Effects of IRS Collection Activities on Consumer Bankruptcy Filings

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Filing for bankruptcy protection temporarily stays IRS collection efforts and may provide leverage in negotiations. Other debts, e.g., unsecured debts, are dischargeable in bankruptcy. Taken together, these laws may lead to a discharge of unsecured debts which otherwise would be repaid but for the IRS debt. Using PACER data from the Eastern District of Washington, we investigate whether distributions of net income, assets and liabilities are significantly different among individuals filing for bankruptcy with IRS claims and those without. Using simple hypothesis tests, we find debtors with priority IRS claims are better off financially, except when controlling for other characteristics.

INTRODUCTION

Policymakers and regulators should be cognizant of the unintended consequences of their initiatives. When regulations create perverse incentives, these policies may require revision if the unintended costs threaten to reduce the efficacy of meeting the policy's intended goals. Such is the case when an individual files for protection under the U.S. Bankruptcy Code. Generally, the petition to file bankruptcy results in an automatic stay (11 U.S.C. §362) and all creditors, including the U.S. Internal Revenue Service (IRS), must cease collection efforts during pendency of stay. Creditors may, however, file a proof of claim with the bankruptcy court to protect their rights. A proof of claim may be a statement and/or any verifying documentation supporting a claim against the debtor. As a creditor, the IRS may also file a proof of claim, even in circumstances where taxes have not been assessed or the question of tax liability is before the tax court.

Since much tax debt, pursuant to 11 U.S.C. §523(a)(1), cannot be discharged in bankruptcy, tax authorities have less incentive to negotiate their claims than other creditors whose claims are unsecured or partially secured with collateral (Power, 2007). In fact, tax collectors may take an aggressive posture, pushing for debt repayment sooner rather than later, in order to reduce their risk that a debtor's financial condition will deteriorate. This aggressive behavior may be less than optimal from the perspective of the

debtor, general unsecured creditors (including those who lend via credit cards), and society as whole (who pay the social costs of bankruptcy through higher interest rates on new borrowing) because, given time and a well-designed repayment plan, many debtors might successfully navigate their way out of financial distress without filing for bankruptcy.

In a recent paper, Hackney, McPherson, Friesner, and Correia (2010) investigated whether tax debt is a significant determinant in the success of Chapter 13 bankruptcies. Using data drawn from the Eastern Washington U.S. Bankruptcy Court District, they find evidence suggesting that filers with significant IRS claims are more likely to successfully complete a bankruptcy repayment plan. However, their findings may actually represent an inefficient and socially undesirable outcome if these tax debtors were fundamentally more financially stable than their peers who did not incur IRS claims, and by extension were capable of repaying their debts.

This manuscript investigates several unresolved issues regarding the resolution of IRS claims against individual households using the U.S. Bankruptcy Code. For example, rather than considering the impact of tax debt on the *outcome* of the consumer bankruptcy process (i.e., the completion of a successful Chapter 13 repayment plan), this paper is intended to provide an analysis of those factors that lead a debtor to *initiate* the filing process; that is, whether the presence of significant tax debt (relative to other types of debt) motivates debtors to file for bankruptcy. As a corollary, by contrasting the debt levels and other characteristics of filers with tax debt to other filers whose taxes are not in arrears, we can also determine whether these types of tax-related filings have the potential to adversely impact other types of lower priority or general unsecured creditors.

BACKGROUND ON IRS COLLECTION PRACTICES

The IRS collection process begins with the assessment of tax. If the taxpayer is unable to pay the amount due in full, he or she may pay through installments; however, the amount outstanding remains subject to interest charges. If the taxpayer is unable to pay through installments, he or she may seek to settle with the IRS for an amount less than the amount owed through an agreement called an Offer in Compromise (OIC). When considering an OIC, the IRS examines the taxpayer's current and future ability to pay, as well as the value of his or her assets, and uses this information to determine the Reasonable Collection Potential (RCP) of the tax due. The IRS will accept an OIC only if the amount of the offer meets or exceeds the value of the RCP. For fiscal year 2010, the IRS accepted 24% of OICs it received (Olson, 2011). While the statute of limitations generally allows the IRS up to ten years to collect taxes due, submitting an offer will toll the statue for the period of consideration, which may be as long as two years. Similarly, the collection statute is tolled during bankruptcy proceedings.

Claims of the IRS against individuals may be secured, priority and general unsecured. A debt becomes secured when the IRS files a Notice of Federal Tax Lien (NFTL), which is a legal claim attaching to the debtor's current and future interests in property. The lien arises automatically when the IRS sends its first demand for payment, and the debtor subsequently fails to pay the amount due within ten days. The primary purpose of the NFTL is to provide public notice to other creditors that the IRS has a claim against the debtor's property. When filed prior to the debtor's filing for bankruptcy, the NFTL secures the IRS's claim in the bankruptcy case to the extent the debtor has equity in the property to which the lien is attached. As a secured creditor, the IRS will receive either the property subject to its lien or the equivalent amount in cash through the bankruptcy proceedings. The IRS lien is superior to ordinary judgment lien creditors, in that the IRS lien is superior to homestead or exemption rights of the debtor. The IRS may attempt to levy (seize) property to satisfy a tax debt once a federal tax lien is in place. The IRS may not, however, levy property if there is a current or pending installment agreement, a pending OIC or once a petition for bankruptcy has been filed with the appropriate bankruptcy court.

When the IRS does not file a NFTL, the debt is considered unsecured. Should the debtor file for bankruptcy protection, some outstanding IRS debt, subject to the terms of 11 U.S.C. §507, receives priority consideration over certain types of debt, but not others. Priority tax debt is also non-dischargeable, per 11 U.S.C. §523, and will remain an obligation of the debtor post-bankruptcy discharge.

Outstanding priority tax debt is ranked as eighth among bankruptcy priority claimants. Other priority claims that typically rank ahead of unsecured IRS claims include, but are not limited to: court-approved administrative expenses (trustee payments, attorney payments, etc.), outstanding domestic support obligation payments, some wage payments owed to employees, outstanding employee benefit contribution plan payments, and outstanding student loan payments. We note in passing that claims generated after the debtor has filed for bankruptcy, or in cases where bankruptcy is involuntary, between the filing and the appointment of a trustee, are generally considered as administrative expenses and receive the highest priority. This includes any capital gain taxes paid when the debtor's assets are liquidated to resolve outstanding claims. (11 U.S.C. §§502 & 507)

Examples of §507 priority IRS tax claims include: claims arising from the debtor's failure to file a tax return due during the three years prior to the petition, federal income taxes assessed during the 240-day period prior to the petition, and federal taxes resulting from a return filed during the two year period prior to the petition that were not assessed but were assessable. The 240-day period does not include any days in which an OIC was pending with the IRS. All other federal income taxes and penalties imposed by the IRS on debtors are considered as general unsecured claims, and thus have the lowest priority of all bankruptcy claims. Under Chapter 13, debtors generally have a right to the discharge of general unsecured tax debts upon the successful completion of a repayment plan.

LITERATURE REVIEW

Several studies have examined the characteristics that distinguish a typical debtor filing for bankruptcy from a solvent debtor. Using the data from the state of Delaware in 2003, Zhu (2011) developed a profile of bankrupt debtors in comparison to "control" households. The greatest contrasts between the bankrupt and control groups were credit card debt and total liabilities. Median credit card debt for the bankrupt group was more than ten times that of the control group, and median total liabilities were nearly five times higher for the bankrupt group. The challenge that the bankrupt group faced in supporting these higher debts was clear given that the bankrupt group's median income was slightly lower than the control group, while median total assets were considerably lower for the bankrupt group.

