

Center for Research on Economic and Social Theory
CREST Working Paper

MichU
DeptE
CenREST
W
#91-9

Taxes and the Choice of Organizational Form

Jeffrey K. MacKie-Mason
Roger H. Gordon

April 3, 1991
Number 91-9



DEPARTMENT OF ECONOMICS
University of Michigan
Ann Arbor, Michigan 48109-1220

Taxes and the Choice of Organizational Form

by

Jeffrey K. MacKie-Mason

and

Roger H. Gordon

*University of Michigan, NBER and Hoover Institution
University of Michigan and NBER*

April 3, 1991

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. noncorporate 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. We also estimate the extent to which easing of the conditions firms must satisfy to acquire sub-chapter S status has increased the amount of activity organized as sub-chapter S corporations. Our empirical results provide strong support for the theoretical forecasts, and hold consistently across a wide variety of specifications and measures of the tax variables. Measured effects are small, however, throwing doubt on the economic importance of tax-induced changes in organizational form.

Address. Prof. Roger Gordon, Department of Economics, University of Michigan, Ann Arbor, MI 48109-1220. Internet: roger.gordon@um.cc.umich.edu; Bitnet: userle6n@umichum
Prof. Jeff MacKie-Mason, Hoover Institution (1990-91), Stanford University, Stanford, CA 94305. Internet: jmm@um.cc.umich.edu. Bitnet: usergc76@umichum.

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 noncorporate. 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) 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. noncorporate 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 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. We also found that some of the major non-tax-rate policy changes caused shifts in the predicted

We are grateful to Laura Kalambokidis, Linda Burilovich, Sharon Parrott, David Eaton, Tracy Hudson, Steve Pincus, Bill Boyle from the IRS, and especially Jane MacKie-Mason for assistance in creating the data set for this paper. We have had helpful discussions with Joel Slemrod and Mark Wolfson. Financial support for the data collection was provided by the Office of Tax Policy Research and the Rackham Graduate School at the University of Michigan. The paper was written while MacKie-Mason was a National Fellow at the Hoover Institution.

directions between C and S corporations, and among S corporations, partnerships and proprietorships.

All 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 noncorporate income by .10 is forecasted to cause no more than one-half of one percent of total assets to shift out of corporate form. 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.¹ Overall, nontax determinants of organizational form do appear to dominate, though further research will be needed to determine which factors are most important.

The organization of the paper is as follows: In the first section, we examine theoretically how the tax law distorts a firm's choice of organizational form. Not only do tax rates differ by organizational form, but a variety of other tax provisions can also affect a firm's choice. We also briefly discuss some non-tax factors that are believed to affect the choice of organizational form.

In the second section, we present the results of our empirical analysis. In particular, we examine the movement of economic activity across organizational forms in the U.S. as tax rates and other tax rules have changed during the period 1959–1987. Our two primary measures of economic resources and activity are book assets and net income. We emphasize that it is important to distinguish between firms with positive income and firms with losses; this distinction is important because many of the incentives are opposite for gain and loss firms. We also examine how several changes favorable to the S corporate form of organization have affected firm behavior.

1. Theoretical Framework

¹ We have not yet estimated the implied excess burden created by the tax distortion to firms' choice of organizational form, however.

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 other 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 shall examine its role in the determination of ownership structure.

In comparing the tax burden on different organizational forms, we begin by examining the optimal debt/equity structure within each organizational form, since the total tax plus nontax burden on each organizational form depends on the firm's financial policy. Then, having determined the cost of taxes and other factors on the optimally financed firm organized in either corporate or partnership form, we can determine the equilibrium allocation of firms between the two forms.

We begin with the effect of U.S. corporate-level taxes on the financing of corporate assets. Interest payments but not dividends are deductible under the corporate income tax, implying that a shift of a dollar from equity to debt finance lowers corporate tax payments each year by $\tau_c i$, where τ_c is the corporate tax rate and i is the nominal interest rate. This tax savings from additional use of corporate debt would be traded off with any nontax costs that arise from the increased risk of bankruptcy.² Following convention, we express the total costs that arise from the threat of bankruptcy by $C(D_c/V)$, where D_c/V is the corporation's debt/value ratio. We assume that $C(0) = 0$ and that $C(\cdot)$ is convex. The nontax cost of substituting a dollar of debt finance for a dollar of equity finance is then $C'(D_c/V)/V$.

² Financial distress costs are presumed to include not only administrative bankruptcy costs but also a variety of extra monitoring and agency costs arising from the conflicts of interest between different classes of creditors in bankruptcy, and even in the anticipation of the possibility of bankruptcy. See, for example, Warner (1977), Myers (1977), Jensen and Meckling (1976), Bulow and Shoven (1978) and White (1980, 1989).

Corporate income is also taxed at the personal level.³ Under the personal income tax nominal debt income (interest) is fully taxed at ordinary rates, while equity income is partially taxed at ordinary rates (dividends) and partially at lower rates (capital gains).⁴ The specific tax rates, of course, vary by investor. However, as shown for example in Gordon and Bradford (1980), when both a firm's debt and equity are 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. Let τ_p represent the implicit personal tax rate on interest income, and let τ_e represent the implicit personal tax rate per dollar of income to equity, taking as given the division of this income between dividends vs. capital gains.⁵ If a corporation owns an asset earning i before tax, and finances this asset by debt, then no corporate taxes are due on the resulting net income, but personal tax liabilities equal $\tau_p i$. If the asset were financed instead with equity the corporate tax liabilities would be $\tau_e i$, leaving net of corporate tax income of $(1 - \tau_e)i$ to be received by equity holders. The shareholders pay tax at a rate τ_e on this income, implying total tax payments of $(\tau_e + (1 - \tau_e)\tau_e)i$ under equity finance.⁶ If additional debt is used to finance the firm until the net tax savings that result are just offset at the margin by additional bankruptcy costs, then in equilibrium

$$(\tau_e + (1 - \tau_e)\tau_e - \tau_p)i = C'(D_e/V)/V. \quad (1)$$

In contrast, the earnings of partnerships (and sole proprietorships and S corporations) are taxed only at the personal level with interest payments on debt financing fully de-

³ The analysis would be different in its particulars for a fully or partially integrated system such as one finds in the United Kingdom, but the qualitative result that there are differential taxes across organizational forms still holds.

⁴ Although the U.S. 1986 Tax Reform Act abolished the capital gains exclusion so that realized gains would be taxed at ordinary rates, there is still a tax advantage from deferral since gains aren't taxed until realized. In any case the equalization of dividend and capital gains tax rates appears to be short-lived: the U.S. 1990 Budget Act begins to erode this by introducing a capital gains tax rate ceiling of 28% versus a maximum ordinary marginal tax rate of 32%.

