

How Much Do Taxes Discourage Incorporation?

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Abstract. One of the most basic distortions created by the double taxation of corporate income is the disincentive to incorporate. In this paper, we investigate the extent to which the aggregate allocation of assets and taxable income in the U.S. between corporate vs. non-corporate forms of organization during the period 1959--86 has responded to the size of the tax distortion discouraging firms from incorporating. In theory, profitable firms should shift out of the corporate sector when the tax distortion to incorporating is larger, and conversely for firms with tax losses. Our empirical results provide strong support for these theoretical forecasts, and hold consistently across a wide variety of specifications and measures of the tax variables. The economic magnitudes of the effects are small, however, throwing doubt on the economic importance of tax--induced changes in organizational form.

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One of the most basic distortions created by the double taxation of corporate income is the disincentive to incorporate. However obvious this distortion may be, most papers investigating the distortions created by the corporate tax have taken as exogenous a firm's choice whether or not to incorporate, assuming for example that some industries are inherently corporate while others are inherently non-corporate. A variety of nontax factors, described below, can certainly influence a firm's choice of organizational form, causing some to favor incorporating and others not. But are these nontax factors so dominant that taxes do not in practice influence a firm's choice of organizational form? As Gravelle and Kotlikoff (1989, 1990) emphasize, tax--induced changes in firms' choices of organizational form in principle can create large excess burdens. The size of these distortions in practice depends on the extent to which firms respond to these tax incentives.

In this paper, we calculate how the tax distortion discouraging firms from incorporating has varied over time, then estimate the extent to which the allocation of assets and taxable income between corporate vs. non-corporate forms of organization has shifted in response to this time--varying tax distortion. We do this using aggregate data, by industry, in the U.S. during the period 1959--86.

In theory, taxes should induce profitable firms to shift out of the corporate sector when the tax distortion to incorporating increases, and conversely for firms with tax losses. Our empirical results provide strong support for these theoretical forecasts, and hold consistently across a wide variety of specifications and measures of the tax variables. We also found that some non--tax--rate policy changes caused shifts in the predicted directions between various forms.

The measured effects are small, however, throwing doubt on the economic importance of tax--induced changes in organizational form. For instance, cutting the tax rate on non-corporate income by .10 is forecasted to cause no more than one--half of one percent of total assets to shift out of corporate form.¹ The effect is larger for the location of taxable gains and losses, with the same tax change leading to a shift of approximately 5% of gains and losses toward the more favored forms of organization. Overall, non-tax determinants of organizational form appear to dominate, though further research will be needed to determine which factors are most important.

In this paper we examine theoretically how the tax law distorts a firm's choice of organizational form. We also discuss some non--tax factors that are believed to affect the choice of organizational form. We then examine

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¹ As shown below, to yield the large excess burden simulated by Gravelle and Kotlikoff (1989, 1990) requires asset shifts that are nearly 30 times as large.

empirically the movement of economic activity across organizational forms in the U.S. as tax rates and other tax rules have changed during the period 1959--1986.

1. Theoretical Framework

1.1 Model of a Firm's Choice of Organizational Form

We begin with a simple model that determines the equilibrium allocation of resources across different organizational forms as a function of tax rates and non-tax factors. For now we leave "other factors" largely unspecified; we return to them in section 1.3. For simplicity, we allow for only two classes of ownership: one that is taxed at both the corporate and personal level ("corporate") and another that is taxed only at the personal level ("partnership"). The double-taxation of corporate income has been the focus of studies of dividend payout behavior and corporate debt/equity decisions; we examine its role in the determination of ownership structure.

When should a firm choose to incorporate? Assume that a firm, if it does not incorporate, would earn economic income before taxes of I , and taxable income I_x . In a non-corporate firm, this income is subject to tax only at the personal level. Denote the personal tax rate on this income by τ_N .² The firm's net-of-tax income is therefore $I - \tau_N I_x$.

If the firm incorporates, its economic income, again before taxes, can be expressed by $I + g$, where g captures any non-tax factors that make the corporate form of ownership more attractive (g can be negative, and will vary by firm). Let the corporation's taxable income equal $I_x + \lambda g$ with $0 \leq \lambda \leq 1$. That is, we assume that the same definition of taxable income is used for corporate and non-corporate firms, but that the tax law may not correctly measure the extra income, g , generated by incorporation.³ At the extremes, the extra economic income is either fully taxed ($\lambda = 1$) or untaxed ($\lambda = 0$).

Corporate income is subject to tax first at the corporate level, at rate τ_C . Shareholders in the corporation then face personal income taxes on the income left after corporate taxes⁴ --- dividend income is taxed at ordinary rates while capital gains are taxed at lower rates. The specific tax rates, of course, vary by investor. However, as shown for example in Gordon and Bradford (1980), when a firm's equity is traded freely in the financial markets, without constraints, then the implicit personal tax rates affecting firm behavior can be expressed as a weighted average of the tax rates faced by each individual investor in the firm. Let τ_E represent the implicit personal tax rate per dollar of

² For a sole proprietorship, this tax rate simply equals the marginal tax rate of the sole proprietor. For firms with several owners, τ_N will equal a weighted average of the tax rates of each of the owners.

³ For example, the relative tax treatment of such items as capital gains, fringe benefits, tax losses, and tax preferences, compared with ordinary income, all differ between corporate and non-corporate firms. If the amounts of these categories are fixed, then these differences can be captured simply through λ , which adjusts the effective tax rate. If behavior changes in response to these tax differences, however, then extra terms would appear in equation (1) below, reflecting both the tax and nontax implications of these changes in behavior. These extra terms are all second-order effects, and so should be small relative to the terms we focus on.

⁴ The analysis would be different in its particulars for a fully or partially integrated system such as exists for example in the United Kingdom, but the qualitative result that there are differential taxes across organizational forms still holds.

equity income, taking as given the division of this income between dividends vs. capital gains.⁵ The firm's income net of all taxes is therefore $I + g - (I_x + \lambda g)(\tau_C + (1 - \tau_C)\tau_E)$. The net cost from incorporating therefore equals

$$COST = -g(1 - \lambda(\tau_C + (1 - \tau_C)\tau_E)) + I_x(\tau_C + (1 - \tau_C)\tau_E - \tau_N). \quad (1)$$

In general, this expression (and each term) can be of either sign.⁶ Each of the parameters in this expression can differ by firm, leading some firms to prefer corporate form and others to remain non-corporate.

In general, those firms will incorporate for whom

$$g > I_x \left(\frac{\tau_C + (1 - \tau_C)\tau_E - \tau_N}{1 - \lambda(\tau_C + (1 - \tau_C)\tau_E)} \right). \quad (1)$$

Given a joint distribution for the values of g and I_x across firms, this implies that the fraction of firms that choose to incorporate will be a function simply of the expression $T \equiv (\tau_C + (1 - \tau_C)\tau_E - \tau_N)/(1 - \lambda(\tau_C + (1 - \tau_C)\tau_E))$, which is the net tax cost of incorporating. The relation between T and incorporation is not monotonic, however. Increasing T lowers the fraction of firms that incorporate among firms with taxable profits ($I_x > 0$), and raises it for firms with $I_x < 0$. Firms with tax losses ($I_x < 0$) gain more from deducting losses when the tax rate they face is higher.⁷ In the empirical work below we test for these contrasting effects of changes in T on profit and loss firms. Note that without tax distortions, only those firms with $g > 0$ would choose to incorporate.