A bankruptcy may also be caused by the household's inability to sustain higher levels of debt due to unforeseen "trigger" events, such as a loss of employment, an unexpected increase in expenses (i.e., divorce), or a combination of these events (i.e., a major medical such as cancer or a stroke). These "triggers" fundamentally alter the debtor's income statement and ultimately prevent the debtor from managing existing debt service obligations (Price and Dalton, 2007). For example, Himmelestein et al. (2005) found that "in 2001, 50% of the 1,071 surveyed bankruptcy filers cited medical conditions as a cause," of the household's need to file for bankruptcy. Sullivan, Warren, and Westbrook (2000) argue that major medical events are responsible for the majority of bankruptcy filings.

Other studies reject the "trigger" event theory, instead arguing that the excessive consumption patterns of debtors is the driving factor in bankruptcy filings. For example, Fay, Hurst, and White (2002) developed a regression model to test the significance of "adverse events" in bankruptcy filings. This model failed to find a "significant relationship between bankruptcy filings and either job loss or health problems for the household head or spouse, although (it) did find that bankruptcy was more likely to occur if the household head had recently been divorced" (Fay, Hurst, and White, 2002). Thus, the authors concluded that trigger events did not constitute a comprehensive explanation for financial insolvency and the decision to file for bankruptcy protection. On the other hand, Fay, Hurst, and White (2002) found a positive correlation between filings and the financial benefits a debtor will receive from filing. They concluded that households will file for bankruptcy when it is to their financial benefit, an action referred to as "strategic filing".

Many unsecured creditors are concerned with strategic filing behavior, since unsecured debts will likely be discharged in bankruptcy proceedings. This is especially true for debtors considering a strategic filing under Chapter 7, where most classes of general unsecured creditors are simply discharged, usually with no payment whatsoever. Debt discharge also occurs in Chapter 13. The debtor submits a budget to

the court that covers household expenses, including house and car payments, and the debtor's net disposable income is paid monthly for a 36-60 month plan payment. These month payments, after administrative expenses, are applied first to the priority claimants, and any remaining money is applied to general unsecured creditors. The debtor receives a discharge from these general unsecured claimants upon successful completion of the Chapter 13 plan. Certain types of outstanding debts (including, but not limited to priority IRS claims) can *only* be resolved using the bankruptcy process (in a manner that benefits the filer) via a Chapter 13 filing (Power, 2007; Reilly, 2012). Hence, creditors such as the IRS have a financial incentive to promote strategic filing under Chapter 13, even if it is to the detriment of unsecured creditors.

Research regarding tax debt and bankruptcy has addressed other pertinent issues, but not the perverse incentive issue just described. For example, Cho, Linn, and Nakibullah (1996) examined the best approach for tax authorities, including the IRS, to maximize tax revenues in the presence of tax evasion and bankruptcy protection as options for tax debtors. However, Cho, Linn, and Nakibullah (1996) do not examine empirical evidence regarding the debtor's side of the same game; that is, the decision of whether or not to file for bankruptcy.

A study closer in nature to this paper is Efrat (2009), who studied the "burden tax obligations impose on small business owners at the time of their bankruptcy filing." Using a national sample, he found that more than half of all small business owners reported some outstanding tax obligations at the time of filing. Moreover, for many of those business owners, the amount of outstanding tax obligations was substantial. Whether those tax obligations were the primary driver of the bankruptcy filing was left for future research.

EMPIRICAL METHODOLOGY

Assumptions and Hypotheses

The empirical methodology employed in this manuscript rests on a number of assumptions. The first assumption is that an individual files for bankruptcy protection to resolve debts that are outstanding at the time of filing. The debtor may be insolvent at the time of filing, or he/she may currently be solvent, but nearing a point of insolvency. In either case, the decision to file would be driven by the current magnitude and mix of the debtor's assets and liabilities (i.e., the debtor's capital structure), relative to the debtor's ability to repay these obligations (i.e., income net of monthly living expenses). We take these obligations as given, and define the population of interest as those individuals who have chosen to file for bankruptcy.

Given this information, if tax obligations are a primary consideration in an individual's decision to file for bankruptcy, it is reasonable to assume that the outstanding tax obligations would represent a substantial drain on net income (relative to other obligations), or a major determinant of the filer's capital structure, or both.[1] We have no prior information suggesting that the typical filer has any tax debt. Moreover, for those individuals who have tax debt, we have no prior information suggesting that the tax debt would be a primary drain on net income and/or a primary determinant of a filer's capital structure. Hence, we operate under null hypotheses of ignorance about the relationship between tax debt and net income and capital structure. This allows for the creation of the following null hypotheses:

> *H_0^1: There are no mean differences in debtor income (whether gross or net of expenses) between debtors who have outstanding tax obligations and those who do not incur such obligations.*
> *H_0^2: There are no mean differences in debtor capital structure (gross assets and assets net of liabilities) between debtors who have outstanding tax obligations and those who do not incur such obligations.*

Under these null hypotheses, tax obligations would be no more or less onerous to debtors, on average, than any other type of debt. Thus, if a typical person in the population files for bankruptcy, taxes are

unlikely to drive that decision. Moreover, if the null hypothesis is not rejected, other creditors, on average, are unlikely to be significantly impacted by the existence of tax debt. Concomitantly, rejecting the null hypothesis suggest that tax obligations, when resolved via bankruptcy, would negatively impact other creditors whose claims receive lower priority in the bankruptcy process.

An additional consideration is the type of priority different tax claims receive. As noted earlier, IRS tax claims may be secured, priority, or general unsecured. If the null hypothesis is rejected because filers have secured tax claims, then the resolution of those debts are likely to adversely impact both general unsecured and priority unsecured creditors. If the null is rejected due to significantly higher unsecured tax claims, then only general unsecured creditors would be the only creditor class that disadvantaged by the bankruptcy process. In either case, these differences in tax claims necessitate that any attempt to assess our null hypotheses account for both types of tax claims.

A third consideration pertains to the chapters under which an individual may file for bankruptcy protection. In general, an individual may file under either Chapter 7 or Chapter 13 of the U.S. Bankruptcy Code. Each chapter contains different provisions for resolving outstanding debts, although Chapter 13 filings (which constitute a minority of filings in most districts) provides more options for addressing tax claims (Hackney, McPherson, Friesner, and Correia, 2010). Most debtors with a regular source of income can elect to file under Chapter 13. Some filers with substantially higher incomes 11 U.S.C. §707 "means test" are precluded from utilizing Chapter 7, and are left with Chapter 13 as their only practical bankruptcy alternative.[2] Thus, chapter filing decisions may confound our null hypotheses and, in such cases, necessitates appropriately controlling for chapter filing.

A final consideration is a phenomenon known as "legal culture" (Hackney, Brajcich, Friesner, and McPherson, 2014). Legal culture is a catch-all term encompassing the fact that individual ethics, influence of lawyers, judges, and the legal environment, as well as religious preferences and practices (Beck, Hackney, and McPherson, 2014) can have a significant influence on the bankruptcy filing decision as well as bankruptcy chapter choice. To the extent that legal culture creates a confounding effect on the null hypotheses, also requires that the determinants of legal culture be controlled for in any empirical analyses.

Econometric Methods

To test the null hypotheses specified in the previous section, we employ a step-wise approach. First, one way analysis of variance (ANOVA) is employed to examine whether significant mean differences exist across various income and capital structure measures between tax debtors and non-tax debtors. Because tax obligations can be either secured or priority unsecured, ANOVA is conducted twice for each income and capital structure measure; once for each type of tax obligation. To account for possible non-normality in the data, we repeat these analysis using non-parametric Kruskal-Wallis tests.

