Estimating the Impact of Liens on Taxpayer Compliance Behavior and Income

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In Fiscal Year (FY) 2011, the IRS issued 1,042,230 liens.[1] Despite the "fresh start" initiative announced early in 2011 and intended to help struggling taxpayers, the IRS continues to file most Notices of Federal Tax Lien (NFTL) based on a threshold amount of liability.[2] Given the widespread use of this collection tool, it is important for the IRS to understand taxpayers' individual circumstances and financial situations prior to filing the NFTL. The National Taxpayer Advocate is concerned that the IRS's use of the NFTL may be harming taxpayers, especially those with economic hardships, while not significantly enhancing collection of delinquent liabilities. The National Taxpayer Advocate requested that TAS Research & Analysis investigate the impact of NFTLs on the compliance behavior of delinquent taxpayers to help the IRS better understand the effectiveness of NFTLs.

TAS Research analyzed a cohort of delinquent individual tax return filers (those who file Forms 1040, *U.S. Individual Income Tax Return*), who incurred unpaid tax liabilities in 2002 and had no such liabilities at the beginning of 2002.[3] We identified the subgroup of these taxpayers against whom IRS filed liens between 2002 and 2004, as well as a comparable subgroup against whom the IRS did not file liens. We compared the payment and filing compliance behavior of these two groups from inception of the liability through 2010 and examined the correlation that lien filing had with taxpayers' reported incomes during this time. We discuss in detail in the methodology section how we selected these two groups for analysis.

Background

A Federal tax lien (FTL) arises when the IRS assesses a tax liability, sends the taxpayer notice and demand for payment, and the taxpayer does not fully pay the debt within 10 days.[4] An FTL is effective as of the date of assessment and attaches to all of the taxpayer's property and rights to property, whether real or personal, including those acquired by the taxpayer after that date.[5] This lien continues against the taxpayer's property until the liability has been fully paid or is legally unenforceable.[6] To put third parties on notice and establish the priority of the government's interest in a taxpayer's property against subsequent purchasers, secured creditors, and junior lien holders, the IRS must file an NFTL in the appropriate location, such as a county register of deeds.[7]

A lien filing determination is required for all unpaid assessed delinquencies.[8] The IRS Internal Revenue Manual (IRM) specifies various criteria for lien filings depending on the nature of the delinquency. The IRS is even supposed to file an NFTL on most accounts reported as currently not collectible (CNC) if the unpaid balance is at least $10,000.[9] Streamlined installment agreements (IAs) do not usually require an NFTL filing.[10]

The IRS files nearly half of its NFTLs through the Automated Collection System (ACS), and files many of these without any significant employee review of the cases.[11] The National Taxpayer Advocate does not believe the IRS should be precluded from filing NFTLs, but rather that it should use this powerful collection tool judiciously as warranted by the circumstances of the delinquency.[12]

While NFTL filings fell to an all-time low after the enactment of the Revenue and Reconciliation Act of 1998, they have since increased, and have risen steadily since 2005. In fact, the 2011 volume of 1,042,230 filings is about six times the number for 1999. The following chart shows the volume of IRS lien filings, and the total dollars collected since 1999.