Equation (1) also implies that if firms have losses during some periods and profits during other periods, then they should change organizational form at the transition point. Similarly, if part of a firm generates negative taxable income while the rest of the firm earns profits, then the firm should try to sell off whichever part is not being taxed at the appropriate tax rate, so that each part can choose the more advantageous organizational form. Tax shelters often seem designed to take best advantage of these incentives.

Our theory does not distinguish between firm births (or deaths) and shifting of assets between existing organizations (or reorganizations). In general, moving assets regularly between different organizational forms to play off tax differences will be constrained by various transactions costs such as the legal costs of rewriting the charter or partnership agreement, and restrictions that the IRS places on the most blatant cases of chattering.⁸ In contrast, new firms face trivial transactions costs when deciding whether or not to incorporate, and new investment in existing firms is not hindered by any equivalent transactions costs. Since the only available data are aggregate at the industry level, however, we cannot distinguish between movements of assets between organizational forms versus the births and deaths of new firms.

⁵ Given the continuing puzzle concerning why firms pay dividends, we do not attempt to model this choice explicitly.

⁶ I_x can be negative for a variety of reasons. First, even if its ex ante value were positive, its ex post value could be negative. Second, for multi-period investments, expected taxable income could be negative in some years and positive in others. Third, even if the real income to equity were positive, this expression equals the real income to the firm minus the nominal income to debt. Finally, even if I were positive, I_x could be negative due to the effects of accelerated depreciation, etc.

⁷ Corporate losses are deducted against current income through consolidation or merger with profitable entities, or against past or future income through carrybacks and carryforwards.

⁸ For example, corporations cannot shift between C status and subchapter S status more than once every five years.

1.2 Tax Effects Other Than Tax Rates

The above discussion focused primarily on differences in tax rates affecting different organizational forms. However, there are a multitude of other tax provisions that differ by organizational form. We summarize some of these provisions,⁹ even though we are in a position to estimate the effects of only a few of them in the empirical work.

Rules Governing Election. A business must satisfy some restrictions in order to avoid corporate taxes. Often, for example, firms that are legally organized as partnerships are required by the IRS to pay corporate taxes. In general, a firm will be taxed as a corporation unless it fails two of the following criteria: (1) continuity of life; (2) centralized management; (3) easy transferability of ownership shares; (4) limited liability.¹⁰

A firm that is deemed to be a corporation under the criteria above can still avoid the corporate-level tax if it qualifies for S corporation status. The main criteria for S corporation eligibility are: (1) no more than 35 shareholders; (2) no corporate shareholders; (3) not part of an affiliated group; (4) only one class of stock; (5) and not a domestic international sales corporation (DISC). The rules governing eligibility for S corporation status have changed frequently since S corporations were created in 1957; we will be examining the effects of a number of these rule changes in section 2.¹¹

Pensions and Fringe Benefits. Opportunities for tax-deferred savings and fringe benefit deductibility have varied across organizational forms and over time. For example, partners and sole proprietors (unincorporated firms with one owner and unlimited liability) can use individual-oriented qualified savings plans such as Keogh accounts. Corporation pension funds have different rules on deduction limits and other characteristics. In addition, more fringe benefits provided to employees are deductible for corporations than for partnerships and sole proprietorships (including, until 1986, health insurance premiums). S corporations have faced corporate tax treatment of fringes during some years, and personal tax treatment during others.

Loss Offsets and At-Risk Rules. One significant advantage for partnerships and sole proprietorships is the ability to offset business losses against other sources of personal income when figuring tax liability. A C corporation can offset losses only against its own past or future profits--losses can offset profits in any of the prior three years, or be carried forward without interest to offset future profits. The number of years before loss carryforwards expire has changed over time. The importance of tax losses has also varied over time. Before 1983 S corporation losses faced a third set of rules; since 1983 they are treated the same as C corporations.

In 1976 "at-risk" rules were applied to partnerships, restricting loss deductions to the amount for which an investor is personally at risk. These rules were a response to the growing use of schemes that leveraged limited partner

⁹ For a richer discussion see Scholes and Wolfson (1987, 1988, 1991).

¹⁰ For much of the 1980s it was possible to form a master limited partnership (MLP) that had most of the characteristics of a corporation, including limited liability for the partners and publicly-traded ownership shares, yet was taxed as a partnership. However the U.S. 1987 tax law instituted rules that require nearly all master limited partnerships be taxed as corporations, except for the oil, gas and real estate firms. See Gentry (1991) for tests of tax effects using MLP data.

¹¹ Since 1977 five states have legislated "limited liability companies," which have the limited liability of a corporation but pay no corporate-level tax, yet also avoid most of the restrictions on S corporations. The IRS took 11 years to approve partnership taxation for the first of these; we do not yet have any data on their prevalence.

investments in order to sell large tax losses to high tax rate investors who could immediately deduct them during the early years of a partnership while deferring taxes on gains until years later (when they were taxed at the usually lower tax rate of the at-risk investor). These schemes were particularly prevalent for real estate and leasing deals that took advantage of depreciation and interest deduction rules. At-risk rules were applied to S corporation shareholders beginning in 1978.

Passive and Foreign Income. Before 1982 firms earning passive or foreign-source income were not allowed to register as S corporations.¹² With the U.S. 1986 Tax Reform Act passive losses accruing to partners and S corporation shareholders could be offset only against other sources of passive income and not against ordinary income. Beginning in 1972 a C corporation could receive favored tax treatment on export business if it qualified as a Domestic International Sales Corporation (DISC). S corporations have never been allowed to obtain DISC treatment.

Reorganization Consequences. There are at least four ways in which economic resources can move from one form to another: through a reorganization of an existing firm, through creation of new firms, through different growth rates for various forms, or in the case of a change from C to S corporation status simply through a declaration to the IRS without legal reorganization. The tax consequences of these avenues differ. For example, when a C corporation wants to convert to a partnership or sole proprietorship, it faces recapture provisions for the recovery of certain tax benefits, but not if it elects S corporation status. Recapture is not an issue for a newly-formed firm, or for new investment by existing firms. Thus the mobility of resources will depend on the extent to which an industry is growing, as well as on the amount of previous tax benefits subject to recapture. Since the provisions that can lead to recapture (investment tax credits, research and development credits, and accelerated depreciation) have changed several times over the past three decades, the tax barriers to mobility across forms have changed as well.

Capital Gains Provisions. In general, capital gains are taxed more favorably at the personal than at the corporate level, creating an incentive not to incorporate for firms earning substantial income in the form of capital gains. However, under the General Utilities doctrine C corporations could separately incorporate an asset before it was sold and then distribute the liquidation proceeds directly to shareholders without incurring capital gains tax at the corporate level. This provision was repealed in 1986.

When the capital gains tax rate is low enough, relative to the ordinary tax rate, then firms may have an incentive to churn assets. When an asset is sold, capital gains taxes must be paid on the book profits, but the asset can then be depreciated based on the new book value. The lower the relative value of the capital gains tax rate, the more likely this transaction is to be profitable. Churning can occur for firms as a whole, through acquisitions and de-acquisitions, or can occur for particular assets, e.g. buildings, airplanes, computers, etc. The opportunities for profitable churning have varied over time --- since 1986, they have basically disappeared. Since “churned” assets would normally generate tax losses, profitable corporations would have had the incentive to shift ownership of “churnable” assets to high-tax-bracket non-corporate investors during periods when churning was profitable.