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

⁶ If the asset earned more than i , with the additional income accruing to the original equity holders, then the same amount of taxes would be paid on the additional income, regardless of the choice of debt vs. equity finance at the margin.

ductible. Let the implicit personal tax rate on the net earnings of this noncorporate firm be expressed by τ_n .⁷ Thus, on an asset earning i before tax that is equity-financed the owner pays $\tau_n i$ in taxes. In contrast, if this asset had been financed with debt, the owner of the asset would owe no taxes but the lenders would face an implicit tax rate of τ_p , implying tax payments of $\tau_p i$. As long as $\tau_n > \tau_p$, as would be expected, these firms would also face a tax distortion encouraging debt finance, implying that debt finance would be preferred until the resulting tax saving is just offset at the margin by any nontax costs of the extra debt. As before, let $H(D_p/V)$ represent the total bankruptcy-related costs faced by this firm, when its debt/value ratio is D_p/V , where $H(\cdot)$ satisfies the same conditions as $C(\cdot)$.⁸ The noncorporate firm should finance with debt to the point at which the marginal nontax costs just offset any tax savings from extra debt finance, implying that in equilibrium

$$(\tau_n - \tau_p)i = H'(D_p/V)/V. \quad (2)$$

Should the firm choose to incorporate? Assume that the firm, if it does not incorporate, would earn I before taxes, interest deductions, and any bankruptcy-related costs. Denote its taxable income, before interest deductions, by I_x .⁹ If the firm incorporates, its earnings, again before taxes, interest deductions, and any bankruptcy-related costs, can be expressed by $I + g$, where g captures any nontax factors which make a corporate form of ownership more attractive (g can be negative, and will vary by firm).¹⁰ For simplicity, let the corporation's taxable income equal $I_x + g$, implying that the same definition of taxable income is used for corporate and noncorporate firms, and that the

⁷ 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. Given the differing "clienteles" for ownership shares in noncorporate firms vs. for debt, τ_n can differ from τ_p , and will normally be greater than τ_p — ownership of real capital becomes relatively more attractive than debt as an investor's tax rate increases.

⁸ Given the lack of limited liability in many forms of noncorporate firms, and given the differing agency problems faced by closely-held noncorporate firms vs. publicly-traded corporate firms, the function $H(\cdot)$ will differ from the function $C(\cdot)$.

⁹ For simplicity, bankruptcy-related costs are assumed to be nondeductible.

¹⁰ As discussed below, corporations have the advantage of limited-liability and the possibility of public trading of shares.

tax law correctly measures the extra income, g , generated by incorporation. If the firm incorporates, the net income received by equity and debt holders together is therefore $I + g - \tau_p i D_c - (I_x + g - i D_c)(\tau_c + (1 - \tau_c)\tau_e) - C(D_c/V)$, while if it does not incorporate this net income would be $I - \tau_p i D_p - (I_x - i D_p)\tau_n - H(D_p/V)$. The net cost from incorporating therefore equals

$$-g(1 - \tau_c - (1 - \tau_c)\tau_e) + (I_x - i D_c)(\tau_c + (1 - \tau_c)\tau_e - \tau_n) + i(D_p - D_c)(\tau_n - \tau_p) + (C - H). \quad (3)$$

In general, this expression (and each of its four terms) can be of either sign. To begin with, theory tells us little about the sign or size of g — all we can say is that the greater the nontax advantage of the corporate form of ownership, the more likely the firm will incorporate. In addition, $(\tau_c + (1 - \tau_c)\tau_e - \tau_n)$ and $(I_x - i D_c)$ can both be of either sign.¹¹ As expected, profitable firms should prefer that form of organization facing the lower tax rate, while unprofitable firms should prefer to face the higher tax rate. In addition, if firms have losses during some periods and profits during other periods, then in principle 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.

The last two terms in the equation capture the effects of differences in use of debt, and any resulting differences in bankruptcy-related costs. Again, theory does not help us sign these terms, at least if the functions $C(\cdot)$ and $H(\cdot)$ differ arbitrarily.

Equation (3) describes the incentives faced by any given firm. Each of the parameters in this expression can differ by firm, leading some firms to prefer to incorporate and others to remain noncorporate.

Given the available data, we are not in a position to examine differences in the choices of organizational form made by firms with different characteristics. Instead, we have data only

¹¹ $(I_x - i D_c)$ 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 multiperiod 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 $(I - i D_c)$ were positive, $(I_x - i D_c)$ could be negative due to the effects of accelerated depreciation, etc.

on the time series for the aggregate division of firms between corporate vs. noncorporate forms of organization. In general, the outcome in any year can be expressed as a function of the joint distribution of each of the variables entering the expression. We will focus specifically on the effects of changes in the second term in this equation. In particular, we examine the effects of changes in the average value of $(\tau_c + (1 - \tau_c)\tau_e - \tau_n)$ each year on the division of firms between corporate vs. noncorporate forms of organization, expecting to find opposite effects of variation in this expression on the choice of organization form made by firms with positive vs. negative taxable income.

In subsequent work, we will explore other testable implications of the theory. To begin with, changes in the variability of $(\tau_c + (1 - \tau_c)\tau_e - \tau_n)$ across investors, holding its average value constant, as for example occurred in 1986 with the reduction in the number of brackets, has predictable effects on the distribution of firms across organizational forms. Similarly, changes in the aggregate value of $(I_x - i D_c)$ should affect the observed distribution, holding tax rates constant. Since theory forecasts that corporate debt/equity ratios depend on basically the same poorly measured tax expression, one alternative test would be to examine the degree to which debt/equity ratios and the chosen pattern of organizational forms move together over time in the way forecast by the theory. Finally, the theory forecasts that noncorporate investors with $\tau_n > \tau_c + (1 - \tau_c)\tau_e$ will own firms generating tax losses, and conversely, a forecast testable with panel data sets on individual tax returns.

Testing the effects of changes in the other three terms in equation (3) is much more difficult. Theory tells us little about the determinants of g . Differences in the use of debt by corporate vs. noncorporate firms would be very difficult to measure, given the flexibility noncorporate owners have concerning where in their tax return the resulting interest deductions can be reported. Similarly, measuring any systematic differences in bankruptcy-related costs, arising from differences in organizational form per se, would be virtually impossible given the available data.

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 briefly some of these other tax provisions,¹² 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.¹³

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.

