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Personal Bankruptcy Costs: Their Relevance and Some Estimates

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The paper argues that there is a need for the formal treatment of personal bankruptcy costs in the finance literature. The need arises out of the relevance of such costs to both corporate and personal financing decisions. We show that (a) personal bankruptcy costs (like personal taxes) are relevant to the corporate capital structure problem and that (b) differential bankruptcy costs across corporations and individuals can result in a clientele model of individual investment-borrowing decision which could lead to institutional arrangements designed to minimize combined bankruptcy costs. Further, we develop a theory of personal bankruptcy and a set of testable hypothesis with regard to their costs. Some preliminary estimates of personal bankruptcy costs are reported which suggest that they are higher than corporate bankruptcy costs. There is also some evidence of economics of scale in personal bankruptcy costs.

Corporate bankruptcy costs have been the subject of considerable theoretical discussion (e.g., see Diamond, 1994; Harris & Raviv, 1991; Haugen, & Senbet, 1978; Kraus & Litzenberger, 1973; Morris, 1982; Scott, 1976; White, 1989)) and some empirical measurement (e.g., see Altman, 1984; Ang, Chua, & McConnell, 1982; Deis, Guffey, & Moore, 1995; Franks & Torous, 1989; Guffey & Moore, 1991; Kalaba, 1984; Warner, 1984; White, 1993). However, the literature has paid only scant attention to personal bankruptcies in general and personal bankruptcy costs in particular. Credit Research Center's Consumer Bankruptcy Study (1982), Durkin and Elliehausen (1978) and Stanley and Girth (1971) are examples of earlier studies which have dealt with personal bankruptcies. The more recent works include those of Bhandari and Hein (1993), Buckley and Brinig (1995), Rooney (1996), Simmons (1989), Sofianos (1985) and Sullivan, Warren, and Westerbrook (1994). Most of those, however, have dealt with questions pertaining to the U.S. Bankruptcy Code and its fallouts.

Personal bankruptcy costs have been dealt with only on a limited basis despite the fact that they are important to all major areas of Finance. More specifically:

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1. Personal bankruptcy costs, or more precisely, their expected value, affect the pricing of personal loans. The lenders, realizing that upon bankruptcy they would have to share the borrowers' assets with third parties for the deadweight costs involved, will impose these expected costs (ex-ante) on the borrower. An assessment of the magnitude of personal bankruptcy costs is, thus, important in delineating these expected costs. Furthermore, the presence of economies of scale in personal bankruptcy costs can partly explain why larger borrowers can obtain loans at lower rates than smaller borrowers can. Indeed, in the absence of other differentials, such as lower investigation, securing and monitoring costs or lower risk of default, economies of scale in bankruptcy costs would be the only justification for such phenomenon.
2. Insofar as personal investment behavior is concerned, the magnitude of personal bankruptcy costs relative to corporate bankruptcy costs is an important factor in deciding whether to invest in levered firms or to lever-up the holdings of unlevered firms' securities. In the absence of tax effects, the margin of choice is between personal and corporate bankruptcy costs. With differential taxation, a clientele model may emerge that is dependent both on the individual's tax bracket and on relative bankruptcy costs. Furthermore, the existence of such a clientele together with the presence of economies of scale in bankruptcy costs may lead to institutional arrangements that are aimed at minimizing combined (business plus personal) bankruptcy costs.
3. Personal bankruptcy costs are relevant to the theory of the capital structure of the firm in much the same way as personal taxes are. Indeed, the interactions of personal vs. corporate bankruptcy costs and personal vs. corporate taxes may determine the capital structure of the corporate sector as well as that of an individual firm.

This study is a first step in addressing the question of personal bankruptcy costs. Section I discusses the relevance of personal bankruptcy costs and develops a clientele model of individual investment-borrowing decisions. Section II presents some insights on a theory of personal bankruptcy and develops some testable hypothesis. Section III describes the data and the characteristics of costs for a sample of personal bankruptcy filings together with an empirical analysis of the nature of bankruptcy costs. Section IV summarizes and concludes the paper.

I. THEORETICAL CONSIDERATIONS

Modigliani and Miller (1958), in their pioneering work on the theory of capital structure, prove that in perfect and complete markets the choice of the capital structure is inconsequential to the value of the firm. The proof rests on the argument that as long as investors can borrow or lend on their own account (on terms identical to those available to the firm), they can undo the effect of any changes in the firm's capital structure. However, if the terms of borrowing (lending) differ, the financing decision may no longer be irrelevant. Several factors can cause the terms to differ across the two groups. One such factor is taxes. Modigliani and Miller (1963) show that when only corporate taxes are considered, there

would be an advantage to corporate borrowing, and a corner solution of 100% debt is obtained. However, once personal taxes are considered as well (with a provision for a progressive income tax system where income from bonds is taxed at a higher rate than income from equity), Miller (1977) shows that equilibrium would be achieved when the spendable income to the marginal investor is the same whether a dollar of pre-tax operating profits is distributed in the form of interest or equity income. Formally, at the margin (m):

$$(1 - t_p^m) = (1 - t_c)(1 - t_g^m) \tag{1}$$

where

t_p = personal income tax on bonds;
t_g = the discounted effective capital gains tax;
t_c = corporate income tax.[1]

Miller, then, proceeds to show that under such an equilibrium there would exist an optimal capital structure for the corporate sector as a whole but none for individual firms. As such, bondholders in the zero and low income tax brackets are the beneficiaries of the tax-deductibility of interest payments at the corporate level. Formally, investor i whose marginal income tax bracket is such that:

$$(1 - t_p^i) > (1 - t_c)(1 - t_g^i) \tag{2}$$

would buy corporate bonds and earn the surplus $t_p^m - t_p^i$. On the other hand, investor j whose income tax bracket is such that:

$$(1 - t_p^j) < (1 - t_c)(1 - t_g^j) \tag{3}$$

would shun corporate bonds and may invest in either equity or tax-free municipal bonds depending on the implicit tax rate on the tax free vis-a-vis t_g^j.