FIGURE 1: Inflation-Adjusted Total Yield vs. Liens Issued[13]
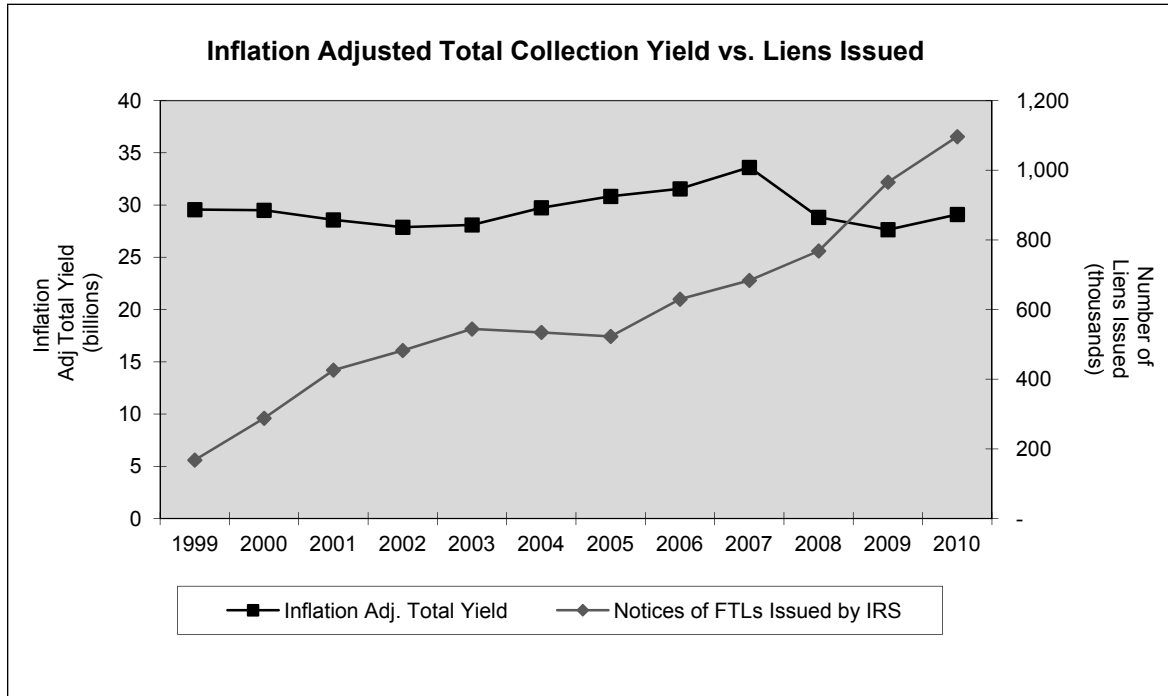
As illustrated above, overall inflation-adjusted collection revenue has not kept pace with the increase in lien filings.[14] While IRS and taxpayer activities, economic conditions, and other factors certainly affect the total collection yield, the fact that increased lien filings do not necessarily increase collections makes the practice of filing an NFTL questionable in various situations.

Objectives

In this study, TAS Research sought to better understand the relationship between lien filings and delinquent taxpayer payment and filing behavior and the impact of lien filing on subsequent reported taxpayer income. Specifically, we explored four research questions:

1. Whether lien filing positively or negatively impacted taxpayers' payment behavior with respect to the original liabilities they incurred in 2002;

2. Whether lien filing positively or negatively impacted taxpayer payment compliance in subsequent periods;

3. Whether lien filing positively or negatively impacted taxpayer filing behavior in subsequent periods; and

4. Whether lien filing positively or negatively impacted taxpayer reported income in subsequent periods.

In this study we are using binary dependent variables in our models to explore basic yes/no questions about compliance and income, *i.e.*, was there an increase or a decrease. In a future study, we will conduct a sensitivity analysis to better understand when NFTLs are likely to be most effective as a collection tool. TAS does not envision that NFTLs are never effective, but rather that they may not be effective for certain taxpayers or in certain situations, such as for those with low incomes or few assets and those whose liabilities have been designated CNC.

Methodology

Our analysis employed a two-phase approach. Phase I involved a two-stage method of producing our cohort of comparable lien and non-lien taxpayers from the initial population of delinquent taxpayers. Phase II estimates the actual impact of the NFTL on taxpayer payment and filing behavior and on reported income.