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 can use individual-oriented qualified savings plans such as Keogh accounts. Corporation pension funds have different rules on deduction limits and other characteristics. For about fifteen of the past thirty years, S corporations have been able to utilize Keogh-like plans; the rest of the time they have been subject to the same pension restrictions as C corporations. On the other hand, more fringe benefits provided

¹² For a richer discussion see Scholes and Wolfson (1987,1988,1991).

¹³ For much of the 1980s it was possible to form a master limited partnership 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.

to employees are deductible for corporations than for partnerships and sole proprietorships (including, until 1986, health insurance premiums). Again, S corporations have faced both corporate and personal tax treatment of fringes at different times.

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. If losses exceed other personal income they may be carried forward against future income. 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 for all organizational forms. Before 1983 S corporation losses faced a third set of rules. Losses flowed through to the shareholders and could be offset against other sources of personal income, but no carryforwards were permitted and any unabsorbed losses were lost forever. Since 1983 S corporations shareholders may carry losses forward for the same number of years as partnerships and 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 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. The at-risk rules were applied to S corporation shareholders beginning in 1978.

Passive and Foreign Income. Before 1982 S corporations were not allowed to earn passive or foreign-source income, while other organizational forms were not so restricted. 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 three ways in which economic resources can move from one form to another: through a reorganization of an existing firm, through entry of new firms, 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 for economic mobility differ. For example, when a C corporation wants to convert to a pass-through form (i.e., S corporation, partnership or sole proprietorship) it faces recapture provisions for the recovery of certain tax benefits if it reorganizes as a partnership, but not if it elects S corporation status (if eligible to do so). Recapture is not an issue for a newly-formed firm. 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 for 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 will 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, however.

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 deacquisitions, or can occur for particular assets, e.g. buildings, airplanes, computers, etc. Churning of particular assets would normally require, however, that the asset not be firm-specific, so that the market can easily set an objective value. 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.

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 this 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 brief review that there are numerous tax rule differences that are not easily captured in the formulation of equation (3) but 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

In the derivation of equation (3), we introduced a nontax advantage, g , to the corporate form of organization, without attempting to explore what factors affect its size or sign. There are a number of potential stories that might be told concerning the source of this parameter g . However, these stories have not been developed formally in the existing literature, and we do not attempt to do so here. Instead, we simply describe briefly some of these stories and how we dealt with them in our empirical analysis.

Limited Liability. One obvious distinction is between limited liability for corporate shareholders and unlimited liability for partners and unincorporated sole proprietors. Upon

careful examination, however, it is not very clear what role liability plays in determining the allocation of resources across organizational forms.

There appears to be a rough corollary to the Modigliani–Miller Theorem that holds for liability and the choice of organizational form: through recontracting it appears possible to undo most of the distinction imposed by formal legal rules, thus rendering limited liability irrelevant, or at least not obviously the dominant distinction between corporate and partnership structures. For example, it is very common that the shareholders of small corporations with low collateral must pledge personal assets if they wish to obtain external bank financing. A partnership, on the other hand, could write liability limits into contracts with its 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 principal–agent between equity holders and bond holders 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 limited liability can lessen the lemons problem when shares are sold to new shareholders.

Another complication is that in some cases a firm can be taxed only at the personal level, yet still have limited liability as the default provision. 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. Although it does appear possible largely to undo the limited liability distinction through this vehicle, there are hidden information and moral hazard costs that arise from the limited partnership form because the limited partners are not allowed to directly participate in management in order to obtain partnership tax treatment.¹⁴

Finally, owners facing unlimited liability may be able to buy insurance protecting them against these losses, so that they effectively have limited liability. For example, in response to restrictions on passive loss deductions (including limited partner losses) in the U.S. 1986 Tax Reform Act some firms that had previously formed limited partnerships began offering general partnerships to generate active losses, but simultaneously offered liability insurance to all of the investors who ordinarily would be limited partners. However, the investors were still exposed to the residual risk in the case of an extreme liability claim that exceeded the limits of the insurance.

The role of limited liability in determining the allocation of resources across organizational forms is too unsettled in the theory for us to completely control for it in our empirical analysis. 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 costs and benefits of limited liability have been relatively constant over time, or at least did not covary systematically with legislated changes in tax costs. Thus, we may have a valid *ceteris paribus* experiment.

Public Trading of Shares. As noted above, another distinction between C corporations vs. other organizational forms is the public trading of shares. This is another area in which the theory is not well–developed. There seem to be at least two real consequences to consider. First, it is widely agreed that publicly–traded firms have access to lower–cost equity capital. Second, publicly–traded shares may provide an important instrument for the amelioration of asymmetric information problems between managers and owners. This second point bears some discussion.

¹⁴ Some moral hazard costs of limited partnerships are considered in Wolfson (1985); MacKie–Mason (1987) examines some hidden information costs.

The divergence between the interests of owners and their agents is well-known and much studied. A central problem is the design of incentive compensation schemes that attempt to align the managers' interests with those of owners. 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 heavily to the firm's share value, via share-purchase pension plans, stock options, etc., as documented for example in Murphy (1988). 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, noncorporate 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.

In the empirical work, we rely on the assumption that the value of public trading of shares, and the size distribution of firms, has not changed much over time, or at least not in a way correlated with tax cost changes.

2. Empirical Analysis

In this section, we 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. Details are given in the appendix. We have measures on 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.¹⁵

For net income, losses and some other variables we have separate data for firms with positive net income and firms with losses. Unfortunately, the IRS does not split asset data by profit and loss firms for all organizational forms. The distinction between gain and loss firms is especially important for the net income data. As we discussed in section 1, firms have an incentive to allocate taxable gains and losses across organizational forms to obtain the most favorable tax treatment. Thus aggregate net income will be a poor indicator of the allocation of economic resources and activity across organizational forms. For example, suppose that when assets yield losses they are best located in partnership form, and then moved to corporate form when they yield gains. Then we would see low or negative net income in the partnership sector, but it would be incorrect to infer that the partnership sector represents a low (or negative!) fraction of economic resources or economic activity.¹⁶ We therefore examine net income (or deficit) separately for gain and loss firms.

We present some descriptive statistics for our dataset in table 1. C corporations control a dominant fraction of business assets in the U.S., and the variation in that share has been relatively small over our sample period.¹⁷ Pass-through organizations (*i.e.*, not C corporations) account for a substantially larger share of losses than of gains. Partnerships and S

¹⁵ We had to remove the entire Industry 1—Agriculture, Forestry and Fishing—from all of our data, leaving us only 7 of the 8 standard SIC industry aggregates, because some necessary farm information was not reported by the IRS during the 1980s. See the appendix for details.

¹⁶ In fact, reported net income from all partnerships was negative from 1981 through 1986.