¹² Income is passive if earned without active management involvement. For example, portfolio income is generally passive, as is a limited partnership interest in a real estate project.

A related provision (Section 1374) was enacted in 1986 that provides sharply different incentives to new firms and existing C corporations that are considering the choice of S corporation status. Under Section 1374 firms that convert to S status must pay tax at the top corporate rate on any “built-in gains” realized during the 10 years following a conversion. This was designed to prevent firms from switching to S status just before liquidation to avoid corporate-level capital gains taxation.

Alternative Minimum Tax. C corporations face an alternative minimum tax (AMT) when taxable income is low due to substantial tax preference items, but for many years this AMT has not been binding on more than a few firms. Pass-through organizational forms were not subject to the corporate AMT. In 1986 a much stronger AMT was legislated. S corporations are not subject to this tax, which will be especially important for firms with substantial tax deferrals and accounting practices that lead to large book income relative to taxable income because the AMT includes 50% of that difference in the alternative tax base. However, a new personal-level alternative minimum tax was also instituted in 1986 and will be especially important for tax shelter investors with substantial passive losses.

Summary. It should be clear from this review that there are numerous tax rule differences that are not easily captured in the formulation of equation (1) but that should affect the allocation of economic resources across organizational forms. In our empirical analysis we exploit the fact that a number of these provisions have changed during our sample period, providing us a limited opportunity to test for their effects.

1.3 Non-Tax Factors

The two main explanations commonly given for a non-tax advantage, g , to the corporate form of organization are first that corporations face limited liability and second that they can trade their shares publicly. How important and convincing are these explanations?

Limited Liability. In principle, corporate shareholders have limited liability, whereas partners and unincorporated sole proprietors have unlimited liability. However, these are only the “default” rules, defining the allocation of liabilities that are not *otherwise* allocated by explicit contracts --- through recontracting, these rules can often be undone. For example, it is very common that the shareholders of small corporations must pledge personal assets if they wish to obtain external bank financing. Partnerships, on the other hand, can write liability limits into contracts with lenders, suppliers, customers and so forth.

The legal difference in the default provisions concerning liability for corporate vs. non-corporate firms is therefore important only to the degree to which explicit recontracting imposes transactions costs --- in some cases, these costs will be large enough that the less favorable rule is left in place. Differences in these provisions are therefore more important when contracting costs are larger.

Even when contracting costs prevent differences in default liability provisions from being undone by explicit contract provisions, it is still not clear whether making limited liability the default provision for corporations favors the corporate form of organization. To the extent that equity holders are better informed than debt holders concerning the future prospects for the firm, then limited liability exacerbates problems created by asymmetric information when firms try to borrow. Conversely if existing shareholders have private information about the firm’s potential

liabilities (or future prospects) not available to new shareholders, then the lemons problem when shares are sold to new shareholders may be lessened because liability is limited for the new shareholders.

Another complication is that some firms are taxed only at the personal level, yet still have limited liability. One clear example would be subchapter S corporations. Another is limited partnerships. In a limited partnership only the general partner---who may own no more than 1% of the equity capital---need bear unlimited liability, while the limited partners are liable only to the extent of their investment, the same as corporate shareholders. In fact, the general partner can even be a corporation, which bears general liability but only to the limit of the corporation's wealth, with no further recourse to the corporation's shareholders.¹³

Public Trading of Shares. Corporations are also claimed to have an advantage due to their ability to trade their shares publicly. It is widely agreed that publicly--traded firms have access to lower--cost equity capital. In addition, publicly--traded shares may provide an important instrument for the amelioration of principal--agent problems between managers and owners. This second point bears some discussion. In principle, a manager's compensation should be tied to his contribution to the value of the firm. Given that this contribution is not normally observable directly, firms in practice try to tie the manager's compensation to the firm's share value, via share--purchase pension plans, stock options, etc., as documented for example in Murphy (1986). The share value used in determining compensation should be based on an objective and external measure of value that is not subject to manipulation. A stock market should produce such an objective valuation, but presumably an outside accounting firm could also do a reasonable job. In principle, this outside valuation is needed only once for each manager, when the manager leaves the firm, as for example occurs for a sole proprietor when he sells his business. For a business of any size, however, in which many of the top managers will have their pay tied to share values, these departures occur regularly. Obtaining careful outside valuations in each case would be very costly, making it valuable to have such a valuation continually available through the firm's share price in the stock market. At least large firms should therefore find the option to have their shares publicly traded to be of great value. It is certainly the case that large firms are much more likely to incorporate than small firms.

In some cases, non-corporate firms have also been able to trade their ownership shares publicly. For example, during much of the 1980's shares in master limited partnerships could be traded publicly.

For our empirical work, the roles of limited liability and public share trading are too unsettled in the theory for us to formally incorporate these effects. However, most of our empirical tests are based on time--series variation in the tax costs for different organizational forms. It seems plausible that the value of limited liability and public share trading have not covaried systematically with time--series variation in tax costs. Thus, we may have a valid *ceteris paribus* experiment.

¹³ It may be possible largely to undo the limited liability distinction through this vehicle, but there are hidden information and moral hazard costs because the limited partners are not allowed to directly participate in management without losing partnership tax treatment. Some moral hazard costs of limited partnerships are considered in Wolfson (1985a, 1985b); MacKie--Mason (1987) examines some hidden information costs. See also Fellingham and Wolfson (1985).

2. Empirical Analysis

We now estimate the degree to which various aggregate measures of the allocation of resources and economic activity across organizational forms has responded as expected to changes in tax incentives. We rely on U.S. tax return data made public by the IRS. Individual business tax returns are not available, so we are not able to estimate microeconomic models of discrete choice among the different organizational types.

2.1 Overview and Data

We use data covering the period 1959--1986. The data were collected from numerous IRS publications and data tapes, and were carefully checked for accuracy. We have measures for about a dozen income statement and balance sheet items as reported to the IRS for C corporations, S corporations, partnerships and sole proprietorships. We have data for 7 industry aggregates that correspond to the SIC 1--digit aggregates.¹⁴ For net income, losses and some other variables we have separate data for firms that reported positive net income and firms with losses. Unfortunately, the IRS does not report asset data separately for profit and loss firms for all organizational forms.

We present some descriptive statistics for our dataset in table 1. C corporations control a dominant fraction of business assets in the U.S.,¹⁵ but report receiving roughly only two--thirds of business income (both positive income and tax losses). In particular, C corporations controlled an asset base over 18 times larger than partnerships, yet reported on average less than three times as much in losses. Partnerships and S corporations seem to have been biased towards loss activities; *e.g.*, the mean partnership share of total losses was more than two times as large as the partnership share of gains. The standard deviations of each form of organization's share of the annual totals, calculated over 1959--1986, are also listed in table 1. These changes over time have been quite modest, with the largest variation occurring for firms reporting tax losses.

How much movement should we have seen across organizational forms during our sample period due to tax changes? Based on equation (1), we estimate the effects of annual changes in the average values of corporate and non-corporate taxes, as measured by $\tau_C + (1 - \tau_C)\tau_E$ and τ_N . Our estimates of these tax rates will inevitably have error. We deal with this by constructing four different series under different assumptions, and then using instrumental variables techniques to eliminate possible biases caused by such measurement error. Our results are very robust to the choice of tax price series and instruments.