A second factor that may cause the terms of borrowing to differ across the corporation-investor groups is bankruptcy costs. In evaluating the effect of corporate bankruptcy costs, a consensus emerged that an optimum capital structure is reached where corporate tax saving is just offset by the present value of expected corporate bankruptcy costs at the margin (e.g., see Taggart, 1982; Kraus & Litzenberger, 1973; Scott, 1976; Kim, 1978, etc.). This view is challenged by Miller (1977), who based on the empirical evidence of Warner (1984), argues that the expected corporate bankruptcy costs are not large enough to warrant such conclusions. Further, Haugen, and Senbet (1978) argue that the only relevant corporate bankruptcy costs are the ones attributable to liquidation. Thus, if one merely assumes that investors are rational and that assets are priced competitively, corporate bankruptcy costs are trivial and insignificant to the firm's capital structure. However, Altman (1984) argues that Warner's analysis suffers from a lack of proper measurement of expected corporate bankruptcy costs. He further argues that because Warner's study employs the data for a restricted sample of railroads, its results are nonrepresentative of the bankruptcy costs for other firms. More importantly, he argues that the relevant corporate bankruptcy costs are not limited to liquidation costs but include indirect costs: costs of lost managerial energies, costs of lost sales and profits, etc. Based on his findings, that total corporate bankruptcy

costs can exceed 20% of the value of the firm just prior to bankruptcy and from 11% to 17% 3 years prior to bankruptcy, he argues that corporate bankruptcy costs are nontrivial and that the choice of the capital is relevant to the value of the firm. Castanias' results (1983) tend to provide further support for the argument that corporate bankruptcy costs are nontrivial. He finds that firms in high failure lines of business tend to have less debt in their capital structure. This is consistent with the hypothesis that bankruptcy costs are large enough to induce firms to hold an optimum mix of debt and equity. Disregarding the arguments about the magnitude of bankruptcy costs, DeAngelo and Masulis (1980) show that starting from a Miller equilibrium situation, the introduction of corporate bankruptcy costs (and other unresolved agency costs) causes the supply curve for corporate bonds to no longer be horizontal and turn downward-sloping instead. The effect, then, is for an optimal capital structure to exist for the individual firms as well as for the corporate sector as a whole. Diamond (1994) brings into focus the control role of debt and argues that within such a framework, bankruptcy costs become endogenous and sometimes negative. Accordingly, capital structure would depend on the correlation between cash flows and profitability of new investments, as well as on taxes and bankruptcy costs.

Interestingly, all the controversy has been centered on corporate bankruptcy costs, their magnitude and relevance, with no attention paid to personal bankruptcy costs. However, disregarding these costs is tantamount to assuming that either personal bankruptcy costs are irrelevant or that they are greater than corporate bankruptcy costs for all investors.

A. The Relevance of Personal Bankruptcy Costs to Corporate Capital Structure

The strongest arguments on the irrelevance of corporate bankruptcy costs are those forwarded by Haugen and Senbet (1978). Can the same arguments be used to reason that personal bankruptcy costs are irrelevant? The thrust of Haugen and Senbet's argument is that liquidation is an investment decision in the sense that liquidation is preferred when:

$$\text{Net Liquidation Value} > \text{Going Concern Value}, \tag{4}$$

where the former is the total value of assets when liquidated less the liquidation costs involved, including bankruptcy costs if the desired course of action calls for such filing. Under such a scenario liquidation may be preferred even in the absence of debt and the event of bankruptcy. Thus, bankruptcy costs are the costs associated with liquidation as an investment decision and are not affected by the amount of debt in the capital structure. Therefore, the amount of debt will not affect the probability or the costs of bankruptcy. Neither will it affect the net cash flows from liquidation. An important feature of this line of reasoning is that when there is a lack of agreement between the shareholders and the creditors, the former can buy out (take over) the latter, or vice versa, in order to liquidate if the net liquidation value exceeds the going concern value.

Even if one assumes that Haugen and Senbet are correct to conclude that corporate bankruptcy costs are irrelevant (see Titman, 1984, for an argument otherwise), the following factors preclude the possibility of drawing such conclusions for personal bankruptcy costs:

1. Informational asymmetry. This is a more serious problem in personal lending as personal assets tend to be more difficult to value and monitor. The lender will

have a more difficult time in deciding when to liquidate personal assets that are pledged, that is, there are costs from premature liquidation.

2. Moral hazard. When facing imminent bankruptcy, the personal borrower may decide to spend the to-be-allocated share of the lender (in part or wholly) before declaring bankruptcy.
3. The lender's limited ability to garnish future income of the borrower implies that for debtors who have limited assets-in-place but high expected future income, liquidation is almost never the preferred alternative. This holds because value at liquidation (a function of in-place assets) is always less than the value of the person's lifetime income (a function of future income). The limited ability to garnish future income may indeed create an incentive for these individuals to declare personal bankruptcy, especially if they can utilize the exemptions provided in the bankruptcy code.[3] These exemptions provide for the discharge of debts and retention of many assets and can move an individual from negative to a positive net worth position.[4] Overall, the use of debt may change the probability of bankruptcy and, considering the moral hazard problem, value at liquidation as well.
4. Human capital is a non-tradeable asset and as such Haugen and Senbet's takeover argument can not be evoked. Even if it were possible to take over a person due to his diminished incentive to work (e.g., see Rea, 1984), the value of his future income will be significantly less than the corresponding value if his future income were 100% self-owned.
5. Finally, in contrast to the corporate case, there are no circumstances under which a rational person would self liquidate at zero debt.