¹⁷ 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.

corporations seem to have been particularly biased towards loss activities. C corporations controlled an asset base over 18 times larger than partnerships, yet reported on average less than three times as much in losses. Viewed another way, the mean partnership share of total losses was more than two times as large as the partnership share of gains.

The relatively small standard deviations indicate that there has not been a lot of net asset mobility across organizational forms. The allocation of losses has been considerably more volatile. The contrast between the allocation of total assets versus gains and losses suggests that taxes indeed may have a significant effect on choice of organizational form. Also, the apparent shifting of gains and losses emphasizes the importance of making that distinction in the analysis.

Figure 1 presents the share of losses (for those firms with net losses) by organizational form. There is substantially more variation in these time series than in the aggregate asset data. There is also a very clear trend of shifting losses from C corporations to partnerships, and also away from sole proprietorships.

How much movement should we have seen across organizational forms during our sample period due to tax changes? We focus on estimating the effects of changes in the average value each year of the relative tax treatment of corporate vs. noncorporate income, as measured by $\tau_c + (1 - \tau_c)\tau_e - \tau_n$. Any estimate of these relative tax rates will inevitably have error. We deal with this by constructing four different series under different assumptions. Some of the series are based on entirely different assumptions than each other, so we made the further assumption that the sources of measurement error in these different series were uncorrelated, allowing us to use one series as an instrument for another in instrumental variables regressions. Our results are very robust to the choice of tax price series and instruments.

Our series were constructed as follows. 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 no-loss-offset provisions.¹⁸

¹⁸ 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.

In the results reported below, we tried two crude measures¹⁹ : the highest statutory marginal rate in a given year, and the realized average tax rate in the IRS data (income tax liability / taxable income).²⁰

For the personal tax rate on ordinary income (τ_n), we need a representative tax rate for those potentially investing in noncorporate 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 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 $\tau_e = d\tau_n + (1 - d)g\alpha\tau_n$ where g 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 $\alpha = 0.25$.²¹ We estimate d by taking the ratio of corporate dividend payments

¹⁹ In an earlier version of the paper we also used an effective marginal tax rate calculated by Auerbach (1983). Although this measure improves on the statutory rate by adjusting for accelerated depreciation and investment tax credits, it does not incorporate the value of asymmetric loss treatment. Our average realized rate approximately accounts for all such provisions. Further, the Auerbach series ends in 1982. For these reasons we only report results from using four tax price series, not six. However, the results using the Auerbach series strongly confirmed our other results and thus emphasize the robustness of the analysis.

²⁰ We calculated the realized average tax rate based on taxes paid by all C corporations in the economy. This measure should not be very correlated with the errors in the disaggregated industry time series on the fraction of C corporation net income for gain and loss firms that is our dependent variable in many of the regressions since each of the dependent variables represents only a small portion of the total tax liability/taxable income ratio. In any case, our instrumental variables procedures ensure consistency of our econometric estimates.

²¹ 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.

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, g .

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. The series are shown in figure 2, and descriptive statistics are given in table 2.²² The main difference between them is in scale; the group that use the implicit bond price estimate of the personal tax rate show a much higher tax price because those estimates are uniformly much lower than the alternative series using the highest statutory personal marginal tax rate. However, we are interested more in how the tax incentives have changed over time than in their levels. We always include a time trend (and time squared) in our regressions; after removing these trends from the tax price series all six are positively correlated (see table 2). In any case, we estimate all of our regressions four times, using each series with appropriate instruments to check the robustness of our results.

Figure 2 and table 2 also show us that there has been 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.

2.2 Tax Price Regressions

In order to test the degree to which there has been covariation between tax incentives and the ownership structure, we estimated linear regressions of a measure of the allocation of economic resources or activity on a constant, a time trend, time squared and one of the four tax price measures. Our first results are given in table 3, for the fraction of assets in C corporations, with a sample of all returns (assets are not separately available for gain

²² The labeling of the series in figure 4 is explained in table 2.

and loss firms for some organizational forms). We report only the tax price coefficient from 12 different specifications, suppressing the constant and time trend coefficients. Each row reports regressions using one of the four measures of the tax price; each column represents a different estimation method. The measurement instrument for each equation is the tax price series constructed with different assumptions than the series included as an explanatory variable.²³

The results are very clear and consistent. Regardless of the measure of the tax price, the use of instruments or the inclusion of a lagged dependent variable, there is a negative and in every case highly statistically significant relation between the tax price and the fraction of assets held by C corporations. The mean t-statistics for the three different methods (columns) are 4.15, 4.05, and 3.54. The higher is the tax disadvantage of C corporate ownership, the lower is the fraction of assets held by corporations.²⁴

The effects are not large, however. Using the mean of the IV estimates, -0.0502 , cutting τ_n (or raising $\tau_c + (1 - \tau_c)\tau_e$) by .10 would lead to only a one-half of one percentage point decrease in the fraction of assets held by C corporations. We also estimated the model with a lagged dependent variable as a rough way to estimate the long-term adjustment effect (this specification would arise from a Koyck adjustment lag process); based on the mean of the estimates in the last column (and the mean of the coefficients on the lagged dependent variable) the long run decrease in the C corporation asset share would still be only 0.55 percentage points.

We report results from similar tax price regressions for disaggregated industries in table 4. Each row gives the mean tax price coefficients averaged over four regressions for each industry listed, each regression using one of the different tax price measures.²⁵ For this

²³ For example, when the TP1 series ($stat/stat$) is an explanatory variable, we use TP4 ($soi/bond$) as the instrument.

²⁴ We undertook another test for the robustness of our estimates. The dependent variable as specified has a limited range, since the fraction is bounded by definition between zero and one. We re-estimated the equations using the log-odds ratio ($\ln(y)/(1 - \ln(y))$) which ranges on the real line, with essentially the same results for all four tax prices, using both OLS and IV. For ease of interpretation we report the results in the paper with the dependent variable in fraction form.

²⁵ Obviously the mean t-statistics reported cannot be used for strict hypothesis testing. However, whenever the mean is about two or larger the dispersion was small enough that each regression would yield essentially equivalent inferences. The detailed results are available upon request.

and all further analyses in the paper we report only results from instrumental variables estimators.

Tax incentives have no statistically discernible effect on asset location for 5 of the 7 industries; only Mining and Financial show strong responses.²⁶ Thus our conclusion at this point is that in total there is very little shifting of assets in response to moderately large tax incentive changes. However, the regressions reported thus far are based on the sample of all firms, and do not allow for the possibility that there may be substantial flows of gain and loss assets in opposite directions as tax incentives change, resulting in rather small net effects.