The measure of the corporate tax rate, τ_C , defined to equal the ratio of tax payments to taxable income, should take into account the progressivity of the corporate tax rate structure, as well as the asymmetric loss offset provisions.¹⁶ In

¹⁴ Because some necessary farm information was not reported by the IRS during the 1980s, we had to remove Industry 1--Agriculture, Forestry and Fishing--from all of our data, leaving us only 7 of the 8 standard industry aggregates.

¹⁵ Sole proprietorships are not required to file balance sheets, and thus we are forced to exclude them from calculations based on asset data. If we assume that sole proprietorships earn the same mean rate of return on assets as do partnerships then sole proprietorships would have 15% of total assets in the economy and the corporate share would fall to 80%. This is almost surely an overestimate for sole proprietorships.

¹⁶ As shown in Altshuler and Auerbach (1990), the tax code's asymmetric treatment of tax losses can have a significant effect on the effective tax rate facing a firm.

the results reported below, we used two crude measures: the highest statutory marginal rate in a given year, and the realized average tax rate in the IRS data (income tax liability / taxable income).¹⁷

For the personal tax rate on ordinary income (τ_N), we need a representative tax rate for those potentially investing in non-corporate businesses. These are generally upper tax bracket individuals. One approach to approximate this tax rate is to look at the representative tax rate on municipal bonds, another asset purchased primarily by those in upper tax brackets. We use an estimate of this implicit tax rate calculated by Kochin and Parks (1988) and Poterba (1989) by comparing the yields on Treasury and municipal bonds. We also construct a τ_N series using the highest statutory marginal personal tax rate in each year.

To estimate the personal tax rate on equity income (τ_E) we assume that the fraction d of nominal income accruing to equity holders takes the form of dividends, and that capital gains are always realized long-term. Then $\tau_E = d\tau_N + (1 - d)\gamma\alpha\tau_N$ where γ measures the fraction of long-term gains that are taxable, and α is an adjustment to make the capital gains tax rate “accrual equivalent” to capture the benefits from deferring accruing tax liabilities until the asset is sold plus the benefits from the capital gains tax exemption on assets still held at death. Following Feldstein, Dicks-Mireaux, and Poterba (1983), we assume that $\alpha = 0.25$.¹⁸ We estimate d by taking the ratio of corporate dividend payments to after-tax corporate profits as reported in the National Income and Product Accounts. We use the statutory time-series for the capital gains exclusion, γ .

With two different measures of both τ_C and τ_N (the latter are used to construct two corresponding measures of τ_E) we have a total of four different time-series measures of the relative tax price on corporate assets, $\tau_C + (1 - \tau_C)\tau_E - \tau_N$. The series are shown in figure 1. The main difference between them is in the level, but we are interested more in how the tax incentives have changed over time. We always include a time trend (and time squared) in our regressions; after removing these trends from the tax price series all four are positively and substantially correlated. In any case, we estimate all of our regressions four times, once with each series, and use instruments to eliminate any bias due to measurement errors, to check the robustness of our results.

Figure 1 also reveals a substantial amount of time-series variation in the tax incentives for different organizational forms. It is a truism in the U.S. empirical public finance literature that one cannot estimate regressions using the corporate tax rate because it has changed so little in the post-war era. However, the tax price incentive for allocation of resources across organizational forms depends on the personal tax rates on ordinary and equity income as well, causing the incentive to vary substantially over time.

¹⁷ This latter definition makes use of the aggregate data on corporate taxable income, creating an endogeneity problem when these same data are used in constructing the dependent variable. We eliminate any inconsistency in the estimation through use of instrumental variables. In any case, the problem is much less important when looking at industry rather than aggregate data, because we use aggregate income to form the average tax rate estimate but industry income to form the dependent variable. Our instrumental variables procedure is discussed in more detail below.

¹⁸ Recent research on optimal trading strategies suggests that the effects of the tax treatment of capital gains may be far more complicated than what can be captured with an estimated α that is constant over time. See Gordon and MacKie-Mason (1991) for further discussion.

2.2 Specifications

Our theory states that those firms will incorporate for whom

$$g > I_x \left(\frac{\tau_C + (1 - \tau_C)\tau_E - \tau_N}{1 - \lambda(\tau_C + (1 - \tau_C)\tau_E)} \right). \quad (1)$$

If the joint distribution of g and I_x is stable across time, then the fraction of firms that incorporate should simply be a function of the corporate tax cost $T = (\tau_C + (1 - \tau_C)\tau_E - \tau_N)/(1 - \lambda(\tau_C + (1 - \tau_C)\tau_E))$. To control for possible changes in the distribution of g and I_x , however, we include a time trend, and a time trend squared, in all the regressions. If F_{it} represents some measure of the fraction of activity organized in corporate form in industry i in year t , then our basic specification is

$$F_{it} = \alpha_0 + \alpha_1 \text{TIME} + \alpha_2 \text{TIME}^2 + \alpha_3 T + \epsilon_{it}. \quad (2)$$

We initially set F_{it} equal to the fraction of book assets in corporate form, and later explore other measures. The theory implies that increasing T lowers F_{it} among the subset of firms with $I_x > 0$ but lowers it among firms with $I_x < 0$. Thus there is no clear forecast for the sign of α_3 in the full sample. But $\alpha_3 < 0$ seems likely since far more assets are held by profitable firms. When equation (2) is estimated on the subsample of firms with taxable losses, however, α_3 should be positive.

We tried to estimate equation (2) with nonlinear methods to get an estimate of λ as well as α_3 , but not surprisingly λ was too poorly identified for the algorithm to converge. Therefore, we instead estimated equation (2) under the extreme assumptions that $\lambda = 0$ or $\lambda = 1$. The qualitative results were very much the same under these two alternative assumptions.

In Table 2 we present estimates of the tax coefficient, α_3 when F_{it} equals the fraction of total assets held by C corporations, aggregated across all industries and across firms with both taxable profits and taxable losses.¹⁹ Results are reported in the top half of the Table for $\lambda = 0$ and in the bottom half for $\lambda = 1$. In the four rows of each panel we report the results from regressions that use each of our different empirical measures of the relevant tax price term. The three columns report estimates from ordinary least squares, instrumental variables (IV), and instrumental variables with a lagged dependent variable.²⁰ All equations were estimated with a first-order serial correlation correction; the average Durbin-Watson statistic after correction was 1.7.²¹

Before discussing the results, we should explain our IV method. The basic idea is simple, and indeed is a standard one in the original measurement error literature (Sargan (1958); Liviatan (1961)). Suppose we have two noisy measures of some underlying variable. While each measure contains some error, assume that the errors are independent across the two measures. Then each measure can serve as a valid instrument for the other. Following this

¹⁹ Estimates of the intercept and the coefficients of the time trend are omitted since they are of no intrinsic interest.

²⁰ Thus, the first number in the table (-0.0312) is the estimate of α_3 using our first measure of the tax price, assuming $\lambda = 0$, and estimating with OLS.

²¹ This average Durbin-Watson excludes the equations with a lagged dependent variable since the Durbin-Watson is biased in that case.

logic, we use one measure of the tax price to instrument for another measure of the same tax price, choosing as the instrument the measure that we think has independent measurement error.