Therefore, the assumption of the irrelevance of personal bankruptcy costs is not a tenable one even if one accepts the argument that corporate bankruptcy costs are irrelevant.

Figure 1 depicts Miller's model. If we now allow for the presence of corporate bankruptcy costs, the supply curve for corporate debt will no longer remain horizontal and will become downward sloping. Thus, as shown in Figure 2, a lower aggregate level of debt is achieved. More importantly, as long as corporate bankruptcy cost functions are non-uniform, there would be an interior solution for each firm. If we next introduce the possibility of personal borrowing (home made leverage) and further allow for the presence of personal bankruptcy costs, the demand curve for corporate debt will shift to the right. As a result, a higher level of aggregate debt is achieved. This is shown in Figure 3. At the firm and at the individual level the situations are more complicated. Since b_c is firm-specific and b_p is individual-specific, there will be matching among firms and individuals such that a clientele model may emerge.

B. A Clientele Model of Investment-Borrowing

An alternative assumption associated with disregarding the personal bankruptcy costs is that they are greater than corporate bankruptcy costs for all investors at all debt levels. Such an assumption embodies implications which run counter to the observable phenomenon of margin borrowing, that is, personal leverage to buy corporate shares.

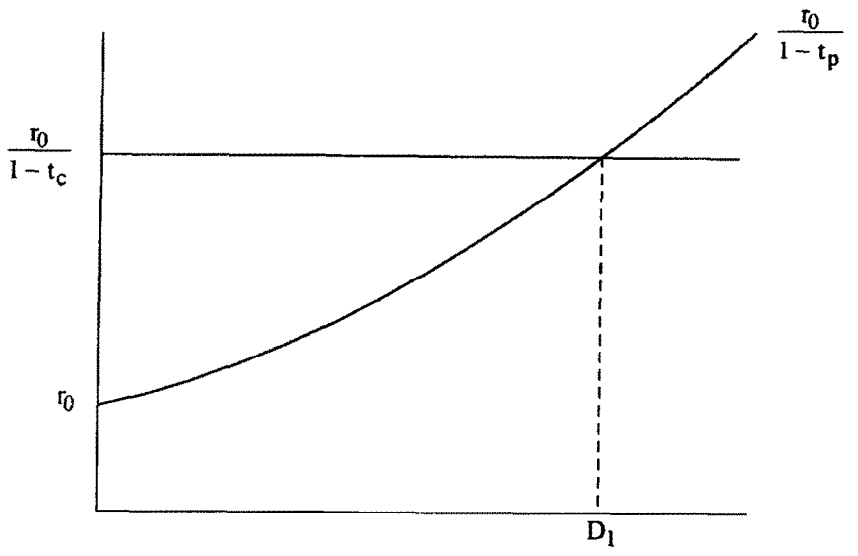

***Figure* 1.** Miller's Model.

Allowing personal bankruptcy costs to be lower than corporate bankruptcy costs for some investors would alleviate this problem. Formally, we consider four cases. First, in the absence of tax effects, an investor whose personal bankruptcy costs, b_p, is greater than the entire range of corporate bankruptcy costs (as a function of debt sizes):

