As noted above, under conditions of perfect competition and equal risk across firms, this omission does not bias the regression results. However, when firms with market power are considered, $R_b$ is likely to differ across firms in direct relation to their market power. In this case, a correlated omitted variable problem exists. This omission will bias the estimated beta coefficients (Maddala, 1992, 161-163).

To summarize, there are two main empirical difficulties with the C&W regression model: (1) A correlated omitted variable ($R_b$) exists, potentially biasing the coefficient estimates. (2) the IMPLICIT variable, as defined, fails to reflect changes due to the ability of a firm to shift its implicit taxes away from stockholders. The effect of this is that C&W’s observed relations between IMPLICIT, pre-tax return and market power variables may merely reflect an underlying relation between IMPLICIT and ETR, on the one hand, and market power on the other.

**CONCLUSION**

Callihan and White (1999) attempt to apply the Scholes and Wolfson (1992) model of implicit taxes to examine the relation between implicit taxes and tax preferences, and how this relation is affected by the market power of a firm. Their first objective was to furnish a measure of implicit taxes applicable to financial accounting data. It has been shown in the present study that this measure, whilst being perfectly valid for firms operating under conditions of perfect competition, cannot validly be used where firms operate in less-than-perfectly competitive markets. Secondly, Callihan and White (1999) estimate the relationship between their measure of implicit taxes and (a) pre-tax accounting returns and (b) market power variables. They find a negative relation between implicit taxes and pre-tax rate of return. This accords with the Implicit Tax Hypothesis. However, I show that their observed negative relation is biased by the omission of the tax-neutral benchmark return from their model. Next, C&W find a negative relation between market power proxies and the maximum potential implicit tax. They cite this as evidence of implicit tax shifting by firms possessing market power. However, I have shown that, under C&W’s specification, changes in market power variables would not be expected to impact implicit tax, as measured. This is

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11 Where firms differ in risk, and hence have differing tax-neutral returns, the estimated beta
because implicit tax was measured under assumptions of perfect competition; the measure did not reflect differences in market power.

Callihan and White (1999) were not the first study to attempt to relate the pre-tax accounting return to the potential implicit tax (or to tax subsidy). For example, Wilkie (1992) studied the relation between pre-tax return and tax subsidy, and again documented a negative relation. This study indicates that caution should be exercised when using such an approach to detect implicit tax effects.

In this study, it has been shown that the Callihan and White (1999) measure cannot validly be used to measure implicit taxes in the presence of market power, or implicit tax shifting. A valid question to ask is thus, ‘How can implicit taxes be measured under such circumstances?’ It would appear that, in measuring the ‘benchmark’ tax-neutral return, one must look outside of the firm of interest, to locate a fully taxable asset. If this asset is not of similar risk to the investment of interest, then use of some risk-adjustment model would appear unavoidable. In the case of accounting-based returns, such a tax-neutral firm will be difficult, if not impossible, to locate in practice. However, if a theoretical relation among tax preferences, market power and expected pre-tax return could be determined for firms of a given risk, then extrapolation of that relation to the point of zero tax preferences would provide an estimate of the benchmark return. Care must be taken in studying the implicit tax effects of firms with differing levels of risk, and in different industries, where the accounting treatments used are not uniform from industry to industry. In the absence of a better method for measuring implicit taxes in firms possessing market power, this may be a fruitful area for future research.

Callihan and White’s methodology represents the first attempt at measuring implicit taxes using financial accounting data. Where firms operate in a perfectly competitive market, their definition of implicit taxes holds, and may be used validly to estimate the implicit tax burden of the firm. Where firms operate in less-than-perfectly competitive markets, however, the C&W measure provides an upper bound on the implicit tax that may be suffered by firms.
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