While ANOVA provides some useful, initial inferences about the distributions of income and capital structure between debtors with and without tax claims, the method is limited in that it does not account for any potential confounders such as the chapter under which a filing occurs or legal culture. To address those issues, let y denote a response variable (either an income of a capital structure variable), let TAX denote a binary indicator of whether a debtor has a priority unsecured tax claim (1 if a priority unsecured tax claim exists and 0 otherwise), and let i = 1,…,n denote the sample of filers. Then the ANOVA described previously can be reproduced via the following regression:

$$y_i = \beta TAX_i + \varepsilon_i \tag{1}$$

where ε is the error term and α and β are parameters to be estimated. In this context, α reflects the mean value of y for the omitted category (those without secured tax obligations) while β represents the (higher or lower) difference in y between filers with priority unsecured tax claims relative to those without such claims. Confounding effects are relegated to the error term. Hence, more detailed specification of ε can be used to account for these confounders. More specifically:

$$\varepsilon_i = \delta TAXUC_i + \psi CH13_i + \sum_{j=1}^{J} \varphi_j C_i^j + \sum_{k=1}^{K} \gamma_k W_i^k + \sum_{h=1}^{H} \mu_h Z_i^h + \nu_i \quad (2)$$

where TAXUC is a dummy variable identifying debtors with general unsecured IRS claims; CH13 is a binary variable identifying debtors who file under Chapter 13 of the U.S. Bankruptcy Code, C is one of J binary variables indicating other types of secured and priority unsecured claims on the debtor's income and/or assets; W is a series of K variables identifying debtor specific characteristics (marital status, employment status, etc.); Z is a series of variables identifying other, socio-economic characteristics (the debtor's place of residence, the debtor's attorney, etc.); ν is an error term with the traditional classical assumptions and the remaining symbols (δ, ψ, φ, γ and μ) are parameters to be estimated. Substituting (2) into (1) gives the basic response function:

$$y_i = \beta TAX_i + \delta TAXUC_i + \psi CH13_i + \sum_{j=1}^{J} \varphi_j C_i^j + \sum_{k=1}^{K} \gamma_k W_i^k + \sum_{h=1}^{H} \mu_h Z_i^h + \nu_i \quad (3)$$

Several econometric comments are in order here. First, if the dependent variable is unbounded from above or below, then (3) can be estimated via ordinary least squares (OLS). This might be the case, for example, with a debtor's net income (gross income less expenses). However, variables such as assets and liabilities are likely to be censored at 0, since it is impossible to have negative assets. To account for censoring of the dependent variable, we follow Greene (2000) and estimate a Tobit model. The Tobit model assumes that there is an underlying variable y* that is uncensored, but which is latent to the researcher:

$$y_i^* = \beta TAX_i + \delta TAXUC_i + \psi CH13_i + \sum_{j=1}^{J} \varphi_j C_i^j + \sum_{k=1}^{K} \gamma_k W_i^k + \sum_{h=1}^{H} \mu_h Z_i^h + \nu_i \quad (3b)$$

The researcher instead observes:

$$\begin{aligned} y_i &= 0 \; if \; y_i^* \leq 0 \\ y_i &= y_i^* \; if \; y_i^* > 0 \end{aligned} \quad (4)$$

Hence, the conditional expectation of y given the regressors in (3b) can be stated as:

$$E\left[y_i | TAX_i, TAXUC_i, CH13_i, C_i^1, \ldots C_i^J, W_i^1, \ldots W_i^K, Z_i^1, \ldots Z_i^H\right] =$$
$$\Phi\left(\frac{\beta TAX_i + \delta TAXUC_i + \psi CH13_i + \sum_{j=1}^{J} \varphi_j C_i^j + \sum_{k=1}^{K} \gamma_k W_i^k + \sum_{h=1}^{H} \mu_h Z_i^h}{\sigma}\right)\left(\beta TAX_i + \delta TAXUC_i + \psi CH13_i + \right.$$
$$\left. \sum_{j=1}^{J} \varphi_j C_i^j + \sum_{k=1}^{K} \gamma_k W_i^k + \sum_{h=1}^{H} \mu_h Z_i^h + \sigma \xi_i\right) \quad (5)$$

$$\text{where } \xi_i = \frac{\phi\left(\frac{\beta TAX_i + \delta TAXUC_i + \psi CH13_i + \sum_{j=1}^{J} \varphi_j C_i^j + \sum_{k=1}^{K} \gamma_k W_i^k + \sum_{h=1}^{H} \mu_h Z_i^h}{\sigma}\right)}{\Phi\left(\frac{\beta TAX_i + \delta TAXUC_i + \psi CH13_i + \sum_{j=1}^{J} \varphi_j C_i^j + \sum_{k=1}^{K} \gamma_k W_i^k + \sum_{h=1}^{H} \mu_h Z_i^h}{\sigma}\right)} \quad (6)$$

In (5)-(6), Φ(•) represents the cumulative normal probability distribution function (cdf) while ϕ(•) represents the probability density function for the normal distribution (pdf). Equations (5)-(6) can be estimated via maximum likelihood.

Two additional econometric considerations are multicollinearity and heteroskedasticity. As is common in the literature, in the case where there are L mutually exclusive and collectively exhaustive dummy variables, only L-1 of these variables are included in the regression to avoid perfect multicollinearity. To reduce the possibility of heteroskedasticity, we transform all quantitative variables

using the natural logarithm. When applying this transformation to censored observations, the natural logarithm is applied conditionally to all non-censored variables (greater than one), with censored variables (and, if applicable, non-censored values between 0 and 1) continuing to take values of zero.

Lastly, we employ a 5 percent significance level in all statistical analysis. However, estimates that are significant at the 10 percent level are also reported for the convenience of the reader who may prefer alternative thresholds when assessing statistical significance. All statistical results were generated using SAS Version 9.3 statistical software package.

Having described the regression models, it is relatively straightforward to explain how the models' parameter estimates can be used to test our null hypotheses concerning the impact of tax obligations on the distributions of debtor income and capital structure. If the null hypotheses are correct, both β and δ should be statistically insignificant from zero. Hence, simple t-tests on these parameters can be used to evaluate the null hypotheses. If one or more hypotheses are rejected, an examination of the signs and magnitudes of these parameters can be used to assess the differences that exist between tax and non-tax debtors with regard to a specific income or capital structure metric.

DATA

Data and other information about used in the study were obtained from the Public Access to Court Electronic Records (PACER) system in the Eastern District of Washington during the years 2009 and 2011. PACER records contain all relevant bankruptcy schedules for a given filing, which includes detailed financial information on individual debtors as well as salient demographic data. Schedules are signed under oath and electronically filed, usually with the bankruptcy petition, both of which should ensure that the information contained in the PACER database is accurate and precise. While Chapter 7 filings are typically resolved (usually with a successful discharge) in a relatively short time frame, Chapter 13 filings require the successful execution of a repayment plan (which generally last between 36 and 60 months) in order to be successfully discharged. Hence, many of the filings that occurred in 2009 and 2011 may still be in progress. Consequently, this analysis focuses on decisions made at the time of filing, rather than at the time at which the case is resolved.

We used simple (interval) random sampling techniques to identify 5 percent of total filings each year, which we use to build our data set. Taken collectively, there are approximately 8,000 Chapter 7 and Chapter 13 filings in the District each year; hence we randomly identified 399 filings in 2011 and another 399 in 2009. After eliminating six files with missing information, we are left with an effective sample size of 792 observations.