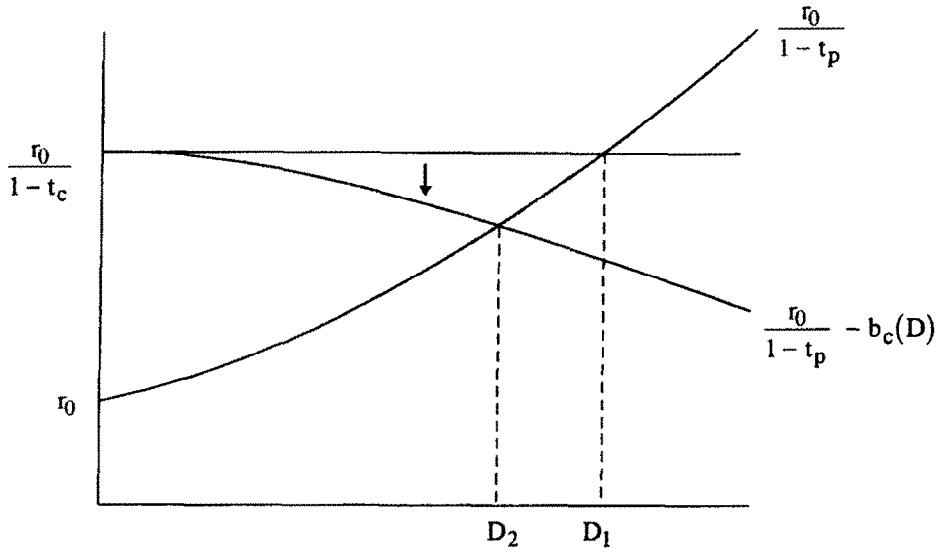

***Figure* 2.** The Combined Effects of Personal Taxes, Corporate Taxes, and Corporate Bankruptcy Costs.

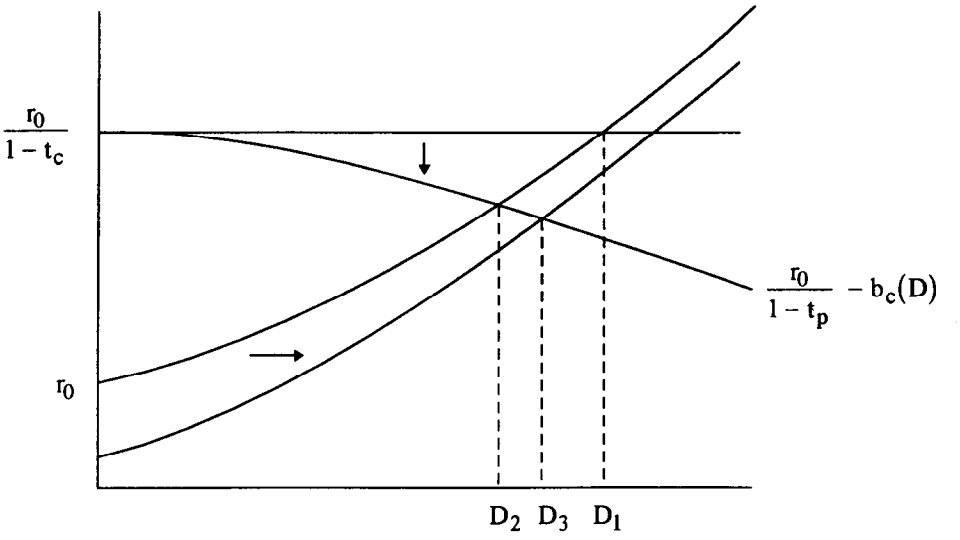

Figure 3. The Combined Effects of Personal and Corporate Taxes, and Personal and Corporate Bankruptcy Costs.

$$b_p(s) > b_c(s), \forall\ s \tag{5}$$

would invest in levered firms and refrain from personal leverage. One the other hand, if:

$$b_p(s) < b_c(s), \forall\ s \tag{6}$$

the investor would buy the shares of unlevered firms and lever the position up via margin. Other possibilities are:

$$b_p(s) > b_c(s_1), s_1 \subset s, \tag{7}$$

where the investor would invest in levered firms of debt size s_1 or smaller, and

$$b_p(s) < b_c(s_2), s_2 \subset s, \tag{8}$$

where he/she would avoid investment in levered firms of debt size s_2 or larger and would instead invest in unlevered firms via personal leverage.

Combining differential taxes and bankruptcy costs we can arrive at a general clientele model of individual investment-borrowing decision. To this end, consider an investor with a universe of four investment vehicles to choose from:

1. a tax-exempt bond;
2. a taxable corporate bond;
3. the equity of an unlevered firm;
4. the equity of a levered firm.

Insofar as the tax regime is concerned, assume that corporate profits after interest payments are taxed at the t_c rate before any distributions to the shareholders. Distributions to the shareholders can take the form of dividends or capital gains. The former is taxed as ordinary income at the rate t_p which is not lower than the rate t_g at which the latter is taxed: $(t_p \geq t_g)$.

The investor may combine his investment in any of the four investment alternatives with borrowing on personal account in which case the interest paid would be deductible from his ordinary income. The rate of interest paid by any borrower, be it the levered firm or the individual investor, is determined by a set of market-wide conditions and a set of borrower specific factors. Market-wide conditions translate into the aggregate supply of and the aggregate demand for loanable funds. Ignoring bankruptcy costs for the moment and starting with a market-clearing rate of interest for tax-exempt risk-free bonds, the rate on tax-exempt risky bonds will include a default risk premium such that the certainty-equivalent rate of interest, r_o, is equal across all such bonds. In order to induce the lenders to purchase taxable bonds, the borrowers will have to offer sufficiently higher rates to provide the lenders an after-tax rate of return at least equal to r_o. The borrowers will do so as long as the tax advantage of borrowing makes the effective cost of loans less than or equal to r_o. At equilibrium, then, the marginal lender is in the same tax bracket as the marginal borrower. If we now assume, as Miller (1977) does, that the marginal borrower is the levered firm without access to other-than-interest tax shields, the equilibrium rate of interest will be $r_o/(1 - t_c)$. If the levered firm can utilize other tax-shielding mechanisms like the investment tax credit, depreciation, etc., DeAngelo and Masulis (1980) show that the equilibrium rate of interest will be $r_o/(1 - t^m)$ where $t^m < t_c$.

Allowing now for bankruptcies to be costly, the interest rate that is charged to a borrower will include a second component, b, to compensate the lender for the expected bankruptcy costs: b_c for the corporate borrower and b_p for the individual borrower. This premium is a function of borrower-specific factors like the riskiness of the venture and the borrower's degree of leverage. To leave the lender with an after-tax compensation no less than the zero expected bankruptcy costs situation, this premium too has to be grossed up by the tax rate applicable to the marginal lender. Therefore, the rate of interest paid by the borrower is $r_o/(1 - t^m)$ in the absence of bankruptcy costs and $(r_o + b_c)/(1 - t^m)$ for the corporate borrower and $(r_o + b_p)/(1 - t^m)$ for the individual borrower when bankruptcies are costly.

Returning to the investor's problem, his choices of after-tax rate of return are:

r_o for tax-exempt riskless bonds
$r_o + b_c$ for tax-exempt risky bonds
$(r_o/(1 - t^m))(1 - t_p)$ for taxable riskless bonds
$((r_o + b_c)/(1 - t^m))(1 - t_p)$ for taxable corporate bonds

The investor will be indifferent between the taxables and the tax-exempts if his tax rate is equal to that of the marginal lender. He will prefer taxables if $t_p < t^m$ and will prefer tax-exempts if $t_p > t^m$.