Table 5 presents the results of our tax price regressions for the aggregate of all industries, separated into firms with net gains and firms with net losses in each year. We again report only the tax price coefficient from many different regressions; each row represents a different tax price as the explanatory variable, with results from 8 regressions reported. Once again the results are clear and consistent. Regardless of method or tax price variable, the fraction of tax losses reported by C corporations significantly increases as the relative corporate tax rate increases. As predicted, gains are allocated in the opposite direction, away from corporations towards pass-through organizations as the corporate tax rate increases. All of the t-statistics are very high.

The magnitude of income and loss shifting reported in table 5 is higher than that estimated for assets in table 3. For example, at the mean for deficit firms, cutting τ_n by .10 would lead to a short-run shift of about 6.2 percentage points. For gain firms the corresponding shift would be about -5.5 percentage points.

The results are reinforced when we estimate the gain/loss regressions on disaggregated industries, reported in table 6. Now we find that the pattern of shifting is very strong and consistent across nearly all industries. We again report the mean results of four different tax price regressions for each of seven industries, split by loss and gain firms. There is a strong shift of taxable losses toward C corporations in every industry when the relative tax on corporations rises (the effect is statistically insignificant at conventional

²⁶ Given the dominant role in partnerships of the oil exploration and the real estate industries, which are part of the Mining and Financial industries respectively, these results should not be surprising.

levels for Trade and Services). Taxable gains are shifted away from C corporations in five industries (although with high statistical significance in only one); the shift is close to zero in Transportation, and is significantly positive for Financial, which is one of the only unexpected results in all of our analyses. Although the effects are mostly consistent and for losses quite statistically significant, the magnitudes are 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). We estimated the share of assets, gains and losses held by C corporations relative to the combined asset base of C and S corporations and report the results in table 7. It turns out that the shifting of assets in the aggregate is due entirely to shifts towards partnerships, not S corporations; the tax cost of C corporation ownership seems to have had no effect on the allocation of total assets between C and S corporations.

However, gains and losses move very 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.

In table 8 we report the results of tax price regressions for number of returns filed by gain and loss firms, for the all-industry aggregate. Of course, this measure is meaningful only to the extent that the size of the average firm filing a return does not systematically change in response to the tax price incentives. Although not a perfect measure, though, the number of returns can be used to test the robustness of our findings. The results support our findings above for loss firms, but they are indeterminate for gain firms. We report regressions for the fraction of C corporation returns versus S corporations alone, and versus all pass-through forms combined (S corporations, partnerships and sole proprietorships). The fraction of C corporation returns for loss firms increases as the relative corporate tax rate increases, with high t-statistics for the shift between C and S corporations.

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. It seems safe to conjecture that the evidence for asset shifting

would be even stronger if we could distinguish between the assets of gain and loss firms, since the incentives go in opposition directions for those groups. The magnitudes of the effects are measured very consistently across a wide variety of models using different definitions of the tax price, both OLS and IV estimation, aggregate and industry-disaggregated data, and to a lesser extent, when looking at the number of returns as an alternative measure of economic activity. The effects are very statistically significant, but appear to be rather small.

2.3 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.²⁷ 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 briefly describe these policy changes in table 9. 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.²⁸ Because S corporations were first

²⁷ We are grateful to Linda Burilovich for her excellent assistance in preparing this chronology.

²⁸ 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 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.

permitted in 1957, we study the effect of these rule changes only for the period 1965–1986 to avoid the problems of the “start-up” transition towards S corporations.²⁹

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.³⁰

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 tables 4 and 6 above. 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. 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 tables 10 and 11. The dependent variables in table 10 are the fractions of C corporate assets, income and losses relative to S corporations; in table 11 the dependent variables are the S corporation fractions 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), estimated once with TP1 and once with TP4 as the explanatory tax price variable. Thus, each table reports coefficients from six different system regressions.

The results are clear and consistent across specifications. The policy changes in 1969, 1982 and to a lesser extent 1976 had the predicted effects on the allocation of assets, income

²⁹ 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.

³⁰ 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.

and deficits between C and S corporations, with strong statistical significance. 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. No clear pattern is demonstrated for either 1973 or 1976; the two statistically significant estimates for 1973 have the predicted sign, but the evidence for 1976 tends weakly against the prediction. The 1983 mix of policies seemed to have zero net effects.

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

2.4 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, corporate income tax data for 1987 and 1988 have not been released by the IRS as of this writing, and we are thus unable to do a thorough analysis of impact of this law. 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 1986.³¹

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

³¹ For a more complete discussion, see Gordon and MacKie-Mason (1991).

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 has continued to be higher than before for each half year through 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 cost 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 presented a model showing how the choice of organizational form depends on the relative tax treatment of corporate and noncorporate firms. We also identified a number of tax policy features that are important for the choice of organizational form but which could not be summarized in an observable tax price measure, and discussed non-tax factors that may affect the choice of organizational form.

Our empirical evidence is quite strong and consistent: assets, taxable gains and taxable losses all shift across organizational forms in response to changes in tax rate and other tax policy incentives. We tested a wide variety of specifications using different measures of the tax incentives, different forms of the dependent variable, and different econometric methods, and throughout obtained highly statistically significant 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. We have not yet estimated the magnitude of the excess burden implied by our estimates. But we do not see the dramatic shifts of resources in response to tax rate changes that we would expect if choice of organizational form were a simple arbitrage in a frictionless environment. It appears that transactions costs and non-tax factors affecting the choice of organizational form are important.

References

- Altshuler, R. and A. J. Auerbach (1990) "The Significance of Tax Law Asymmetries: An Empirical Investigation," *Quarterly Journal of Economics*, CV, 61-86.
- Auerbach, A. J. (1983) "Corporate Taxation in the United States," *Brooking Papers on Economic Activity*, 2, 451-514.
- Bulow, J. and J. Shoven (1978) "The Bankruptcy Decision," *Bell Journal of Economics*, 9, 437-56.
- Feldstein, M. S., L. Dicks-Mireaux, and J. Poterba (1983) "The Effective Tax Rate and the Pretax Rate of Return," *Journal of Public Economics*, 21, 129-58.
- Gordon, R. H., J. R. Hines, Jr., and L. H. Summers (1987) "Notes on the Tax Treatment of Structures," in *The Effects of Taxation on Capital Accumulation*, ed. Feldstein, M.. Chicago, IL: University of Chicago Press.
- Gordon, R. H. and J. K. MacKie-Mason (1991) "Effects of the Tax Reform Act of 1986 on Corporate Financial Policy and Organizational Form," in *Do Taxes Matter?: The Impact of the Tax Reform Act of 1986*, ed. Slemrod, J.. Cambridge, MA: MIT Press.
- Gravelle, J. G. and L. J. Kotlikoff (1989) "The Incidence and Efficiency Costs of Corporate Taxation When Corporate and Noncorporate Firms Produce the Same Good," *Journal of Political Economy*, 97, 749-81.
- Jensen, M. C. and W. H. Meckling (1976) "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure," *Journal of Financial Economics*, 3, 305-60.
- Kochin, L. A. and R. W. Parks (1988) "Was the Tax-Exempt Bond Market Inefficient or Were Future Expected Tax Rates Negative?," *Journal of Finance*, 43, 913-932.
- MacKie-Mason, J. (1987) "Long-Term Contracts and Sequential Economic Decisions." Univ. of Michigan Working Paper.
- Murphy, K. A. (1988) "Executive Compensation," *Journal of Financial Economics*, , .