Table 1 establishes names and definitions, as well as descriptive statistics, for each of the variables used in the analysis. Panel A lists debtor financial characteristics, including both balance sheet items (assets and liabilities) and income statement items (wages/salaries and expenses). For simplicity, all dollar amounts were converted to real 2009 dollars using the consumer price index for all urban consumers (http://research.stlouisfed.org/fred2/series/CPIAUCSL/). At the mean, debtors earn $2,711.50 in (real) monthly income; an amount that is (again, at the mean) $27.58 less than the household's expected monthly expenses. Hence, from a cash flow perspective, the typical filer is not able to meet his/her expected financial obligations. The standard deviation for the real net monthly income variable (RNET) is relatively large ($690.83) implying that many filers do have positive monthly cash flows, and by extension have an ability to make some portion of outstanding debt service payments. On the balance sheet side, the typical filer has $113,641.47 in real assets, of which $89,263.32 is real property/assets and $24,378.14 is personal property/assets. Mean real liabilities are $189,167.17, implying that the typical filer is insolvent from an equity perspective. Moreover, the mean (median) value of the debt-asset ratio is 7.271 (1.581), suggesting a high level of skewness in the data set. That is, while some filers may be solvent (exhibit a ratio less than one), there are many filers who are highly insolvent.

Panel B, Binary Debtor Characteristics, lists important demographic data derived from the schedules. Attorneys with the largest bankruptcy caseloads are listed anonymously (A1 through A10), as well as the percentage of 2009 versus 2011 cases. Generally speaking, the sample demographic characteristics match

the population at large that resides in the District. Approximately 33 percent of filings are by residents of Spokane County, the most populated county in the District. Approximately 45.6 percent of filers are married, while 38.4 percent are single. Remaining filers are separated (3.8 percent), divorced (8.2 percent) or widowed (1.8 percent). Nearly 60 percent of filers (59.6 percent) claim dependents, while 68.7 percent report being employed at the time of filing. 19.8 percent of individuals in the data set are filing under Chapter 13 of the U.S. Bankruptcy Code. About half of filers report owning a home (49.4 percent) or a car (50.5 percent). 11.7 percent of debtors have previously filed for bankruptcy protection, while 6.9 percent of filers claim more than 50 creditors. Lastly, 14.9 percent of filers reported a priority unsecured tax claim, while only 3.7 percent reported a general unsecured tax claim at the time of filing.

Table 2 examines the priority tax population compared to the balance of the sample. Priority unsecured tax debtors total 118 (or 14.9 percent) of the entire debtor population of 792. Priority tax, as discussed earlier, has important consequences for the debtor. Not only does this priority claimant have to be paid before unsecured creditors, important in Chapter 13s, but the priority tax debt is non-dischargeable and survives the Chapter 7 discharge. Hypothetically, this group of debtors might be incentivized to discharge their unsecured obligations, so as to improve their liquidity and have more resources available for the non-discharged tax claims. Our tax debtors have significantly higher real monthly incomes, $3,326.80, versus debtors who do not have priority tax obligations ($2,603.78 per month in real 2009 dollars). This mean difference is statistically significant at the 5% level under both the ANOVA and Kruskal-Wallis tests. Similarly, ANOVA results indicate the mean the coverage ratio (debtor monthly income divided by court-approved expenses) is significantly higher for debtors with tax debt (1.075) than for filers without priority tax claims (0.986). Kruskal –Wallis tests fail to find statistical significance at conventional levels. Lastly, neither ANOVA nor the Kruskal-Wallis test find any significant difference between priority tax debtors and all other debtors in terms of real net monthly income (real monthly income less real monthly expenses).

Statistically significant differences (as indicated by both ANOVA and Kruskal-Wallis tests) exist across debtors with priority tax debt and all other filers in four asset and liability-related variables. At the mean, priority tax debtors have significantly more total assets ($170,203 versus $103,739, respectively), real property, usually a home ($137,223 versus $80,867, respectively), and personal property ($32,980 versus $22,872, respectively). The tax debtor, however, is also significantly more heavily indebted than the non-tax debtor, with mean liabilities of $331,330 versus $164,278 for the non-tax debtor. These significant asset and liability ratios tend to offset each other, as ANOVA and Kruskal-Wallis tests find no significant difference in liability/asset ratios (or ln(liability)/ln(asset) ratios) across the two groups. In the final analysis, both classes of debtors are highly illiquid and unable to service their debt.

Table 3 examines the relationship between general unsecured tax debtors and the balance of the sample population. Unsecured tax debtors are less common comprising 29 (roughly 4 percent) of the 792 observations. The unsecured tax debtor is much more similar to the balance of the sample. Kruskal-Wallis tests indicate that no statistically significant differences exist between filers with outstanding general, unsecured tax claims and all other filers. ANOVA results also indicate a lack of statistically significant differences between the two groups. The only exception is for the real 2009 dollar value of liabilities, where ANOVA results indicate that tax debtors have significantly more liabilities than non-tax filers ($462,938 versus $178,762, respectively).

A potential limitation of the results contained in Tables 2 and 3 is that they fail to control for the confounding effects of filer characteristics beyond income, expense, asset and liability information. To account for these differences regression analysis is employed. Table 4 contains a series of regression results focusing on the prediction of filer income and solvency, treating solvency as the ability to service debt as opposed to a purely balance sheet approach. More specifically, Table 4 estimates three (reduced form, linear in parameters) regressions, each of which has the same covariates and function form, and three different dependent variables: 1) COURAT- a ratio of debtor income and monthly expenses; 2) RNET- a measure of monthly income less monthly income, totals measured in constant 2009 dollars; and 3) the natural logarithm of RINC- real income measured in 2009 dollars. As noted by the F-statistic

and/or likelihood ratio statistic, each of the three regressions cumulatively explains a statistically significant amount of variation in the dependent variable.

The first regression predicts the COURAT, or coverage ratio, variable. Five different regressors are statistically significant determinants of the coverage ratio. For simplicity, we focus on the signs and significance of these estimates. First the estimate for CH13DV is positive and significant from zero. This result is intuitive, since Chapter 13 filers have more net monthly income than the balance of the Chapter 7 filing sample, and thus are more likely to have a greater likelihood of successfully making debt service payments. The coefficient estimate for Spokane is negative and significant, indicating that Spokane County filers have significantly worse coverage ratios. Filers who are unemployed, as measured by UNEMP, also have significantly lower coverage ratios. Again, this result makes sense, as these filers have no (or if a two-income family, less) income with which to service existing debts. Lastly, individuals who employ attorneys 3 and 5 in the bankruptcy process have significantly higher coverage ratios than other filers.

Noticeably absent from the list of significant coefficient estimates are those for the TAX and TAXUC variables. Thus, individuals who file for bankruptcy with outstanding tax debts (whether priority unsecured or general unsecured) have no greater or lesser free cash flow as measured by COVRAT, than non-tax debtors who also file for bankruptcy, holding the other specified regressors constant. Thus, when other determinants of a filer's financial position are accounted for, the existence of tax debt does not appear to be of statistical importance. Hence, for COVRAT, we fail to reject our primary null hypotheses.

The second regression in Table 4 predicts RNET, or net real monthly income. The findings mirror those for the COVRAT results. As before, individual who file under Chapter 13, and those who employ attorneys 3 and 5 exhibit significantly greater net income. Unemployed and Spokane county filers exhibit significantly lower net incomes. Several additional variables are also significant determinants of net monthly income. For example, filers who have secured claims other than a home or a car have significantly higher net incomes, while individuals who file for personal bankruptcy, but also report business related debt (BUSINESS; ostensibly because they owned a personal, non-incorporated business) have significantly lower net monthly incomes. Also, individuals who employ attorneys 9 and 10 to file for bankruptcy have significantly higher net incomes. Lastly, we find no significant relationship between the existence of tax-related debt and a typical filer's net monthly income. Once again, we fail to reject our null hypothesis.