The first stage of Phase I estimates the probability that a taxpayer will have a tax lien filed against his or her delinquent liability. This stage is also described as generating "propensity scores" for the taxpayers. The propensity score represents the probability that the IRS will file a lien with respect to a taxpayer's tax liability and ranges in value between 0 and 1. We used a logistic regression equation to estimate the propensity scores.[15]

This estimation method addresses the selection bias inherent in the lien filing process, which exists because of existing IRM lien filing criteria. Specifically, the IRS criteria that determine when tax lien filings should occur[16] introduce a selection bias that must be addressed, or the estimation of the tax lien's impact in the second phase (using a tax lien indicator) would produce biased results. A variety of circumstances prevents the IRM lien filing criteria from being consistently followed. For example, revenue officers in some geographical areas will work cases with lower balance dues, while inventories will be so high in other areas that a case with a similar balance due will remain in the Collection queue and not be assigned to a Collection employee. Accordingly, the IRS treats two very similar cases much differently. This variation actually helps us to correct for the selection bias that arises from the fact that taxpayers are not randomly selected for a lien.

To overcome the selection bias we used propensity scores and a matching algorithm to generate matched pairs of lien taxpayers and nonlien taxpayers who are very similar with respect to the characteristics the IRS uses to make a lien filing determination.[17] The result is a cohort of taxpayers that approximates a random sample of equivalent pairs of taxpayers.[18] This approach allows us in the second phase of our analysis to use a binary lien indicator (a variable with possible values of one or zero, where one indicates a tax lien has been filed against the taxpayer and zero indicates that a lien has not been filed) as an unbiased estimator of the lien effect. A more detailed discussion of both phases of the analysis follows.

Phase I Regression Analysis

In our first stage, we use regression to estimate a propensity score for each taxpayer (*i.e.*, the conditional probability of the taxpayer having a lien filed against him or her). We use a logistic regression where the dependent variable is a binary variable (one indicates a lien has been filed and zero indicates a lien has not been filed).[19] The independent variables are the covariates that capture the underlying conditions for tax lien filing, which are identified in the IRM.[20] Tables 1 and 2 report the lien filing criteria we identified in the IRS data and used to create our covariates.[21] These criteria were in place at the time these delinquent taxpayers faced lien filing determinations (from 2002 to 2004).[22] The use of this information permits the model to more closely reflect IRS practices.

The model estimates the relationship between these criteria and whether a lien was actually filed to generate propensity scores. Some lien filing criteria are absolute (such as when the unpaid balance of assessments totals at least $5,000). However, the IRS must consider even this criterion in conjunction with other factors. For example, a taxpayer who owed $15,000 has a debt that exceeds the $5,000 threshold and would be subject to an NFTL. If this same taxpayer worked out an installment agreement prior to NFTL filing, the IRS would not generally file an NFTL because the balance owed is less than $25,000. Other criteria such as the breaking of a promise are only a consideration for NFTL filing and must be weighed with other factors by Collection personnel.

TABLE 1. Criteria Captured in Model from IRM 5.12.1.13(2) & IRM 5.12.2.8(4) & (5)

ID	IRM Provision
1	The aggregate unpaid balance of assessment (UBA) is $5,000 or more.
2	If there is an UBA of any amount for an entity and the entity is not adhering to compliance requirements, such as Federal tax deposits, return filings, etc.
3	An installment agreement does not meet streamlined, guaranteed, or in-business trust fund express criteria.
4	An open account with an aggregate UBA of $5,000 or more is being reported as currently not collectable.
5	The property is exempt by the Federal Bankruptcy Code or State insolvency proceeding.

Source: IRM 5.12.1.13(2) (July 31, 2001); IRM 5.12.2.8(4) & (5) (Mar. 1, 2004).

TABLE 2. Criteria Captured in Model from IRM 5.19.4.5.2

ID	IRM Provision
1	Currently not collectible accounts, where aggregate assessed balance is at or above $5,000 and account is closed hardship (closing codes 24 - 32).
2	A lien has been filed and additional liabilities with aggregate assessed balance of $2,000 or more are received.
3	Consider lien filing in any situation where taxpayer has: • Broken a promise (defaulting on an installment agreement in our models). • Been warned of possible lien filing. • An aggregate assessed balance at or above $5,000. • Employee believes filing the lien immediately will be helpful in collecting the balance due.