Additionally, regardless of the choice, the investment may be combined with personal leverage if the after-tax cost of personal borrowing $((r_o + b_p)/(1 - t^m))(1 - t_p)$ is less than the after-tax return from lending $((r_o + b_c)/(1 - t^m))(1 - t_p)$. It is readily apparent that the critical variables are b_c and b_p, that is, personal leverage is preferred if $b_p < b_c$. Thus, it is

TABLE 1
A Clientele Model of Individual Investment-Borrowing Decisions

	$b_p > b_c(S)$	$b_p < b_c(S)$
$t_p > t_c + t_g$	Type I	Type II
$t_p < t_c + t_g$	Type III	Type IV

Type I: Buys shares of levered firms; no personal borrowing

Type II: Buys shares of unlevered firms via personal leverage

Type III: Buys bonds; no personal borrowing

Type IV: Buys bonds via personal leverage

possible for an individual to be a lender and a borrower at the same time if his expected bankruptcy costs are sufficiently smaller than corporate bankruptcy costs.

Consider now the alternatives of investing in the equity of an unlevered firm and that of a levered firm. Without loss of generality, let us assume that the payout is zero or alternatively, that both dividends and capital gains are taxed at the same rate (t_g). It can then be shown that a tax-and bankruptcy-induced clientele model emerges. Such a model would compare the differential, after tax returns of each of the four alternatives relative to the other three. Bypassing the details of the derivations, we offer the summary in Table 1. It is clear that the individual's choice of the investment medium is dependent on a how his/her tax bracket compares to the corporate tax rate and the marginal investor's tax rate as well as how his/her bankruptcy costs compare to the corporate bankruptcy costs.

II. A PRIMER ON THE THEORY OF PERSONAL BANKRUPTCY

The preceding section illustrates the importance of personal bankruptcy costs to both the investment and the financing decision. Before proceeding to report some estimates of these costs, we present a discussion of the some of the differences between personal and corporate bankruptcies. We also present a few testable hypothesis about personal bankruptcy cost.

Given that corporate bankruptcies and their costs have been the focus of much debate, it would be helpful to review the process of corporate bankruptcy first. The essential features of corporate bankruptcy (Harris & Raviv, 1993; John, 1993) can be listed as follows:

1. A failure to pay either the interest or the principal of an obligation, or the violation of certain loan covenants, can trigger a corporate bankruptcy. Upon such an event, all assets of the corporate firm become available for takeover by the creditor(s).
2. The limited liability feature of the corporate form prevents the creditor(s) from gaining access to the non-corporate assets of the shareholders.
3. No legal exemptions are granted for the benefit of the residual claimant(s). Exceptions consist of some deviations from the absolute priority rule that vary from case to case.

4. At bankruptcy, the business may either be liquidated or be allowed to continue to operate.
5. The creditors bear all of the ex-post bankruptcy costs. (These are usually only partially offset by the ex-ante bankruptcy costs assessed.)

These features have two important implications for the process of corporate bankruptcy. One is that the corporate firm (representing the shareholders/owners or the managers as their agents) has no incentive to voluntarily file for bankruptcy. This is due to the fact that when the value of the firm is less than the value of the obligations against it, the wealth position of the residual claimants is equivalent to the value of an unexercised out of the money call option. The residual claimant has no reason to exercise such an option given that the exercise will net the holder a current value of zero. Keeping the option alive is preferable, given that the probability of recovery at some future date is always non-negative. Indeed, as long as the owners/managers remain the decision makers for the operations of the entity, they can act to increase the value of the option by increasing the riskiness of the assets. Alternatively, we can consider that portion of the value of the equity which is attributable to the limited liability feature of the corporate form. This is a put option, which can not have a negative value and can only enhance the value of the equity.

The other important implication is that the creditors, in their interest to preserve assets, would want to initiate the bankruptcy proceeding as soon as possible. This follows from the observation, above, that allowing the corporate firm to continue operations could amount to a process of wasting assets in place. Accordingly, the creditors would want to assume ownership of all assets as soon as possible. They can then decide whether to liquidate or to continue the operations. With ownership, they position themselves to receive all the potential gains from access to assets in place. Simultaneously, they would prevent the owners/shareholders from exploiting risk-shifting opportunities which could enhance value only for themselves. Therefore, we can summarize that with corporate bankruptcies: (a) the debtors will never initiate a bankruptcy proceeding, and (b) it is almost always the creditors who initiate the proceedings.[5]

Personal bankruptcies differs from the corporate ones in several important ways:

1. In the event of bankruptcy, not all assets of the individual can be taken over by the creditors. Some assets in place (e.g., the principal place of residence, vehicle, tools, etc.) and the individual's future income stream are exempt from takeover. It is possible, therefore, that these exemptions would preserve a significant portion of assets in place. Indeed, exemptions granted by the Bankruptcy Law and those granted by the states could leave the bankrupt individual significant residual assets following a filing.
2. Unlike the corporate case, under certain circumstances, it would be optimal for the individual to initiate bankruptcy proceedings. These arise from:
   - A desire to secure the individual ownership of the exempt assets, given that in the absence of bankruptcy the exempt assets can dissipate as payment to the creditors. Following this line of reasoning, it can be hypothesized that the asset level at which bankruptcy declaration is triggered increases with the level of exemptions.