Formally, let the different underlying data series we use for constructing corporate tax rates be called (C_1, C_2) , and let the measures for the personal tax rate be (P_1, P_2) . Then we construct one tax price variable using (C_1, P_1) , a second using (C_2, P_2) , and others using (C_1, P_2) and (C_2, P_1) . Our key assumption is that the measurement errors in the series (C_2, P_2) are independent of the measurement errors in (C_1, P_1) . Then, by the above argument the tax price measure constructed using $(C_{\sim i}, P_{\sim j})$ is a valid instrument for the tax price measure constructed using (C_i, P_j) , where $\sim i$ means “not i ”. This procedure provides us with four alternative measures of the tax variable, each with an appropriate instrument.

The resulting estimates for α_3 , reported in Table 2, are very robust. Regardless of the specification, the measure of the tax price, the use of instruments or the inclusion of a lagged dependent variable, in every case an increase in the relative corporate tax rate has a negative effect on the fraction of assets held by C corporations. Using the mean of the coefficient estimates in Panel A for the instrumental variable estimates, for example, increasing the tax rate on noncorporate firms by 0.1 raises the fraction of assets invested in the C corporate form by 0.5 percentage points; according to the results from Panel B, the same tax change would also increase corporate assets by 0.5 percentage points.²² To roughly account for dynamic adjustment lags (due perhaps to the transaction costs of changing form) we also estimated the model with a lagged dependent variable, as justified under a Koyck adjustment process. Based on the mean of the tax price and lagged dependent variable coefficients, the long-run increase in the fraction of assets in C corporations would still be only 0.64 percentage points according to the Panel A estimates.

These coefficients are all quite precisely estimated. The mean t-ratios for the three different estimation methods assuming $\lambda = 0$ are 3.0, 2.4, and 2.2. (When $\lambda = 1$, the mean t-ratios are 3.0, 2.2, and 2.2.) The equation as a whole also fits very well --- the average R^2 was 0.97. These statistics increase our confidence that the true tax effect is small.

We turn next to examining the forecast from the theory that tax changes should have opposite effects on firms with taxable profits vs. losses. While asset data are not separately available for gain and loss firms, we do have separate earnings data on firms with and without taxable profits.

In Table 3 we present our results for gain and loss firms, aggregated across industries, where the dependent variable is now the fraction of all income (or loss) reported by C corporations. Otherwise, the specifications are identical to the IV estimates of Panel (A) in Table 2.²³ We report only the tax price coefficient from eight different regressions. Once again the results are clear and consistent. Regardless of the tax price explanatory variable, the fraction of tax losses reported by C corporations significantly increases as the relative corporate tax rate increases. As predicted, gains are shifted in the opposite direction as the corporate tax rate increases. All of the t-ratios are very high.

²² The smaller coefficient estimates in Panel B are compensated for by the differences in the means of the two versions of the tax price variable. We calculated the derivative with respect to τ_N in Panel B using the average value of the tax price denominator across all years and definitions.

²³ For this and all further analyses in the paper we report only results from instrumental variables estimators, under the assumption that $\lambda = 0$, in order to economize on space. We did estimate all of the remaining models in the paper under the alternative assumption that $\lambda = 1$, and in all cases the results were qualitatively the same as those reported for the case when $\lambda = 0$.

The magnitude of income and loss shifting reported in table 3 is higher than that estimated for assets in table 2. For example, at the mean for deficit firms, raising τ_N by .10 would lead to a short-run shift of losses by about 7.2 percentage points away from C corporations. For gain firms the corresponding shift of income would be about -5.9 percentage points towards C corporations. The small aggregate effect therefore is composed of much larger but mostly offsetting movements by firms with taxable profits and losses.

The results are reinforced when we estimate the gain/loss regressions on disaggregated industries, reported in table 4. We report the mean results from four different tax price regressions for each of seven industries, split by loss and gain firms.²⁴ The pattern of shifting is consistent across nearly all industries. The results are strongest for loss firms, however. When the relative tax on corporations rises, taxable losses shift toward C corporations in every industry. Taxable gains are shifted away from C corporations in five industries; the shift is close to zero in Transportation, and is significantly positive for Financial and Real Estate, which is perhaps the only unexpected results in all of our estimations.²⁵ Although the effects are consistent and in many cases quite statistically significant, the magnitudes are again not very large.

We noted in section 2 that we might be able to control for some of the non-tax influences on choice of organizational form by comparing C and S corporations, since both are corporations and share many similar characteristics (including limited liability). To test this conjecture we estimated gains and losses reported by C corporations as a share of total gains and losses for C and S corporations, and report the results in table 5. Both gains and losses move significantly between C and S corporations, in the direction predicted. Since the distinction between C and S corporations more directly focuses on tax rules than other factors these results provide strong support for our overall conclusions.

2.4 Other Robustness Tests

We undertook several further analyses to verify the robustness of our results. For example, we estimated our regressions using the number of returns filed (rather than the magnitude of assets, gains and losses) as our dependent variable. The tax price effects held strongly among loss firms for movements between C corporations and other firms, and also for movements between C and S corporations; the estimates were insignificantly different from zero for gain firms. To control for business cycle effects we tried including GNP and an estimate of the deviation between GNP and its long-run trend as regressors but these also had no significant impact on the results.

We also tested our restriction that the coefficients on the corporate and personal tax costs are the same (except for sign), as it appears in Panel (A). In particular, we re-estimated the regressions in Table 4 with the two tax variable components entered separately and performed a Wald test for the null hypothesis. For loss firms, the difference between the coefficients on the corporate and personal tax costs was insignificant on average across all of the regressions, for all industries except Mining. For gain firms, however, the difference was significant on average for

²⁴ For example, the coefficient and t-ratio reported for deficit mining firms (0.854, 2.25) are the means from four regressions, each using a different one of our four tax price measures, appropriately instrumented.

²⁵ One possible explanation is that most Financial and Real Estate firms expect to generate taxable losses ex ante and respond to tax changes accordingly, but given the uncertainty they face some in fact generate taxable profits ex post.

all industries except Mining and Construction.²⁶ One possible explanation is that while $\lambda \approx 0$ for loss firms, it differs systematically from zero for gain firms (see equation (1)).

We were also concerned that our dependent variable was a fraction constrained to lie between zero and one. To check the sensitivity of our linear specification to this restriction on the error distribution we re-estimated the aggregate and industry equations with the dependent variable in log-odds form, $\ln(F/(1 - F))$, under the assumption that ϵ_{it} follows a Weibull distribution. This had no appreciable effect on the magnitude or significance of our results. We report the linear specifications because it is so much easier to interpret the effect of a tax rate change on allocation between organizational forms.

Altogether we have found very strong evidence that both assets and annual gains and losses are shifted across organizational forms in response to changes in the relative tax costs imposed on those forms. The magnitudes of the effects are measured very consistently across a wide variety of models using different specifications derived directly from the theory, different definitions of the tax price, both OLS and IV estimation, aggregate and industry--disaggregated data, and when subjected to several other robustness checks.

2.5 Magnitude of the Effects

While tax effects on the allocation of activity across organizational forms appear to be very statistically significant, the magnitudes are rather small. a 0.10 increase in the personal tax rate appears to shift only 0.5 percent of assets towards C corporations; the same large tax reduction only shifts about 5% of gains and losses across forms. Are these shifts economically significant?