Myers, S. C. (1977) "Determinants of Corporate Borrowing," *Journal of Financial Economics*, 5, 147-175.

Poterba, J. M. (1989) "Tax Reform and the Market for Tax-Exempt Debt," NBER Working Paper No. 2900.

Scholes, M. S. and M. A. Wolfson (1987) "Taxes and Organization Theory," Working Paper, Stanford Graduate School of Business.

Scholes, M. S. and M. A. Wolfson (1988) "The Effects of Changes in Tax Laws on Corporate Reorganization Activity," Working Paper, Stanford Graduate School of Business.

Scholes, M. and M. Wolfson (1991) *Taxes and Business Strategy: A Global Planning Approach*. Englewood Cliffs, NJ: Prentice-Hall.

Warner, J. B. (1977) "Bankruptcy Costs: Some Evidence," *Journal of Finance*, 32, 337-347.

White, M. J. (1980) "Public Policy Toward Bankruptcy: Me-First and Other Priority Rules," *Bell Journal of Economics*, 11, 550-64.

White, M. J. (1989) "The Corporate Bankruptcy Decision," *Journal of Economic Perspectives*, 3, 129-151.

Wolfson, M. A. (1985) "Empirical Evidence of Incentive Problems and Their Mitigation in Oil and Gas Tax Shelter Programs," in *Principals and Agents: The Structure of Business*, ed. J. Pratt and R. Zeckhauser. Cambridge, MA: Harvard Business School.

Figure 1
Shares of Losses by Organizational Form

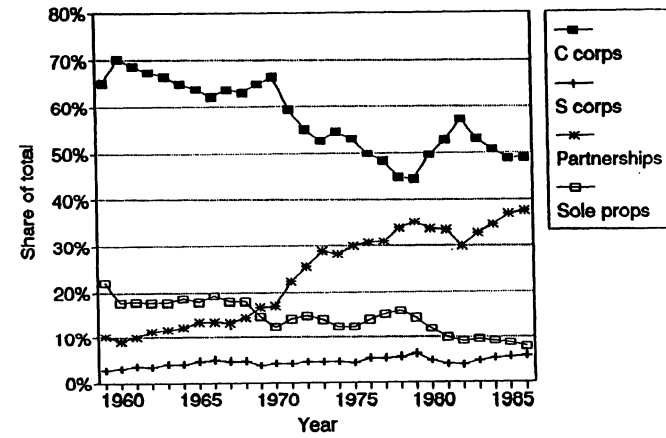


Figure 2
Estimated Tax Cost of Corporate Form

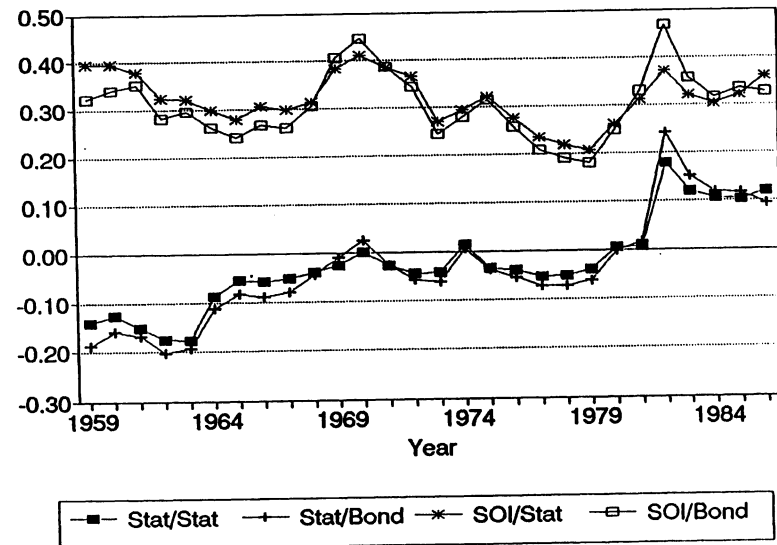


Table 1: Assets, Income and Losses By Organizational Form
Billion 1982 Dollars, 1959-1986

	Mean	Std. Dev.	Minimum	Maximum
<i>Assets, all returns</i>				
Total Assets	8050.6	2744.2	3994.2	15052.2
% C corporation	93.8%	2.1%	89.5%	96.2%
% S corporation	1.1%	0.2%	0.6%	1.6%
% partnership	5.1%	2.0%	3.1%	8.9%
<i>Income, firms with net income</i>				
Total Income	405.4	84.0	264.4	574.6
% C corporation	66.9%	3.6%	61.9%	76.0%
% S corporation	2.1%	0.8%	0.7%	3.9%
% partnership	10.1%	1.9%	6.0%	14.0%
% sole proprietorship	20.8%	3.4%	16.0%	25.5%
<i>Loss, firms with loss</i>				
Total Loss	85.5	65.9	24.0	243.0
% C corporation	57.9%	7.5%	44.7%	70.1%
% S corporation	4.6%	1.0%	2.7%	7.9%
% partnership	22.9%	9.8%	9.1%	37.6%
% sole proprietorship	14.6%	3.8%	7.7%	22.1%

Source: IRS Statistics of Income publications.

Table 2: Descriptive Statistics on Tax Price Variables, 1959-1986

Series	Mean	Std. Dev.	Minimum	Maximum
TP1	-2.6%	8.9%	-17.7%	17.7%
TP2	-3.5%	10.7%	-20.1%	24.3%
TP3	31.9%	5.5%	20.7%	41.1%
TP4	30.6%	7.0%	18.0%	47.0%

Correlation Matrix (after detrending)

	TP1	TP3	TP4	TP6
TP1	1.0	0.964	0.589	0.661
TP2		1.0	0.661	0.784
TP3			1.0	0.951
TP4				1.0

Detrended tax prices calculated as residuals from regressions on a constant, time and time-squared.