The final regression in Table 4 examines the determinants of the natural logarithm of real (gross) monthly income, or ln(RINC). Several commonalties, especially in terms of statistically significant coefficient estimates, exist with the cash flow and leverage variables. As both previous regressions, individual who file under Chapter 13, and who have secured claims besides a home and an automobile, exhibit significantly greater net income, while unemployed filers exhibit significantly lower net incomes. Several additional variables are also significant determinants of net monthly income. Filers who have secured claims on a home (HOUSEDV) and an automobile (CARDV) are associated with significantly higher real monthly incomes. Similarly, filers who claim dependents are also have significantly greater real monthly (gross) incomes. Single filers are associated with significantly lower real gross incomes. Lastly, after controlling for the effects of the other specified regressors, the two tax variables, Tax and TAXUC, are not significant predictors of real gross monthly income.

Table 5 takes a balance sheet approach to our debtor population measuring the amounts of assets and liabilities by categories. As before, the analysis estimates reduced form (linear in parameters) equations for five dependent variables: 1) LNDLNE - the natural logarithm of real 2009 liabilities divided by the natural logarithm of real 2009 assets; 2) ln(RASSETS) – the natural logarithm of the real 2009 dollar value of assets; 3) ln (RRPROP) - the natural logarithm of the real 2009 dollar value of real property assets (mostly debtor residences); 4) ln(RPPROP) - the natural logarithm of the real 2009 dollar value of personal property assets; and 5) ln(RLIAB) - the natural logarithm of the real 2009 dollar value of debtor liabilities. As noted by the likelihood ratio statistics, each of the three regressions cumulatively explains a statistically significant amount of variation in the dependent variable.

First consider the regression predicting LNDLNE, which explains (in elasticity terms) the filer's debt-to-asset ratio. Two debtor characteristics - owning a home (HOUSEDV) and owning a car(s) with payments (CARDV) both positively and significantly affect the debtor's balance sheet position. Four additional debtor characteristics also significantly predict LNDLNE. Filers with more than 50 creditors (NOCREDDV), who report being disabled (DISABLED) and who report being unemployed (UNEMP) are significantly more likely to have higher debt-to-asset ratios. Individuals who hire attorney 4 (A4) to file are negatively and significantly associated with the dependent variable.

The second column in Table 5 uses the logarithm of total assets at 2009 dollars, RASSETS, as its dependent variable. This column identifies four variables that are positively and significantly associated with greater real assets, and five filer characteristics that are negatively and significantly correlated with the natural logarithm of real assets. Debtors with a house and mortgage, who own car with a car loan, who hold other types of secured debt (perhaps a boat, or furniture) and owning a small business (whose debt is intermingled with the filer's personal debt) are all significantly more likely to have a greater amount of real assets (on a percentage basis). Concomitantly, filers that are single, are divorced, that are retired, are unemployed, and those who have previously filed for bankruptcy are significantly less likely to exhibit higher real assets (again, on a percentage basis). These findings are intuitive, since debtors with higher (worse) earnings and/or better (worse) repayment histories will have greater (fewer) opportunities for asset accumulation.

Column 3, Table 5, uses the variable logarithm of RRPROP, 2009 value of real property assets as the dependent variable. This dependent variable essentially profiles debtors with homes (and higher valued homes) from those debtors who do not own (or own lower valued) homes. The results show some overlap with the column 2's (RASSETs) findings. The HOUSEDV group is, not surprisingly, positively correlated at 5 percent statistical significance. Similarly, those filers with prior bankruptcies, who are single and who use attorney 6 to submit their bankruptcy paperwork are associated with significantly lower real property values, holding the other specified regressors constant. Once again these results are intuitive. Filers with prior bankruptcies and single income debtors would be more likely to be unable to qualify for home financing.

Column 4 contains a regression predicting ln(RPROP) – the natural logarithm of personal property assets at real 2009 dollar valuations. Several coefficient estimates are statistically significant predictors of the dependent variable. Filers who own a house, a car, or other secured property are positively and significantly more likely to accumulate real property. These debtors had historical credit worthiness, and retained some of these assets upon entering bankruptcy. At the five percent level, filers who are single, retired, disabled and unemployed debtors are significantly associated with lower real property accumulation, holding the effects of the other specified regressors constant. Debtors with poor earnings characteristics are less able to have opportunities or success in accumulating assets. Lastly, debtors who file using attorney 9 are significantly less likely to accumulate real property.

One important trend that is common to all five regressors is the impact of tax debt on the filer's balance sheet position. In each and every regression in Table 5, the TAX and TAXUC coefficient estimates are not statistically different from zero at the 5 percent significance level. Thus, the presence of tax debt does not significantly impact asset or liability accumulation. Put slightly differently, the balance sheet positions of filers with either type of tax debt are statistically no different from the positions of their counterparts who do not hold such debts. This implies that we fail to reject our null hypotheses. Additionally, the result implies that filers are not strategically filing to deal with tax debt while preserving assets and/or discharging other types of debt to more successfully repay tax debts.

DISCUSSION AND CONCLUSIONS

The primary purpose of this paper is to investigate whether the individuals filing for bankruptcy have significantly different distributions of net income, assets and liabilities than those who do not have outstanding IRS claims. Significant differences indicate a differential ability to repay debts among debtors who have an IRS claim versus other filers. Using simple hypothesis tests, we find statistically significant

evidence that debtors with priority IRS claims are, indeed, better off financially. However, when controlling for other debtor characteristics, these significant differences cease to exist. Thus, the typical filer does not appear to be filing strategically to discharge other debts (which they may have an ability to repay) to deal with outstanding tax debts. This also implies that the potential for social welfare losses which accompany such re-distributional activities is minimal.

The difference between the simple hypothesis tests (which indicate that the typical tax debtor is better off financially) and the regression results (which suggest that there are no differences) indicates that the characteristics that cause a bankrupt filer to accumulate tax debt are driven primarily by non-financial filer-specific characteristics. Thus, it is interesting to consider the set of financial characteristics that were significant predictors of a filer's financial position at the time that they declared for bankruptcy, and how those factors might intuitively account for the accrual of tax debt.

The results indicate that tax debtors are a population that once enjoyed higher incomes (in order to owe income tax, one must first have enough income to warrant a tax liability) and the creditworthiness that typically accompanies those higher incomes. These higher levels of creditworthiness allowed these debtors to accumulate more property and higher levels of debt. These higher incomes still persist to some degree, but are insufficient to service the higher levels of secured and unsecured debt. At higher levels of income and debt, the tax debtors are heavily indebted, balance sheet insolvent, and with insufficient cash flow net of living expenses to service their debt levels. The non-tax debtors are also balance sheet insolvent as well as cash flow insolvent. This population, however, has significant percentages of disabled, unemployed, prior bankruptcies and other demographic characteristics, e.g., divorce, indicating debtors with questionable recent creditworthiness and resultant lack of ability to accumulate higher levels of secured or unsecured debt. If you have a low FICO score, you won't be getting credit card solicitations with higher credit limits.