Gravelle and Kotlikoff (1990) (hereafter GK) have simulated the excess burden from corporate taxation in a simple setting in which τ_C and the taxable rate of return to capital are the same for all firms and τ_N is the same for all investors, but in which partnership and corporations produce goods that are imperfect substitutes in demand.²⁷ They report an excess burden of more than 100% of the revenues raised. These estimates, however, are based on totally implausible forecasts of the fraction of firms that are initially corporate and the sensitivity of the composition of firms across organizational forms to tax factors. Further, as we discuss below and in Gordon and MacKie-Mason (1992), their model misses many important features of an equilibrium allocation of firms and investor portfolios.

To show the implausibility of the GK results, we have replicated the model simulations from GK (1990) in order to determine how much shifting of assets must occur between corporations and noncorporations to generate the high excess burdens they report. GK emphasize the case in which they assume unitary substitution elasticities in production and a demand substitution elasticity of 30 between goods produced by corporations and noncorporations within the same industry; the excess burden in this case is 109% of the tax revenue collected. However, in this case, the corporate share of total assets starts at the implausibly low figure of 36%, suggesting a serious benchmarking problem. The corporate asset share then jumps to 99% if the corporate tax is removed. Even when the demand substitution elasticity

²⁶ There was no clear pattern to the differences in the tax variable coefficients, however.

²⁷ They have a closely related model in GK (1989) in which demand for corporate and non-corporate goods is identical but firm production functions differ. The excess burden results are quite similar in the two papers.

is only 10, and the excess burden is “only” about 40% of revenues, the corporate share of assets is predicted by their model to jump to 73% if the corporate tax is removed. The Statistics of Income data show, in contrast, that on average 93.8% of assets had been corporate during the period 1959--86, while our estimates forecast that the corporate share would increase by 2.5% if a 45% corporate tax rate were set to zero. In any case, our measured tax price series varies substantially during our time period, as seen in Figure 1, yet the maximum and minimum corporate shares of total assets differ by less than 7 percentage points over 1959--86, compared to the massive shifts the GK model would predict with that much tax price variation.

Ideally, we would like to use our results to estimate the marginal excess burden from double corporate taxation. This excess burden would arise due to firms with $g > 0$ choosing not to incorporate due to tax factors, and conversely for firms with $g < 0$. The information estimated above is not sufficient, however, to estimate the efficiency cost of the observed tax distortions. In a related paper, we solve a full equilibrium model to find the size of the nontax gain, g , needed to rationalize the observed distribution of assets between corporate and noncorporate form in each industry (Gordon and MacKie-Mason (1992)). In doing so, we collect data on the size of taxable income I_x in each industry, in order to infer the optimal holdings of corporate and noncorporate assets by investors in each tax bracket for any given value of g in each industry. We then chose the value of g in each industry so that the forecasted aggregate investment in corporate vs. noncorporate firms equals the observed allocation of assets. Given the resulting estimates of g , we inferred that the efficiency loss from the tax distortions to organizational form is between 2% and 6% of the revenue collected from corporate and noncorporate firms during the period 1970 to 1986. These small effects are very much consistent with limited responsiveness estimated above.

2.6 Other Tax Factors

In section 1.2 we discussed a number of other tax rules that can affect the incentive to locate assets in particular organizational forms, but that are difficult to summarize in a measure of the tax rate incentive. In this section we report the results of our efforts to determine whether some non--tax--rate changes in tax rules had significant effects on the allocation of economic resources and activities across organizational forms.

We have developed a chronology of significant tax policy changes between 1958 and 1986 that we believe may have affected the choice of organizational form without directly affecting one of our tax rate variables.²⁸ From a long list of changes (in nearly every year) we have selected 4 years in which the changes seem to have a strong and clear impact on the direction of the tax incentives, and a 5th year in which the changes were clearly important but had effects in two directions making it difficult to predict *ex ante* the magnitude or direction of the effects. We describe these policy changes in table 6. Most of the changes concern rules for S corporations, so we provide our prediction of the changes in the fraction of activity in C corporations relative to S corporations, and in the fraction of S corporate activity to all pass--through organizations.²⁹ Because S corporations were first permitted in 1957, we study the effect

²⁸ We are grateful to Linda Burilovich for her excellent assistance in preparing this chronology.

²⁹ Most of the changes should be self--explanatory, or were explained in section 1.2 of the paper. One exception is the debt reclassification relaxation for S corporations in 1973. When corporations--C or S--borrow substantial sums from their shareholders, there is a risk that the IRS will

of these rule changes only for the period 1965--1986 to avoid the problems of the ‘‘start-up’’ transition towards S corporations.³⁰

Most of the changes were liberalizations of the restrictions on S corporations, so we expect a shift of resources and activity away from C and toward S corporations. The changes in 1983 both liberalized and further restricted S corporations, so we expect the effects to be ambiguous.³¹

We tested for the effects of these policy changes on the allocation of assets and income by extending our tax price regressions reported above. Our basic model was to use three--stage least squares to estimate a system of tax price regressions across the seven industry disaggregates, allowing all of the coefficients to vary by industry as in the regressions reported in table 4. We added dummy variables as intercept shifts for the policy changes; to obtain sufficient degrees of freedom we restricted the policy dummy coefficients to be the same across all 7 industry equations.³² Since the policy changes were permanent, the dummies were coded to be one for all years subsequent to the initial year, and zero for all years before. Thus each coefficient estimate represents the average permanent change in the dependent variable following the policy change.

The results are reported in table 7. The dependent variables are first, the fractions of C corporate assets, income and losses relative to S corporations; and second, the fractions for S corporation relative to partnerships and sole proprietorships. In each table we report the tax policy dummy variable estimates for the fraction of assets (all returns), the fraction of net income (returns with positive net income) and the fraction of losses (returns with losses).³³

The results, when statistically informative, are consistent with our predictions. When statistically significant, the policy changes in 1969, 1982 and to a lesser extent 1976 had the expected effects on the allocation of assets, income and deficits between C and S corporations. The results for the allocation of assets are quite precisely estimated. The debt reclassification relaxation for S corporations in 1973 seems to have had no discernible effect. The 1983 mix of changes shifted taxable gains towards S corporations, but had no effect on assets or losses. It is not clear why only the allocation of gains should have been affected; if anything, we expected the allocation of deficits to be more affected by the unlimited flow--through loss carryover granted to S corporations.

The results for S corporations versus partnerships and sole proprietorships are similar, but somewhat weaker. Both 1969 and 1982 show the predicted effect with strong statistical significance for assets (and for losses in 1969). The

deem those loans to be the taxable equivalent of non--voting equity shares, thereby ruling the ‘‘interest’’ payments to be dividends and ineligible for the interest deduction. Since S corporations were allowed to have only one class of stock, debt reclassification could make a corporation ineligible for S status. Since the interest payments were taxable to the shareholders at the same tax rates as pass--through equity earnings, the IRS essentially stopped debt reclassifications for S corps in 1973, making S status more viable for many firms.

³⁰ Graphical analysis of the data suggested that the startup transition ran from about 1957--1964. Our time-period dummy estimates are quite sensitive to the presence of this secular trend in the early years.

³¹ The various changes we study all have the flavor of raising or lowering barriers to entry, all else constant. Thus, the predicted effects are the same for both gain and loss firms: when S corporation rules are liberalized, more activity of both sorts should move to S corporate form.

³² The tax prices are potentially endogenous due to the measurement error problems discussed earlier, and thus we use our instrumental variables method. Since we must restrict the tax policy dummies to have the same effect across industries (to conserve degrees of freedom) we estimate as a system to capture cross-equation correlations in the errors.