Tax Price	Definitions	
	Corporate Tax Rate	Personal Tax Rate
TP1	Statutory	Statutory
TP2	Statistics of Income	Statutory
TP3	Statutory	Bond prices
TP4	Statistics of Income	Bond Prices

Statutory = highest marginal statutory rate

Statistics of Income = realized average tax rate for all returns, IRS Statistics of Income

Bond Prices = implicit personal tax rate from bond prices, Kochin and Parks (1988) and Poterba (1989)

Table 3

Estimated Tax Price Effects on the Fraction of Assets Held By C Corporations

All firms (aggregated) except agriculture, forestry, fishing

Tax price	OLS	IV	IV, Lagged Dependent Variable
TP1: stat/stat	-0.0312 (2.97)	-0.0678 (4.17)	-0.0553 (4.15)
TP2: soi/stat	-0.0268 (3.74)	-0.0523 (3.63)	-0.0433 (3.14)
TP3: stat/bond	-0.0427 (4.84)	-0.0498 (4.54)	-0.0394 (3.40)
TP4: soi/bond	-0.0292 (5.06)	-0.0308 (3.89)	-0.0215 (3.47)
Means	-0.0325 (4.15)	-0.0502 (4.05)	-0.0399 (3.54)

Notes:

1. t-statistics based on White's heteroskedastic-consistent standard errors are in parentheses
2. Each reported coefficient is the tax price coefficient from a different regression (12 regressions are reported in this table). The dependent variable was the fraction of assets held in the C corporation form. The other explanatory variables were a constant, a time trend and time squared. *Means* are the arithmetic means of the coefficients and t-statistics in the column above.
3. Tax price variables are identified by the source used to obtain the marginal tax rate for corporations/ 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).
4. All regressions based on 27 observations, 1959-1986 (partnership asset data is unavailable for 1960).

Table 4

Estimated Tax Price Effects on the Fraction of Assets Held by C Corporations
by Industry

Industry	Tax Price Coefficient Mean
Mining	-0.129 (3.27)
Construction	0.0438 (0.933)
Manufacturing	-0.00518 (0.623)
Transportation	-0.00407 (0.959)
W&R Trade	0.00482 (0.358)
Financial	-0.0910 (1.88)
Services	0.0745 (1.61)
Aggregate (from Table 3)	-0.0502 (4.05)

Notes:

1. t-statistics based on White's heteroskedastic-consistent standard errors are in parentheses. Each column was estimated by instrumental variables.
2. Each reported coefficient is the mean tax price coefficient from different regressions using the four tax price variables defined in the text. Thus, coefficients from 32 regressions are summarized in this table. The other explanatory variables in each regression were a constant, a time trend and time squared.
3. All regressions based on 27 observations, 1959-1986 (partnership assets not available for 1960).

Table 5

Estimated Tax Price Effects on the Fraction of Gains and Losses
Reported by C Corporations
All firms (aggregated) except agriculture, forestry, fishing

Tax price	Deficit Firms	Gain Firms
TP1: stat/stat	0.776 (3.26)	-0.721 (3.09)
TP2: soi/stat	0.463 (2.71)	-0.560 (3.60)
TP3: stat/bond	0.767 (3.56)	-0.548 (4.73)
TP4: soi/bond	0.457 (3.45)	-0.355 (3.36)
Means	0.616 (3.25)	-0.546 (3.70)

Notes:

1. t-statistics based on White's heteroskedastic-consistent standard errors are in parentheses
2. Each reported coefficient is the tax price coefficient from a different regression (8 regressions are reported in this table). The other explanatory variables were a constant, a time trend and time squared. Each regression estimated with instrumental variables.
3. Tax price variables are identified by the source used to obtain the marginal tax rate for corporations/ individuals (respectively). "stat" = statutory; "soi" = average realized 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).
4. All regressions based on 28 observations, 1959-1986.

Table 6

Estimated Tax Price Effects on Fraction of Gains and Losses
Reported by C Corporations
Results by Industry, for Deficit and Gain firms

Industry	Deficit Firms	Gain Firms
Mining	0.854 (2.25)	-1.531 (3.99)
Construction	0.946 (2.35)	-0.130 (1.08)
Manufacturing	0.515 (5.61)	-0.060 (1.88)
Transportation	0.848 (2.94)	0.014 (0.328)
W&R Trade	2.750 (1.25)	-0.261 (1.67)
Financial	0.737 (2.21)	0.204 (2.27)
Services	1.324 (1.45)	-0.171 (1.62)
Aggregate (from Table 5)	0.616 (3.25)	-0.546 (3.70)

Notes:

1. t-statistics based on White's heteroskedastic-consistent standard errors are in parentheses.
2. Each entry in the table is the mean from four regressions using the four different tax price variables (64 regressions are summarized in this table). The other explanatory variables were a constant, a time trend and time squared.
3. Tax price variables are identified by the source used to obtain the marginal tax rate for corporations/ individuals (respectively). "stat" = statutory; "soi" = average realized 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).
4. All regressions based on 28 observations, 1959-1986. All regressions estimated with instrumental variables.

Table 7

Estimated Tax Effects on the Allocation of Assets, Income and Losses
Between C and S Corporations
All firms (aggregated) except agriculture, forestry and fishing

Tax Price	Assets	Losses	Gains
TP1: stat/stat	-0.00087 (0.0920)	0.361 (5.94)	-0.0953 (2.03)
TP3: soi/stat	-0.00405 (0.664)	0.244 (5.59)	-0.0825 (2.65)
TP4: stat/bond	-0.00532 (0.492)	0.291 (4.54)	-0.1 (2.44)
TP6: soi/bond	-0.00734 (0.885)	0.165 (4.83)	-0.079 (2.13)
Means	-0.00439 (0.533)	0.265 (5.23)	-0.0893 (2.31)

Notes:

1. t-statistics based on White's heteroskedastic-consistent standard errors are in parentheses.
2. Each reported coefficient is the tax price coefficient from a different regression (12 regressions are reported in this table). The other explanatory variables were a constant, a time trend and time squared. Each regression was estimated with instrumental variables.
3. Tax price variables are identified by the source used to obtain the marginal tax rate for corporations/ individuals (respectively). "stat" = statutory; "soi" = average realized 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).
4. All regressions based on 28 observations, 1959-1986.