While our results provide some interesting findings, they also have several limitations. First, the data come from two years in a single U.S. Bankruptcy district. While our results are likely generalizable to the population of bankruptcy filers that exist in this district, they may not be generalizable to other districts whose populations, economies and socio-cultural characteristics differ substantially from those of eastern Washington. Our data also contain a mix of Chapter 7 filings and Chapter 13 filings. If those two sets of debtors exhibit fundamentally different reasons for filing for bankruptcy protection, then our results may suffer from aggregation bias. Accounting for this type of bias requires estimating separate regressions for each type of filer.[3] Similarly, any changes in filer motivations or actions that occur after the filing takes place (possibly as a means to halt collection efforts temporarily with no intention of obtaining a successful case discharge from the court) are not captured in this analysis. Fourth, the regression analyses contained in Tables 4 and 5 attempt to control for additional filer characteristics beyond tax claims that may influence a filer's financial position. We assume that these factors are exogenous to the decision maker at the time of filing. However, if that assumption is inappropriate, our regression results may suffer from endogeneity bias. In such cases, one must consider the regression results as (purely exploratory) partial correlations. Lastly, and as noted in footnote 1, this analysis does *not* answer the question "Does tax debt cause individuals to file or not file for bankruptcy?". Rather, it addresses the question "Of those individuals who file for bankruptcy, does the existence and resolution of tax debt play a major role in that decision?". Clearly, the first of these questions is the more comprehensive of the two, and by extension the more informative one for policy makers. The ability to capture a representative sample on this larger population of tax delinquent individuals would provide a much broader and deeper set of policy recommendations than what is contained in the current study. Future research that addressed these (and other, related) issues would add valuable insights into our current understanding of how and why certain individuals with tax debt file for bankruptcy protection.

ENDNOTES

1. These last few sentences highlight a subtle, but important aspect of the empirical analysis. The first assumption restricts our population of interest (those debtors who have initiated a bankruptcy filing) to a

specific subset of the general population (all individuals in the community who do, and do not, file for bankruptcy protection). Hence, this analysis does not answer the question "Does tax debt cause individuals to file or not file for bankruptcy?". Rather, it addresses the question "Of those individuals who file for bankruptcy, does the existence and resolution of tax debt play a major role in that decision?"

2. Starting in 2007, the Bankruptcy Abuse Prevention Consumer Protection Act (BAPCPA) required all debtors to undergo "means testing" in which a debtor's income is compared to the average income in the state in which they reside. Debtors whose income substantially exceeds this threshold (i.e., "do not pass" the means test) are considered able to repay some portion of their debts and are prohibited from filing under Chapter 7 where assets are liquidated and most debts are discharged. If these debtors file, they must file under Chapter 13, in which a repayment plan is established. Debtors whose income does not exceed the state's average income are said to "pass" the means test, and are eligible to apply under either chapter.
3. We note in passing that we did conduct separate regressions based on the chapter of filing, and those results are qualitatively similar to those results presented here.

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TABLE 1
VARIABLE NAMES, DEFINITIONS AND DESCRIPTIVE STATISTICS

Variable	Label	Mean	Std Dev	Median
Panel A: Non-Qualitative Debtor Financial Characteristics				
RINC	Real average monthly income in 2009 dollars	2711.500	1791.100	2404.300
RNET	Real average monthly income less real monthly expenses (in 2009 dollars)	-27.575	690.828	5.625
COVRAT	Debtor average monthly income divided by Court-approved average monthly expenses	1.000	0.325	1.002
RASSETS	Real 2009 dollar value of debtor assets	113641.470	157832.260	67410.260
RRPROP	Real 2009 dollar value of real property/assets	89263.320	144179.080	25667.940
RPPROP	Real 2009 dollar value of personal property/assets	24378.140	38589.130	13086.740
RLIAB	Real 2009 dollar value of debtor liabilities	189167.170	422795.420	109258.070
DERAT	Debtor's debt-to-asset ratio, or RLIAB/RASSETS	7.271	32.143	1.581
LNDLNE	ln(RLIAB)/ln(RASSETS)	1.103	0.163	1.040
Panel B: Binary Debtor Characteristics				
TAX	Debtor has a priority unsecured tax claim	0.149		
TAXUC	Debtor has a general unsecured tax claim	0.037		
CH13DV	Debtor filed under Chapter 13 of the Bankruptcy Code	0.198		
HOUSEDV	Debtor listed a home as an asset, upon which a claim has been filed	0.494		
CARDV	Debtor listed an automobile as an asset, upon which a claim has been filed	0.505		
OTHCLMDV	Debtor listed another secured asset, upon which a claim has been filed	0.181		
DSO	Debtor has a priority unsecured claim for domestic support obligations	0.035		
BUSINESS	Debtor filed for bankruptcy as a business filing	0.029		
NOCREDDV	Debtor has 50 or more outstanding creditors	0.069		
PRIORBK	Debtor has previously filed for bankruptcy protection	0.117		
SPOKANE	Debtor lives in Spokane County	0.333		
YAKIMA	Debtor lives in Yakima County	0.215		
BENTONF	Debtor lives in Benton or Franklin Counties	0.157		
OTHCNTY	Debtor lives in another, rural county in the U.S. Bankruptcy Court District	0.295		
SINGLE	Debtor is single	0.384		

DIVORCED	Debtor is divorced	0.082
SEPAR	Debtor is separated from his/her spouse	0.038
MARRIED	Debtor is married	0.456
WIDOWED	Debtor is widowed	0.018
DEPDV	Debtor supports one or more dependents	0.596
RETIRED	Debtor is retired	0.042
DISABLED	Debtor is disabled	0.014
UNEMP	Debtor is unemployed	0.255
EMP	Debtor is employed	0.687
STUDENT	Debtor is a student	0.003
A1	Debtor's attorney is attorney "A1"	0.042
A2	Debtor's attorney is attorney "A2"	0.040
A3	Debtor's attorney is attorney "A3"	0.033
A4	Debtor's attorney is attorney "A4"	0.049
A5	Debtor's attorney is attorney "A5"	0.061
A6	Debtor's attorney is attorney "A6"	0.030
A7	Debtor's attorney is attorney "A7"	0.038
A8	Debtor's attorney is attorney "A8"	0.039
A9	Debtor's attorney is attorney "A9"	0.048
A10	Debtor's attorney is attorney "A10"	0.053
DV09	Debtor filed for bankruptcy in 2009	0.496
DV11	Debtor filed for bankruptcy in 2011	0.504
Number of Observations		792

TABLE 2
MEAN COMPARISONS BY PRIORITY UNSECURED TAX CLAIM STATUS

	Priority Unsecured Tax Claim [n=118]		*No Priority Unsecured Tax Claim [n=674]*		ANOVA		Kruskal-Wallis	
Variable	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**	**Statistic**	**Prob.**	**Statistic**	**Prob.**
Income and Expense-Related Variables								
RINC	3326.800	2406.630	2603.780	1638.790	16.688	<0.001	11.308	0.001
RNET	51.042	808.616	-41.339	667.814	1.798	0.180	2.233	0.135
COVRAT	1.075	0.441	0.986	0.299	7.567	0.006	2.286	0.131
Asset and Liability-Related Variables								
RASSETS	170203.190	208337.720	103738.970	145168.240	18.195	<0.001	14.812	<0.001
RRPROP	137222.760	191686.930	80866.860	132554.250	15.626	<0.001	16.091	<0.001
RPPROP	32980.440	51682.970	22872.110	35645.430	6.942	0.009	3.590	0.058
RLIAB	331329.630	792255.180	164278.190	311151.020	15.974	<0.001	20.659	<0.001
DERAT	8.487	28.742	7.058	32.717	0.198	0.656	0.452	0.502
LNDLNE	1.094	0.166	1.104	0.163	0.416	0.519	0.902	0.342