³³ For brevity we report only the results using one of the four tax price measures (4); the results were essentially the same for each tax price variable.

1976 effect has the predicted sign and a high t-ratio for 1976. All of the other coefficients are small and statistically indistinguishable from zero.

When statistically significant, the allocation of assets, gains, and losses across organizational forms responded essentially as predicted to these changes in the rules. However, all of the estimated effects were rather small.

2.7 The U.S. 1986 Tax Reform Act

The U.S. 1986 Tax Reform Act probably contained the most important changes in both tax rate and other tax incentives for the choice of organizational form during our entire sample period. Unfortunately, the tax rule transition was not completed until 1989, and post-1988 data had not been released at the time we constructed our data set. None of the results reported thus far in the paper reflect any data after 1986. However, we have been able to obtain some information that suggests large shifts across organizational forms after 1986.³⁴

The most obvious change is that the personal tax rate was cut by more than the corporate rate, and in fact the top personal marginal tax rate was lower than the corporate rate for the first time in the modern era. This will raise the relative tax price on the C corporate form and should have induced profitable assets to move towards pass-through forms. Another important change was the repeal of the General Utilities doctrine for corporations, which was an important vehicle for avoiding a double capital gains tax on asset sales. The tough new alternative minimum tax on C corporations should also have shifted activity. On the other hand, passive loss restrictions and the higher floors on allowable personal deductions for medical and other expenses are unfavorable to pass-through organizations.

One observation possible with data currently available is that there was a huge surge in the number of corporations filing to obtain S status. During the first six months of 1987 there were about 375,000 filings, compared to an average six-month rate of about 150,000 during 1983--1986. The filing rate continued to be higher than before for each half year through at least 1988.

Another striking fact concerns the aggregate net income reported by S corporations and partnerships. From 1981 to 1986 this net income averaged -\$2.2 billion. In 1987 net income jumped to positive \$32 billion. This is consistent with the elimination of *any* investors with personal tax rates exceeding the effective tax rate on corporate income --- with a relatively higher corporate tax, income should be shifted towards pass-through organizations and losses should move towards C corporations.

3. Conclusion

Our basic hypothesis is simple: taxes should induce profitable firms to shift out of the corporate sector when the tax distortion to incorporating is larger, and conversely for firms with tax losses. We identified a number of tax policy features that are important for the choice of organizational form. Some tax rules could be summarized in an observable tax price measure, others were treated as shifts in regime. We also discussed non-tax factors that may affect the choice of organizational form.

³⁴ For a more complete discussion, see Gordon and MacKie--Mason (1991).

Our empirical evidence provides strong and consistent support for these hypothesis: assets, taxable gains and taxable losses all shift across organizational forms in the direction expected in response to changes in tax rate and other tax policy incentives. We tested a wide variety of specifications using different theoretical specifications of the relevant tax variables, different measures of the tax variables, different forms of the dependent variable, different econometric methods, different control variables, and throughout we obtained statistically precise estimates that support the basic hypothesis. We also found that some of the major non-tax-rate policy changes that we identified caused significant shifts in the predicted directions between C and S corporations, and between S corporations, partnerships and proprietorships. Some of the policy changes seemed to have no effect, but none that we tested had consistently significant effects that contradicted our predictions.

All measured effects are small, however, throwing doubt on the economic importance of tax-induced changes in organizational form. It appears that transactions costs and non-tax factors affecting the choice of organizational form are dominant.

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Table 1: Assets, Income and Losses by Organizational Form
1959-1986

| | Mean | Std. Dev. |
|--------------------------------------|--------|-----------|
| <i>Assets, all returns</i> | | |
| Total Assets | 8050.6 | 2744.2 |
| % C corporation | 93.8% | 2.1% |
| % S corporation | 1.1% | 0.2% |
| % Partnership | 5.1% | 2.0% |
| <i>Income, firms with net income</i> | | |
| Total Income | 405.4 | 84.0 |
| % C corporation | 66.9% | 3.6% |
| % S corporation | 2.1% | 0.8% |
| % Partnership | 10.1% | 1.9% |
| % sole proprietorship | 20.8% | 3.4% |
| <i>Loss, firms with loss</i> | | |
| Total Loss | 86.1 | 65.9 |
| % C corporation | 57.5% | 7.8% |
| % S corporation | 4.5% | 0.9% |
| % Partnership | 23.5% | 10.0% |
| % sole proprietorship | 14.5% | 3.8% |

Source: IRS Statistics of Income publications.

Note: Totals are in billions of 1982 dollars. “Percents” give the mean and standard deviation for each form’s share of the total over time; e.g., the mean C corporation share of total assets was 93.8%, with a 2.1% standard deviation.

Table 2: Estimated Effect of Corporate Tax Disadvantage on the Fraction of Assets Held by C Corporations
All firms (aggregated) except agriculture, forestry, fishing

| Measure used for tax cost of corporate form | Statistical Method | | |
|---|--------------------|--------------------|-----------------------|
| | OLS | IV | IV w/Lagged Dep. Var. |
| Panel A: Tax disadvantage to corporate form is $\tau_C + (1 - \tau_C)\tau_E - \tau_N$ | | | |
| stat/stat | -0.0258 (2.05) | -0.0668 (2.37) | -0.0590 (2.47) |
| soi/stat | -0.0225 (2.42) | -0.0567 (2.33) | -0.0505 (2.38) |
| stat/bond | -0.0412 (3.71) | -0.0442 (2.66) | -0.0683 (1.98) |
| soi/bond | -0.0277 (3.65) | -0.0260 (2.13) | -0.0331 (2.14) |
| Means | -0.0293 (2.96) | -0.0484 (2.37) | -0.0527 (2.24) |
| Panel B: Tax disadvantage to corporate form is $(\tau_C + (1 - \tau_C)\tau_E - \tau_N)/(1 - \tau_C - (1 - \tau_C)\tau_E)$ | | | |
| stat/stat | -0.0072 (1.87) | -0.0192 (2.23) | -0.0161 (2.64) |
| soi/stat | -0.0054 (2.21) | -0.0188 (2.19) | -0.0157 (2.49) |
| stat/bond | -0.0252 (4.40) | -0.0267 (2.65) | -0.0267 (2.20) |
| soi/bond | -0.0095 (3.38) | -0.0092 (1.75) | -0.0083 (1.59) |
| Means | -0.0118 (2.96) | -0.0185 (2.204) | -0.0167 (2.23) |

Notes:

1. All regressions estimated with a correction for first-order serial correlation. t-ratios are in parentheses. “Means” are the arithmetic means of the coefficients and t-ratios in the column above.
2. Tax price variables are identified by the source used to obtain the marginal tax rate for corporatins/individuals(respectively). “stat”=statutory; “soi”=average tax rate based on SOI data (Federal income tax/net pre-tax income); “bond”=bond price implicit personal tax rate from Kochin and Parks (1988) and Poterba (1989). The other explanatory variables were a constant, a time trend and time squared.
3. Each reported coefficient is the tax price coefficient from a different regression (24 regressions are reported in this table).

4. All regressions based on 25 observations, 1962-1986 (partnership asset data are unavailable for 1960).
5. The average R^2 for the reported regressions was .97 with a standard deviation of .02. The smallest Durbin-Watson statistic after the Cochrane-Orcutt transformation (excluding the models with a lagged dependent variable) was 1.6.