- A need to facilitate additional borrowing at some future date. In such situations, an individual's decision to file for bankruptcy is analogous to a sovereign country's willingness to work out its loan(s) in default with the lenders involved. The motivation behind such a decision is the debtor's perceived need for future borrowing.
- An effort to take advantage of the presence of a mandatory cooling off period between bankruptcy filings: An early filing increases the present value of the gains from consumption (made possible by new debt) prior to a second bankruptcy filing.
- An attempt to relax restrictions on consumption: The pressure to satisfy debt obligations could compel individuals to limit spending below the subsistence level. Settlement through bankruptcy proceedings may ease or remove such restrictions.[6]

3. When filing for personal bankruptcy, the individuals can choose to give up either part of their assets in place (net of exemptions) or part of their future incomes (typically, for no more than 3 years). The former can be done through a Chapter 7 filing and the latter through a Chapter 13 filing. Accordingly, the individual filer can choose the "least cost" alternative among the two: Those who are assets-in-place poor but are future-income rich (e.g., medical school students with non-student loans) would prefer Chapter 7. Those with low expected future incomes but high assets-in-place (e.g., a person with a principal place of residence that has substantially appreciated in value) will choose Chapter 13. Personal bankruptcies are, therefore, subject to a potential moral hazard problem which the corporate ones are not subject to.[7]
4. There are other moral hazard problems as well: Individuals with low levels of asset-in-place (i.e., below the exemption level) may actually incur debt to increase current consumption and to increase their holdings of exempt assets. Further, given the aggravated level of informational asymmetry with respect to the valuation of personal assets, an individual's misrepresentations, made to take advantage of the exemption limit, will have a higher probability of not being detected.
5. In personal bankruptcies, when the value of the asset is near or slightly below the exemption limit, the individual (as the debtor) will be responsible for the ex-post costs of bankruptcy. Thus, the magnitude of bankruptcy costs does matter to the individual and to his or her decision as to whether to declare bankruptcy. It follows, then, that higher bankruptcy costs may delay the bankruptcy filing if such costs exceeds the necessary assets needed to keep the creditors at bay (i.e., partial debt payment).

The personal bankruptcy process can, thus, be summarized as one that gives the individual the choice as to the best alternative for retaining the highest level of wealth. Within this framework, the individual would compare his/her expected wealth after bankruptcy to the current wealth to decide whether or not to file. The former is measured as the sum of exempt assets, net of ex-post bankruptcy costs, and the present value of all future income. The latter is measured as the current assets in place plus the present value of all future incomes net of a portion to be paid out for a specified number of years. Additionally, the

incentive to declare bankruptcy is often with the individual not with the creditors, as it is in the corporate case.

These procedural differences can lead to certain testable hypothesis. To arrive at these, we assume that an individual facing financial distress has fewer resources available to him/her than does a corporation in distress. The differential access to information and legal advice which this assumption embodies leads to the following hypothesis:

H1: When compared to corporations, individuals may wait too long to file for bankruptcy. As a result, assets-in-place can dwindle to a level below the triggering point for the preservation of exempt assets.

H2: When compared to corporations, individuals are at a disadvantage in finding ways to minimize their direct bankruptcy costs. As a result, ex-post personal bankruptcy costs are higher than the corporate ones.

H3: The lower level of legal sophistication on the part of near-bankrupt individuals tends to prevent them from appropriately taking advantage of the economic incentives built into the Bankruptcy Code.

In what follows we provide some direct evidence in support of these hypothesists.

III. THE EMPIRICAL RESULTS AND DISCUSSION

Our main objectives in this section are threefold: to provide some preliminary results on the magnitude of personal bankruptcy costs, to empirically determine if these costs are non-trivial and to compare them to business bankruptcy costs. The data is comprised of bankruptcies filed over the six-year period 1977-1982 with the Bankruptcy Court, U.S. District Court, Middle District of Florida. It consists of 167 personal bankruptcy petitions filed with the court. Of these 112 (67%) may be labeled as nominal asset cases because the bankruptcy costs involved exceeded the value of the assets involved.[8] Accordingly, the other 55 will be labeled as asset cases. The observation that two-thirds of those cases result in the total loss of assets provides direct evidence in support of our H1 hypothesis and indirect evidence in support of the H3 hypothesis. However, direct evidence available elsewhere does provide additional strong support for the last hypothesis. Consider, for example, Bhandari and Weiss (1993) results that the Bankruptcy Code does not appear to have had a significant effect on the rate of personal bankruptcy filings; Buckley and Brining's (1995) findings that differences in state filing rates are not attributable to legal or common economic variables; and Sullivan, Warren and Westerbrook's (1994) finding that debtors in high-exemption and low-exemption states filed for bankruptcy and selected Chapter 13 in similar proportions. These findings all support the notion of lack of sophistication on the part of individuals in financial distress.

The breakdown of personal bankruptcy cases by the range of the amount of claims is shown in Table 2. The greatest concentration of these cases is in the less than $20,000 range of claims:[9] 39% of all cases and 53% of asset cases fall in this range. Also, it appears that the ratio of total administrative costs to total debt declines as the amount of claims increases, but no such appearance is present for the ratio of administrative costs to net proceeds realized. The former may be regarded as an estimate of b_p. When all cases are considered the magnitude of these costs is not, in any of the ranges of claims, less than

TABLE 2
Characteristics of Personal Bankruptcy Cases

Range of the Dollar Amount. of Claims per Case	*Number of Cases*	*Total Debt (TD)*	*Total Administrative Costs (AC)*	*Net Proceeds Realized (NPR)*	*AC/TD*	*AC/NPR*
A: All Cases						
0-$ 9,999	35	$ 205,029	$ 13,892	$ 26,419	.0677	.5258
10- 19,999	30	425,674	17,562	31,125	.0412	.5642
20- 29,999	14	347,814	5,696	6,456	.0163	.8822
30- 39,999	17	590,573	7,148	17,841	.0121	.4006
40- 49,999	6	258,053	2,992	6,257	.0115	.4781
50- 59,999	10	558,559	9,229	11,350	.0165	.8131
60- 69,999	5	321,772	4,931	14,782	.0153	.3335
70- 79,999	8	597,773	8,852	20,310	.0148	.4358
80- 89,999	3	256,960	1,804	3,197	.0070	.5642
90- 99,999	6	573,812	4,862	4,862	.0078	.9317
100-199,999	21	2,821,499	16,984	26,671	.0060	.6367
200,000 & more	12	$ 22,131,473	19,573	51,173	.0008	.3824
Total	167	$ 29,088,891	$113,193	$220,643		
Average		$ 2,424,074	$ 9,433	$ 18,387	.018	.579
B: Asset Cases Only						
0-$ 9,999	9	$ 44,997	9,442	$ 21,969	.0298	.4297
10- 19,999	10	133,408	12,307	25,870	.0922	.4757
20- 29,999	4	106,736	2,891	3,651	.0270	.7918
30- 39,999	6	204,029	5,154	15,347	.0252	.3252