Source: IRM 5.19.4.5.2 (Aug. 30, 2001).

The model generates a propensity score for each taxpayer based on the values the taxpayer has for each of these criteria. The higher the propensity score value, the greater the likelihood that the IRS will file an NFTL against the taxpayer under consideration. (See the graph in Appendix B for a comparison of the propensity scores between the lien and nonlien groups.) Table 3 shows the independent variables included in the model.[23]

TABLE 3. Independent Variables for Propensity Scoring Model

Label	Variable Description
X1	An indicator of aggregate assessed tax greater than $5,000.
X2	An indicator of collection at risk.
X3	An indicator of taxpayer having CNC modules.
X4	An indicator of taxpayer having an installment agreement.
X5	An indicator of taxpayer having a defaulted installment agreement.
X6	An indicator of taxpayer having a bankruptcy filing.
X7	Log of taxpayer total module balance. This variable is not in the IRM criteria, but significantly affected the lien filing determination.
X8	An indicator of CNC status, hardship.

Source: TAS Research & Analysis, Lien Analysis.

The second stage uses the estimated propensity scores to create matched pairs of tax lien taxpayers with non tax lien taxpayers. We used a propensity score matching technique known as the "nearest available neighbor" method.[24] The matched pairs allow the two groups (tax lien taxpayers and non-tax lien taxpayers) to be effectively identical over set covariates (observable characteristics pertaining to the IRS's lien filing determinations). This condition in the sample allows the estimate of the event (tax lien filing) effect to be less biased.

In the nearest available neighbor matching method, both lien and nonlien groups are randomly sorted. Then, the first lien unit is selected to find its closest non-lien unit match based on the absolute value of the difference between the propensity score of the selected lien unit and that of the non lien unit under consideration. The closest non lien unit is selected as a match. This procedure is repeated for all the lien units. This method matches lien and nonlien cases within a certain distance of the propensity score set by the user (.01 in our case). While the propensity score for each pair member is an estimate and the matches may therefore be subject to some uncertainty, we believe the aggregate comparison between the lien and non-lien groups is valid, as any imprecision at the pair level balances out in the overall groups.

TAS Research performed several propensity score matches that included or excluded different variables. We also modified how we constructed several independent variables. In all instances, we obtained similar results, suggesting model robustness.

Limitations

We matched about 93 percent of all lien cases (taxpayers against whom the IRS filed liens between 2002 and 2004). Fewer nonlien than lien cases are in the top fifteen percent of propensity scores. Therefore, this study does not pertain to those scores. We conducted two matches of lien cases against the population of nonlien cases to create more matches, so some nonlien cases were used twice and have a weight of two.

Also, although we believe that we captured the important characteristics that drive lien filing determinations, due to data limitations some characteristics that may influence lien filing behavior were not included in the propensity scoring process. Nevertheless, situations that could not be modeled (such as when Collection personnel believe that NFTL filing will be beneficial) should lead to favorable outcomes for the lien group. Therefore, results that suggest better outcomes for the non-lien group are conservative estimates. We will continue to explore this issue further. See Appendix A for an in-depth discussion of how we implemented the IRS's lien filing practices in the process.

Finally, researchers from the Office of Program Evaluation and Risk Analysis (OPERA) and the Small Business / Self Employed (SB/SE) Operating Division provided suggested changes to the model. Perhaps, most notably, they commented that our existing analyses considered any installment agreement, installment agreement default, bankruptcy, or IRS reporting of an account as currently not collectible in the propensity scoring, even though the event may have occurred after the lien filing date. We are currently doing the analysis again to include these events only if they occurred before the lien filing date. Although this paper does not contain the new results from our analyses, preliminary results for all of our models do not suggest any significant change in the impact of lien filing from the findings contained in this paper.