Table 3: Estimated Effect of Corporate Tax Disadvantage on the Fraction of Gains and Losses Reported By C Corporations
All firms (aggregated) except agriculture, forestry, fishing

| Tax price | Deficit Firms | Gain Firms |
|-----------|------------------|-------------------|
| stat/stat | 0.9393 (4.35) | -0.7800 (2.68) |
| soi/stat | 0.6594 (5.94) | -0.6405 (2.53) |
| stat/bond | 0.7666 (4.28) | -0.5556 (3.68) |
| soi/bond | 0.5273 (5.38) | -0.3736 (3.08) |
| Means | 0.7232 (4.99) | -0.5874 (2.99) |

Notes:

1. All regressions estimated with a correction for first-order serial correlation. t-ratios are in parentheses. “Means” are the arithmetic means of the coefficients and t-ratios in the column above.
2. See note 2, table 2, for variable definitions.
3. Each reported coefficient is the tax price coefficient from a different regression (8 regressions are reported in this table).
4. All regressions based on 27 observations, 1960-1986. Each regression estimated with instrumental variables.
5. The average R^2 for the reported regressions was .76 with a standard deviation of .15. The smallest Durbin-Watson statistic after the Cochrane-Orcutt transformation was 1.7.

Table 4: Estimated Effect of Corporate Tax Disadvantage on the Fraction of Gains and Losses Reported By C Corporations
By Industry

| Industry | Deficit Firms | Gain Firms |
|-----------------------------|------------------|-------------------|
| Mining | 0.8775 (1.70) | -4.5637 (0.87) |
| Construction | 0.5635 (2.85) | -0.9149 (2.62) |
| Manufacturing | 0.4656 (4.51) | -0.0866 (1.47) |
| Transportation | 0.7807 (1.78) | 0.0986 (0.66) |
| W&R Trade | 0.3801 (2.03) | -0.5579 (1.92) |
| Financial & Real Estate | 0.0875 (0.19) | 1.8117 (2.94) |
| Services | 0.7253 (0.90) | -0.4563 (2.34) |
| Aggregate (from Table 3) | 0.7232 (4.99) | -0.5874 (2.99) |

Notes:

1. All regressions estimated with a correction for first-order serial correlation. t-ratios are in parentheses. "Aggregate" reports the means for the aggregate regressions, as detailed in Table 3.
2. See note 2, table 2, for variable definitions.
3. Each entry in the table is the mean from four regressions using the four different tax price variables (56 regressions are summarized in this table).
4. All regressions based on 27 observations, 1960-1986. All regressions estimated with instrumental variables.
5. The average R^2 for the reported regressions was .39 with a standard deviation of .22. The average Durbin-Watson statistic after the Cochrane-Orcutt transformation was 1.8 with a standard deviation of .23. The only regressions with a Durbin-Watson statistic less than 1.4 were the four estimates for Financial and Real Estate firms with positive profits, which also produced the one anomalous coefficient estimate in the table.

Table 5: Estimated Effect of Corporate Tax Disadvantage on the Allocation of Gains and Losses Between C and S Corporations
All firms (aggregated) except agriculture, forestry, fishing

| Tax price | Deficit Firms | Gain Firms |
|-----------|------------------|-------------------|
| stat/stat | 0.3331 (2.80) | -0.1174 (2.07) |
| soi/stat | 0.2422 (3.42) | -0.1022 (1.69) |
| stat/bond | 0.2264 (3.00) | -0.1203 (2.38) |
| soi/bond | 0.1491 (3.64) | -0.0908 (2.17) |
| Means | 0.2377 (3.22) | -0.1077 (2.08) |

Notes:

1. All regressions estimated with a correction for first-order serial correlation. t-ratios are in parentheses. “Means” are the arithmetic means of the coefficients and t-ratios in the column above.
2. See note 2, table 2, for variable definitions.
3. Each reported coefficient is the tax price coefficient from a different regression (8 regressions are reported in this table).
4. All regressions based on 27 observations, 1960-1986. Each regression estimated with instrumental variables.
5. The average R^2 for the reported regressions was .36 with a standard deviation of .30. Two of the eight regressions had Durbin-Watson statistics after the Cochrane-Orcutt transformation of 1.4; the other six were all greater than 1.7.

Table 6: Major Non-rate Tax Policy Changes

| Year | Changes | Expected effect on: | |
|------|--|---------------------|-----------------------|
| | | C / (C + SC) | SC / (SC + P + SP) |
| 1969 | S corps allowed to use Keogh-like qualified pension plans, putting them on parity with partnerships and sole proprietorships | - | + |
| 1973 | Debt reclassification restriction on S corps almost completely relaxed | - | + |
| 1976 | At-risk rules implemented, primarily for partnerships | + | + |
| 1982 | (a) New S corps cannot own subsidiaries; (b) Limit on S corp shareholders raised to 20; (c) limit removed on S corp foreign income; (d) limit removed on S corp passive income; (e) C corp loss carryforward extended from 7 to 15 years | - | + |
| 1983 | (a) S corps restored to pension plan parity with C corps; (b) S corp shareholder limit raised to 35; (c) S corps granted unlimited flow-through loss carryovers; (d) S corps restricted on fringe deductions by shareholder-employees | ? | ? |

Table 7: Estimated Effects of Non-rate Tax Policy Changes on
Allocation of Assets, Income and Losses

| Model | 1969 | 1973 | 1976 | 1982 | 1983 |
|--|--------------------|--------------------|--------------------|--------------------|--------------------|
| C Corporations versus S Corporations | | | | | |
| Assets(all firms) | -0.00731 (4.56) | 0.00230 (1.42) | 0.00529 (4.43) | -0.00574 (2.51) | -0.00190 (0.98) |
| Income(gain firms) | -0.01504 (1.94) | 0.00165 (0.21) | 0.00061 (0.11) | -0.01072 (0.97) | -0.07327 (7.66) |
| Deficit(loss firms) | 0.04941 (0.95) | 0.07466 (1.43) | -0.01975 (0.51) | -0.04479 (0.60) | 0.01806 (0.29) |
| S Corporations vs. Partnerships and Sole Proprietorships | | | | | |
| Assets(all firms) | 0.05571 (3.97) | 0.00017 (0.01) | -0.01203 (1.15) | 0.05071 (2.51) | 0.00248 (0.14) |
| Income(gain firms) | -0.02448 (0.76) | -0.03448 (1.06) | 0.08918 (3.71) | -0.01106 (0.25) | 0.00508 (0.14) |
| Deficit(loss firms) | 0.01341 (2.11) | -0.01059 (1.69) | -0.00045 (0.09) | -0.00272 (0.30) | 0.00607 (0.77) |

Notes:

1. t-ratios are in parentheses, calculated using the Newey--West method for robust standard errors in the presence of an MA(2) process.
2. See note 2, table 2, for variable definitions.
3. Each row reports the coefficients on the tax policy change dummy variables for a single regression (6 regressions are reported in this table). The tax price used as an explanatory variable was "soi/bond".
4. All regressions based on 154 observations for seven industries over 1965-1986. Models were estimated using generalized method of moments, with equality restrictions on the tax policy change dummies across the equations. "stat/stat" was used as the instrument for "soi/bond".
5. The average R^2 for the reported regressions was .45 with a standard deviation of .25.