(*continued*)

TABLE 2 (cont.)

Range of the Dollar Amount of Claims per Case	*Number of Cases*	*Total Debt (TD)*	*Total Administrative Costs (AC)*	*Net Proceeds Realized (NPR)*	*AC/TD*	*AC/NPR*
40- 49,999	3	126,047	1,935	5,200	.0153	.3721
50- 59,999	2	108,436	4,343	6,464	.0400	.6718
60- 69,999	2	130,921	4,431	14,282	.0338	.3102
70- 79,999	4	306,667	6,841	18,299	.0223	.3738
80- 89,999	1	88,161	1,306	2,699	.0148	.4838
90- 99,999	1	93,564	168	500	.0017	.3360
100- 199,999	8	1,010,867	13,253	22,940	.0131	.5777
200,000 & more	5	2,576,215	13,361	45,161	.0051	.2958
Total	55	$ 4,930,048	$ 75,432	$182,882		
Average		$ 410,837	$ 6,286	$ 15,240	.0416	.4536

33% and is on average 58%. When only asset cases are considered, the corresponding figures are 29% and 45%.[10] These are all significantly (beyond the .01 level) greater than zero and apparently much higher than the corresponding figures for business bankruptcies reported elsewhere; for example, an average of 5.3% in Warner (1984), 7.5% in Ang, Chua and McConnell (1982), or 20% in Stanley and Girth (1971). These results are, therefore, consistent with the predictions of our second hypothesis. Notice, however, that due to the presence of exempt assets (see footnote 3) there is an asymmetry of personal bankruptcy costs between the borrower and the lender. As a result, although the preceding figures may be representative of the costs from the point of view of the lender, they overestimate the costs to the borrower because the value of exempt assets are not included in the net proceeds realized.

Table 3 provides a breakdown of the component costs of bankruptcy and their relative importance. In approximately half (47%) of the cases, the trustee's attorney fees amounted to over 50% of all costs and as such is the most important of all component costs. The second most important of all component costs is the trustee's commissions, which in 38% of all cases amounted to over 50% of all costs.[11] Since some costs were incurred for only a few cases, no concrete statement can be made regarding the least important component costs. However, for the frequently incurred costs, the referees' salary and expenses ranks as the least important component cost: for 74% of cases this item amounts to less than 10% of all costs.

Table 4 provides the data on distributions to claimants. Claims are broken down into the priority, secured and unsecured categories. Among these, priority claimholders are the ones with the highest percentage of claims paid: approximately 20%. Interestingly, secured claimholders fare worse than unsecured claimholders: 0.19% of claims paid to the secured and 0.46% paid to the unsecured claimholders.[12] However, the distribution to the secured claimholders may be understated if some properties are abandoned to their claimants by the trustee. Yet, with consideration given to the possibility of such understatements, the percentage of claims satisfied is extremely low which explains why in a few cases some claimants did not even bother to file claims.[13] This is also suggestive of the ineffectiveness of monitoring debt in the case of individuals. Finally, in a similar vein to the conclusions of Green and Shoven (1983, p. 50), the low percentage of claims paid suggests that the pros-

TABLE 3
The Relative Importance of Component Costs

Number of cases for which the component cost as a percentage of total administrative cost falls in the range of	*0–10%*	*11–20%*	*21–30%*	*31–40%*	*41–50%*	*>50%*
The Trustee's Commissions	29	28	21	11	11	64
Referees Salary and Expenses	124	32	2	1	0	0
Auctioneer's Fees	2	3	2	0	3	1
Attorney Fees for the Trustee	0	9	3	8	3	1
The Trustee's Other Expenses	44	7	0	1	0	0
Attorney Fees for Bank	0	0	1	1	2	0
Receiver's Expenses	0	1	0	0	0	0
The Appraiser's Fees	9	6	1	0	0	2
Rental Expenses	2	0	0	1	1	0

TABLE 4
Distributions to the Claimants

	Total Amount of Claims	*Amount Paid*	*Percentage of Claims Paid*
Priority	$ 320,756	$17,947	5.59%
Secured	17,780,927	34,999*	0.19%
Unsecured	10,987,208	51,240	0.46%
Case	*Secured Claim*	*Amount Paid*	*Percentage Claim Paid*
1.	$ 297	$ 297	100
2.	6,056	6,056	100
3.	450	450	100
4.	468	2,468	100
5.	113,844	25,728	22.6
TOTAL	$124,115	$34,999	28.4

Note: *There were only five cases where secured payments were made.

pect of bankruptcy may make personal borrowing so expensive that some portion of the economically desirable demand for personal borrowing not be met.[14]

To gain insight into the nature of personal bankruptcy costs, we regressed the total administrative costs of bankruptcy (AC) on net proceeds realized (NPR). The estimated equation is as follows:

$$AC = 262 + 0.31\ (\text{NPR})$$
$$(7.0)\ (30.67)$$
$$\bar{R}_2 = 0.85 \tag{9}$$