TABLE 3
MEAN COMPARISONS BY GENERAL UNSECURED TAX CLAIM STATUS

Table 3: Mean Comparisons by General Unsecured Tax Claim Status

	General Unsecured Tax Claim [n=29]		*No General Unsecured Tax Claim [n=763]*		ANOVA		Kruskal-Wallis	
Variable	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**	**Statistic**	**Prob.**	**Statistic**	**Prob.**
Income and Expense-Related Variables								
RINC	2955.980	1722.900	2702.210	1794.070	0.561	0.454	0.919	0.338
RNET	-76.723	577.206	-25.707	695.031	0.152	0.697	0.010	0.919
COVRAT	0.987	0.236	1.000	0.328	0.042	0.838	0.089	0.765
Asset and Liability-Related Variables								
RASSETS	143364.660	256249.350	112511.750	153007.640	1.068	0.302	0.108	0.743
RRPROP	121124.700	247514.560	88052.340	138879.380	1.471	0.226	0.067	0.796
RPPROP	22239.960	22898.850	24459.410	39068.460	0.092	0.761	0.265	0.606
RLIAB	462937.810	1464846.150	178761.730	322103.720	12.810	<0.001	1.405	0.236
DERAT	7.754	18.183	7.253	32.563	0.007	0.934	0.994	0.319
LNDLNE	1.109	0.142	1.102	0.164	0.042	0.838	0.759	0.384

TABLE 4
ANALYSIS OF INCOME-RELATED VARIABLES, FULL SAMPLE [N=792]

Dependent Variable:	ln(COVRAT)					RNET					ln(RINC)				
Method of Analysis	Ordinary Least Squares					Ordinary Least Squares					Tobit				
	Coefficient	Std.	Test			Coefficient	Std.	Test			Coefficient	Std.	Test		
Variable	Estimate	Error	Statistic	Probability		Estimate	Error	Statistic	Probability		Estimate	Error	Statistic	Probability	
Intercept	-0.048	0.034	-1.400	0.162		-106.991	74.846	-1.430	0.153		7.469	0.136	55.090	<0.001	**
TAX	0.017	0.029	0.570	0.571		-14.737	64.025	-0.230	0.818		0.066	0.116	0.570	0.572	
TAXUC	0.038	0.052	0.730	0.463		-39.086	114.055	-0.340	0.732		-0.043	0.207	-0.210	0.834	
CH13DV	0.280	0.029	9.640	<0.001	**	831.305	63.728	13.040	<0.001	**	0.353	0.115	3.060	0.002	**
HOUSEDV	0.032	0.021	1.530	0.128		-17.648	45.877	-0.380	0.701		0.279	0.083	3.360	0.001	**
CARDV	0.011	0.020	0.540	0.590		6.184	44.418	0.140	0.889		0.233	0.080	2.900	0.004	**
OTHCLMDV	0.037	0.026	1.430	0.154		159.592	56.586	2.820	0.005	**	0.274	0.102	2.680	0.007	**
DSO	0.004	0.054	0.080	0.938		-100.959	118.161	-0.850	0.393		0.035	0.214	0.160	0.870	
BUSINESS	-0.079	0.060	-1.320	0.188		-467.193	130.999	-3.570	<0.001	**	-0.386	0.237	-1.620	0.105	
NOCREDDV	-0.015	0.041	-0.370	0.709		-101.904	89.890	-1.130	0.257		-0.041	0.163	-0.250	0.801	
PRIORBK	0.006	0.032	0.180	0.853		-110.648	70.987	-1.560	0.120		-0.179	0.129	-1.390	0.163	
SPOKANE	-0.098	0.029	-3.380	0.001	**	-178.266	63.970	-2.790	0.006	**	-0.112	0.116	-0.960	0.335	
YAKIMA	0.006	0.042	0.140	0.887		68.680	93.219	0.740	0.462		-0.100	0.169	-0.590	0.555	
BENTONF	-0.045	0.033	-1.370	0.172		129.384	71.814	1.800	0.072	*	0.044	0.130	0.340	0.734	
SINGLE	-0.007	0.022	-0.320	0.747		-74.396	47.738	-1.560	0.120		-0.584	0.086	-6.750	<0.001	**
DIVORCED	0.010	0.038	0.270	0.789		15.593	82.942	0.190	0.851		-0.244	0.150	-1.630	0.104	
SEPAR	-0.059	0.052	-1.130	0.257		-172.843	114.155	-1.510	0.130		-0.402	0.207	-1.940	0.052	*
DEPDV	-0.014	0.021	-0.660	0.509		-39.436	45.787	-0.860	0.389		0.299	0.083	3.600	<0.001	**
RETIRED	0.045	0.051	0.880	0.377		97.892	111.188	0.880	0.379		0.029	0.201	0.140	0.886	
DISABLED	0.030	0.083	0.360	0.721		-35.597	182.829	-0.190	0.846		-0.270	0.331	-0.820	0.415	
UNEMP	-0.071	0.023	-3.080	0.002	**	-146.933	50.467	-2.910	0.004	**	-0.649	0.091	-7.090	<0.001	**
A1	0.064	0.053	1.200	0.230		155.569	116.608	1.330	0.183		0.063	0.211	0.300	0.765	
A2	0.005	0.061	0.080	0.934		-95.648	134.068	-0.710	0.476		0.380	0.243	1.560	0.118	
A3	0.145	0.058	2.510	0.012	**	487.105	126.603	3.850	<0.001	**	0.364	0.229	1.590	0.113	
A4	-0.020	0.055	-0.370	0.715		-88.272	121.165	-0.730	0.467		-0.276	0.220	-1.260	0.209	
A5	0.175	0.045	3.930	<0.001	**	452.939	97.916	4.630	<0.001	**	0.103	0.177	0.580	0.561	
A6	-0.011	0.068	-0.160	0.872		-115.172	148.699	-0.770	0.439		0.177	0.269	0.660	0.512	
A7	-0.066	0.055	-1.200	0.232		-81.838	120.254	-0.680	0.496		-0.141	0.218	-0.650	0.517	
A8	0.026	0.060	0.420	0.673		-16.051	132.628	-0.120	0.904		-0.040	0.240	-0.170	0.868	
A9	0.066	0.049	1.360	0.174		217.367	107.158	2.030	0.043	**	0.030	0.194	0.150	0.878	
A10	0.066	0.047	1.410	0.160		244.911	102.177	2.400	0.017	**	0.320	0.185	1.730	0.084	*
DV09	-0.027	0.020	-1.370	0.172		-20.233	43.106	-0.470	0.639		0.119	0.078	1.520	0.129	
Tobit Disturbance Term											1.061	0.027	39.120	<0.001	**
R-Square	0.233					0.310									
Adjusted R-Square	0.201					0.281									
F [31, 760] Statistic			7.440	<0.001	**			10.990	<0.001	**					

TABLE 5
ANALYSIS OF ASSETS AND LIABILITY-RELATED VARIABLES, FULL SAMPLE [N=792]