Table 8

Estimated Tax Price Effects on the Fraction of Returns Filed By C Corporations
C corps vs. others; C corps vs. S corps
All firms (aggregated) except agriculture, forestry and fishing

Tax price	Deficit Firms		Gain Firms	
	C corps vs. other	C corps vs. S corps	C corps vs. other	C corps vs. S corps
TP1: stat/stat	0.0625 (1.06)	0.196 (4.48)	0.00774 (0.253)	0.0550 (0.865)
TP3: soi/stat	0.0315 (0.606)	0.141 (4.06)	-0.0133 (0.634)	0.0129 (0.305)
TP4: stat/bond	0.13 (2.43)	0.156 (3.7)	0.0343 (0.978)	0.0524 (0.671)
TP6: soi/bond	0.1 (2.02)	0.0929 (3.91)	0.0170 (0.791)	0.0135 (0.281)
Means	0.081 (1.53)	0.146475 (4.04)	0.247 (0.664)	0.0335 (0.531)

Notes:

1. t-statistics based on White's heteroskedastic-consistent standard errors are in parentheses.
2. Each reported coefficient is the tax price coefficient from a different regression (16 regressions are reported in this table). The other explanatory variables were a constant, a time trend and time squared. Each regression estimated with instrumental variables.
3. Tax price variables are identified by the source used to obtain the marginal tax rate for corporations/ individuals (respectively). "stat" = statutory; "soi" = average realized 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).
4. All regressions based on 28 observations, 1959-1986.

Table 9

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 corporation foreign income; (d) limit removed on S corporation passive income; (e) C corporation 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 10

Estimated Non-Rate Tax Policy Changes on Fraction of Assets and Income C Corporations versus S Corporations

Model	1969	1973	1976	1982	1983
<i>Assets (all firms)</i>					
stat/stat	-0.00469 (2.65)	-0.00114 (0.833)	0.00516 (3.26)	-0.0155 (3.19)	-0.000674 (0.243)
soi/bond	-0.00795 (4.21)	0.0024 (1.26)	0.00594 (4.18)	-0.00721 (2.71)	-0.0014 (0.623)
<i>Income (gain firms)</i>					
stat/stat	-0.0149 (3.29)	0.0071 (0.489)	0.00859 (2.12)	-0.0247 (1.98)	-0.0153 (2.15)
soi/bond	-0.0172 (3.32)	0.00532 (1.02)	0.00966 (2.47)	-0.0159 (2.17)	-0.0155 (2.52)
<i>Deficit (loss firms)</i>					
stat/stat	-0.00361 (.259)	-0.0147 (1.37)	0.00489 (0.393)	-0.0825 (2.16)	0.022 (1.01)
soi/bond	-0.0201 (2.70)	0.0183 (2.43)	-0.00509 (0.909)	-0.0313 (2.98)	0.0106 (1.20)

Notes:

1. t-statistics based on White's heteroskedastic-consistent standard errors are in parentheses.
2. Each row reports just 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 is indicated in the left column. The other explanatory variables were a constant, a time trend and time squared.
3. Tax price variables are identified by the source used to obtain the marginal tax rate for corporations/individuals (respectively). *stat* = statutory; *etr* = Auerbach's (1983) corporate effective tax rates; *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).
4. All regressions based on 154 observations for seven industries over 1965-1986. Models were estimated using 3SLS equations, with equality restrictions imposed on the tax policy change dummies across the equations. TP4 was used as the instrument for TP1, and TP1 was used as the instrument for TP4.

Table 11

Estimated Non-Rate Tax Policy Changes on Fraction of Assets and Income
S Corporations versus Partnerships and Sole Proprietorships

Model	1969	1973	1976	1982	1983
<i>Assets (all firms)</i>					
stat/stat	0.0291 (2.31)	0.0258 (2.65)	-0.0114 (1.01)	0.0645 (1.86)	0.0228 (1.15)
soi/bond	0.0604 (3.36)	-0.00707 (0.390)	-0.0166 (1.23)	0.0579 (2.29)	0.00218 (0.102)
<i>Income (gain firms)</i>					
stat/stat	0.0216 (3.93)	0.0159 (3.75)	-0.00828 (1.69)	0.0671 (4.45)	0.0121 (1.40)
soi/bond	0.0392 (3.88)	-0.00648 (0.635)	-0.0157 (2.06)	0.0621 (4.36)	0.00361 (0.301)
<i>Deficit (loss firms)</i>					
stat/stat	0.0148 (1.19)	0.00169 (0.176)	-0.00358 (.0323)	0.0175 (0.515)	0.00388 (0.200)
soi/bond	0.0139 (1.18)	-0.00606 (0.513)	-0.00447 (0.507)	-0.00394 (0.239)	0.00758 (0.546)

Notes:

1. t-statistics based on White's heteroskedastic-consistent standard errors are in parentheses.
2. Each row reports just 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 is indicated in the left column. The other explanatory variables were a constant, a time trend and time squared.
3. Tax price variables are identified by the source used to obtain the marginal tax rate for corporations/ individuals (respectively). 'stat' = statutory; 'etr' = Auerbach's (1983) corporate effective tax rates; '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).
4. All regressions based on 154 observations for seven industries over 1965-1986. Models were estimated using 3SLS equations, with equality restrictions imposed on the tax policy change dummies across the equations. TP4 was used as the instrument for TP1, and TP1 was used as the instrument for TP4.

91-01: Mark Bagnoli, Stephen W. Salant, Joseph E. Swierzbinski, "Price Discrimination and Intertemporal Self-Selection," June, 1990.

91-02: Howard Doran, Jan Kmenta, "Multiple Minima in the Estimation of Models with Autoregressive Disturbances," April 1991.

91-03: Ted Bergstrom, Mark Bagnoli, "Courtship as a Waiting Game," April 3, 1991.

91-04: Ted Bergstrom, Jeffrey K. MacKie-Mason, "Peak-Load Pricing-With and Without Constrained Rate of Return," April 2, 1991.

91-05: Laura E. Kodres, Daniel P. O'Brien, "The Existence of Pareto Superior Price Limits and Trading Halts," February 1991.

91-06: Theodore Bergstrom, David Lam, "The Effects of Cohort Size on Marriage Markets in Twentieth Century Sweden," November 1989.

91-07: Theodore Bergstrom, David Lam, "The Two-Sex Problem and the Marriage Squeeze in an Equilibrium Model of Marriage Markets," April 1991.

91-08: Greg Shaffer, "Capturing Strategic Rent: Full-line Forcing, Maximum Resale Price Maintenance, Brand Discounts and Aggregate Rebates," March 1991.

91-09: Jeffrey K. MacKie-Mason, Roger H. Gordon, "Taxes and the Choice of Organizational Form," April 3, 1991.