Accordingly, the administrative costs of personal bankruptcies amount to approximately $262 per filing plus 31% of net proceeds realized. When nominal cases are excluded, costs amount to $396 per filing plus 29% of net proceeds.[15]

To investigate the possible presence of economies of scale in bankruptcy costs, the following quadratic equation was estimated:

$$AC = 120.26 + .49(\text{NPR}) - 0.67 \times 10^{-5}\ (\text{NPR})^2$$
$$(4.02)\quad (29.3)\qquad (11.9)$$
$$\bar{R}_2 = .92 \tag{10}$$

Accordingly, it can be concluded that personal bankruptcy costs are a quadratic function of the net proceeds realized and that there are economies of scale in such costs.[16]

IV. SUMMARY AND CONCLUSIONS

Corporate bankruptcy costs have been the subject of much theoretical debate and empirical measurement. Personal bankruptcy costs on the other hand have not received much atten-

tion. This paper is designed to show the need for further investigation into both the relevance and the magnitude of personal bankruptcy costs. It is argued that we can neither safely assume that personal bankruptcy costs are irrelevant nor can we assume that they are insignificant. We show that the interaction of personal vs. business bankruptcy costs and personal vs. corporate taxes determine the capital structure of the corporate sector as well as that of the individual firm. Considering bankruptcy costs (personal and corporate) and taxes (both personal and corporate), we develop a general clientele model of individual investment-borrowing decisions. Within such a model the choice of the media (equity vs. debt) and the mode (use vs. non-use of leverage) in investments is determined by the interaction of an individual's tax bracket and his/her bankruptcy costs. Furthermore, within such a framework, levered mutual funds may become the providers of low cost leverage to the individuals with relatively high bankruptcy costs and or high monitoring costs. The incentive to create these funds is then dependent on the magnitude of the spread between the average cost of personal debt and the average cost of personal debt. This spread is a function of the difference between the average expected bankruptcy and monitoring costs for corporate and personal debt, which our exploratory estimates of personal bankruptcy costs indicate may be rather large. These estimates indicate that personal bankruptcy costs can consume as much as 45% of the net proceeds realized on the average and as such are higher than corporate bankruptcy costs documented in the literature. The evidence also suggests that personal bankruptcy costs are a quadratic function of the net proceeds realized and that there are economies of scale in such costs. This should provide further impetus for institutional arrangements that minimize combined bankruptcy costs.

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NOTES

1. Note that Miller sets $t_g = 0$.

2. Note that at the margin(m) $b_c{}^m = b_p{}^m$. This is comparable to the case where only taxes are considered and at equilibrium $(1 - t_p{}^m) = (1 - t_c{}^m)(1 - t_g{}^m)$.

3. Under Chapter 7 of the U.S. 1978 Bankruptcy code, the first $7,500 of equity in an individual's home and $3,050 in other specified assets are exempt from bankruptcy proceedings. However, the level of exemptions vary from one state to another, and the petitioner has the choice between Federal and state exemptions. See Frank and Torous (1992) for a comparison of UK and U.S. bankruptcy procedures. Gropp, Scholz and White (1997) discuss how personal bankruptcy exemptions redistribute credit toward borrowers with high assets.

4. It is from this perspective that Shepard (1984) refers to bankruptcy as a rational strategy by many debtors to maximize their wealth.

5. An interesting exception to this rule is the case of John Manville which declared bankruptcy in order to limit the asbestos victims' claims. The strategy, designed to protect the interest of the shareholders, proved disastrous for the firm.

6. Note that these are post-bankruptcy benefits and are often ignored in theoretical discussions.

7. *Business Week,* in a recent commentary on personal bankruptcies, reports that about 30% of debtors file under Chapter 13 (Gutner, 1996).

8. By comparison, business bankruptcy filings during this period consist of 34 cases, only 11 (32%) of which were nominal asset cases. In what follows we will report the highlights of the results for personal cases in the body of the paper and report the results for business bankruptcies in footnotes. The detailed results are, however, available from the authors.

9. By contrast the greatest concentration of business bankruptcy cases is in the more than $150,000 range of claims.

10. The corresponding figures for business bankruptcy cases (b_c) are 14% (minimum) and 20% (average) for all cases and 12% and 17% for asset cases only.

11. For business bankruptcy cases the trustee's attorney fees ranked as the most important component cost. The trustee's commissions and accountants' fees tied as the second most important component.

12. In business bankruptcy cases secured and unsecured claimholders fare almost as poorly: 4.6% and 4.3% of claims paid, respectively.

13. This may be due to an important difference between corporate and personal bankruptcies: when a firm is in distress, the lender would consider (a) the liquidation value of all assets of the firm and (b) the capitalized value of all future cash flows and choose a course of action. In case of individuals, however, the relevant figures are (a) the liquidation value minus exemptions and (b) the current wealth in-place without regard for future wages (i.e., no slavery, no garnishment of wages, etc.).

14. However, the default rate on consumer loans is very low (1-2%).

15. In comparison, the administrative costs of business bankruptcies include larger fixed costs and lower fixed costs as a percentage of net proceeds realized: for all cases the variable costs amount to $1,996 and the variable costs to 20%. The corresponding figures for asset cases are $2,848 and 19%.

16. The same holds true for our sample of business bankruptcy cases, where the equation is:

$$AC = \underset{(1.01)}{635.55} + \underset{(9.2)}{.38(\text{NPR})} - \underset{(4.6)}{.97 \times 10^{-6}(\text{NPR})^2} \quad \bar{R}_2 = .8$$

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