Dependent Variable:	LNDLNE					ln(RASSETS)					ln(RRPROP)					ln(RPPROP)					ln(RLIAB)				
Method of Analysis	Tobit					Tobit					Tobit					Tobit					Tobit				
Variable	Coefficient Estimate	Std. Error	Test Statistic	Probability		Coefficient Estimate	Std. Error	Test Statistic	Probability		Coefficient Estimate	Std. Error	Test Statistic	Probability		Coefficient Estimate	Std. Error	Test Statistic	Probability		Coefficient Estimate	Std. Error	Test Statistic	Probability	
Intercept	1.181	0.018	66.860	<0.001	**	9.022	0.129	70.000	<0.001	**	-2.937	0.559	-5.250	<0.001	**	8.876	0.128	69.280	<0.001	**	10.394	0.096	108.080	<0.001	**
TAX	0.018	0.015	1.190	0.235		0.065	0.110	0.590	0.558		0.201	0.413	0.490	0.626		0.026	0.110	0.240	0.810		0.185	0.082	2.250	0.024	**
TAXUC	-0.008	0.027	-0.280	0.780		0.246	0.196	1.250	0.211		0.379	0.777	0.490	0.626		0.119	0.195	0.610	0.543		0.211	0.147	1.440	0.149	
CH13DV	-0.017	0.015	-1.120	0.264		0.142	0.110	1.300	0.195		-0.042	0.416	-0.100	0.919		0.118	0.109	1.080	0.278		-0.054	0.082	-0.660	0.507	
HOUSEDV	-0.142	0.011	-13.130	<0.001	**	2.675	0.079	33.870	<0.001	**	15.197	0.395	38.490	<0.001	**	0.600	0.079	7.640	<0.001	**	1.523	0.059	25.840	<0.001	**
CARDV	-0.033	0.010	-3.180	0.002	**	0.475	0.076	6.210	<0.001	**	-0.322	0.305	-1.050	0.292		0.761	0.076	10.010	<0.001	**	0.275	0.057	4.810	<0.001	**
OTHCLMDV	-0.016	0.013	-1.190	0.235		0.363	0.097	3.720	<0.001	**	0.269	0.362	0.740	0.458		0.462	0.097	4.770	<0.001	**	0.272	0.073	3.740	<0.001	**
DSO	0.027	0.028	0.970	0.331		-0.212	0.203	-1.040	0.297		-0.781	1.001	-0.780	0.435		-0.239	0.202	-1.180	0.238		0.026	0.152	0.170	0.866	
BUSINESS	0.030	0.031	0.960	0.335		0.450	0.226	2.000	0.046	**	1.361	0.796	1.710	0.087	*	0.395	0.224	1.760	0.078	*	0.752	0.168	4.470	<0.001	**
NOCREDDV	0.042	0.021	1.990	0.046	**	0.044	0.155	0.290	0.774		-0.189	0.647	-0.290	0.770		-0.055	0.154	-0.360	0.721		0.488	0.115	4.220	<0.001	**
PRIORBK	0.013	0.017	0.750	0.452		-0.315	0.122	-2.580	0.010	**	-0.977	0.497	-1.970	0.049	**	-0.212	0.122	-1.740	0.081	*	-0.218	0.091	-2.390	0.017	**
SPOKANE	0.010	0.015	0.630	0.528		0.097	0.110	0.880	0.377		-0.390	0.426	-0.910	0.361		0.205	0.110	1.870	0.062	*	0.175	0.082	2.120	0.034	**
YAKIMA	0.037	0.022	1.670	0.095	*	-0.090	0.161	-0.560	0.574		0.441	0.638	0.690	0.489		-0.123	0.160	-0.770	0.439		0.193	0.120	1.610	0.107	
BENTONF	0.017	0.017	1.000	0.316		-0.161	0.124	-1.300	0.194		0.566	0.481	1.180	0.239		-0.116	0.123	-0.940	0.345		0.091	0.092	0.990	0.322	
SINGLE	0.014	0.011	1.250	0.211		-0.200	0.082	-2.430	0.015	**	-0.659	0.325	-2.030	0.043	**	-0.305	0.082	-3.730	<0.001	**	-0.173	0.061	-2.820	0.005	**
DIVORCED	0.032	0.020	1.620	0.106		-0.437	0.143	-3.060	0.002	**	-0.895	0.583	-1.540	0.125		-0.542	0.142	-3.820	<0.001	**	-0.251	0.107	-2.360	0.018	**
SEPAR	0.008	0.027	0.290	0.770		-0.197	0.197	-1.000	0.315		-0.569	0.762	-0.750	0.455		-0.214	0.195	-1.090	0.274		-0.219	0.147	-1.490	0.135	
DEPDV	-0.007	0.011	-0.630	0.528		0.071	0.079	0.900	0.370		-0.398	0.312	-1.280	0.202		0.074	0.078	0.950	0.343		0.133	0.059	2.260	0.024	**
RETIRED	-0.016	0.026	-0.610	0.542		0.136	0.191	0.710	0.476		1.179	0.715	1.650	0.099	*	-0.391	0.190	-2.060	0.040	**	0.055	0.143	0.380	0.701	
DISABLED	0.090	0.043	2.100	0.036	**	-0.733	0.315	-2.330	0.020	**	-0.892	1.381	-0.650	0.518		-0.944	0.313	-3.020	0.003	**	-0.230	0.235	-0.980	0.328	
UNEMP	0.025	0.012	2.120	0.034	**	-0.245	0.087	-2.820	0.005	**	-0.060	0.342	-0.180	0.861		-0.365	0.086	-4.220	<0.001	**	0.003	0.065	0.050	0.960	
A1	-0.042	0.028	-1.520	0.130		0.249	0.201	1.240	0.216		0.399	0.717	0.560	0.577		0.136	0.200	0.680	0.495		-0.055	0.150	-0.370	0.715	
A2	-0.051	0.032	-1.610	0.108		-0.207	0.231	-0.900	0.371		-1.576	0.971	-1.620	0.105		-0.150	0.229	-0.650	0.514		-0.517	0.172	-3.000	0.003	**
A3	-0.016	0.030	-0.540	0.591		0.072	0.218	0.330	0.742		0.914	0.793	1.150	0.249		-0.032	0.217	-0.150	0.883		0.011	0.163	0.070	0.948	
A4	-0.076	0.029	-2.670	0.008	**	0.253	0.209	1.210	0.225		-1.151	0.880	-1.310	0.191		0.381	0.207	1.840	0.066	*	-0.294	0.156	-1.890	0.059	*
A5	-0.005	0.023	-0.210	0.831		-0.037	0.169	-0.220	0.828		0.357	0.624	0.570	0.568		-0.209	0.168	-1.250	0.212		-0.020	0.126	-0.160	0.876	
A6	-0.030	0.035	-0.870	0.386		-0.353	0.256	-1.380	0.168		-2.380	1.181	-2.010	0.044	**	-0.062	0.255	-0.240	0.807		-0.576	0.191	-3.010	0.003	**
A7	-0.019	0.028	-0.680	0.497		0.067	0.207	0.320	0.747		0.267	0.811	0.330	0.742		0.225	0.206	1.090	0.274		-0.074	0.155	-0.480	0.634	
A8	-0.036	0.031	-1.160	0.244		-0.029	0.228	-0.130	0.899		-0.235	0.926	-0.250	0.800		0.040	0.227	0.180	0.859		-0.348	0.170	-2.040	0.041	**
A9	0.007	0.025	0.270	0.791		-0.297	0.185	-1.610	0.108		-0.211	0.803	-0.260	0.793		-0.437	0.183	-2.380	0.017	**	-0.249	0.138	-1.810	0.070	*
A10	0.012	0.024	0.480	0.631		-0.001	0.176	-0.010	0.996		0.452	0.662	0.680	0.495		-0.115	0.175	-0.660	0.512		0.061	0.131	0.470	0.641	
DV09	-0.016	0.010	-1.610	0.108		0.046	0.074	0.620	0.533		0.148	0.290	0.510	0.609		0.029	0.074	0.390	0.698		0.008	0.055	0.150	0.879	
Tobit Disturbance Term	0.138	0.003	39.750	<0.001	**	1.008	0.025	39.750	<0.001	**	3.247	0.123	26.360	<0.001	**	1.002	0.025	39.750	<0.001	**	0.752	0.019	39.800	<0.001	**
R-Square																									
Adjusted R-Square																									
F [31, 760] Statistic																									
Unrestricted Log-Likelihood	440.56593					-1132.000					-1164.000					-1127.000					-898.504				
Restricted Log-Likelihood	308.28541					-1607.000					-1834.000					-1299.000					-1268.000				
Chi-Square [31 degrees of freedom]			264.561	<0.001	**			950.000	<0.001	**			1340.000	<0.001	**			344.000	<0.001	**			738.993	<0.001	**

** indicates statistical significance at the 5 percent level.
* indicates statistical significance at the 10 percent level.