Phase II Regression Analysis

In Phase II we use logistic regression analysis to estimate the actual effect of the NFTL. As discussed above, we use the dataset that resulted from the Phase I propensity scoring and matching process. This dataset allows us to estimate the impact of lien filing on the outcome variables of interest, since the matched pairs are designed to control for the fact that liens are not filed randomly in the population—even among those who meet the basic criteria.

Following is a discussion of the regression models we used to estimate each of the outcome (*i.e.*, dependent) variables we explored. We have a separate model for each outcome we are interested in exploring (*e.g.*, taxpayer filing compliance or taxpayer payment compliance). The outcome variables are described below in the model discussions.

The independent variables included in the models capture the factors that we believe significantly influence the model outcome variables. For example, the models have independent variables for taxpayer characteristics and indicators that reflect IRS collection activities associated with the taxpayer's liability. Individual taxpayer characteristics include marital status, number of exemptions, and an age category. Additionally, income information is included in several forms such as total positive income,[25] average total positive income, presence of the earned income tax credit (EITC),[26] and business or partnership income.

Since taxpayer compliance may be influenced by IRS audit and collection activities, the models include independent variables that capture whether the taxpayer has undergone an audit, as well as information about important collection-related activities, such as whether the taxpayer had an installment agreement (IA) or defaulted on an IA, whether the taxpayer was placed in CNC status, or whether the IRS levied on the taxpayer.[27]

Additional independent variables include entity module balance (the total amount due) at lien filing time and nonfiler status. See Table 4 for a description of all of the independent variables in the models and which are included in each model.

The lien variable (X19) is the critical independent variable in these models. A positive or negative sign on the estimated coefficient on the lien variable shows whether lien filing had a positive or negative effect on the outcome variable being modeled. In Table 5 (in the Findings section), we report on the sign of the lien variable and its marginal effect for each of our models. The marginal effect shows the impact lien filing had on the

likelihood of the outcome we are modeling (*i.e.*, how much more or less likely lien taxpayers were to experience the outcome than nonlien taxpayers).

We use each regression model to estimate the lien effect on its outcome variable over six different timeframes: 2002–2005, 2002–2006, 2002–2007, 2002–2008, 2002–2009, and 2002–2010. Appendix B contains additional statistics on the propensity score matching and the final model results.

TABLE 4. Independent Variables for the Tax Compliance Models

Label	Variable Description	Current Payment	Future Payment	Future Filing	Future Income
X1	A vector of 11 Age Categories	X	X	X	X
X2	The log of the taxpayer's entity module balance on the date of lien filing (or proxy date for non-lien taxpayers[1])	X	X	X	X
X3	The log of the taxpayer's total positive income	X	X	X	
X4	The log of the taxpayer's average total positive income	X	X	X	
X5	An indicator that taxpayer filed for bankruptcy	X	X	X	X
X6	An indicator that taxpayer has self-employment or sole proprietorship income	X	X	X	X
X7	The number of exemptions claimed by the taxpayer	X	X	X	X
X8	An indicator that taxpayer is married	X	X	X	X
X9	An indicator that taxpayer claimed EITC	X	X	X	
X10	An indicator that taxpayer has an installment agreement	X	X	X	X
X11	An indicator that taxpayer did not timely file a required return[2]	X	X		X
X12	An indicator that taxpayer defaulted on an installment agreement	X	X	X	X
X13	An indicator that taxpayer has a levy	X	X	X	X
X14	An indicator that taxpayer has an offer-in-compromise status	X	X	X	X
X15	An indicator that taxpayer defaulted on an offer in compromise	X	X	X	X
X16	An indicator that taxpayer is in currently not collectible status	X	X	X	X
X17	An indicator that taxpayer has had an audit, during the study period	X	X	X	X
X18	An indicator that taxpayer has no filing requirement[3]	X	X	X	X
X19	An indicator that taxpayer has a tax lien	X	X	X	X

[1]We used the median days to the lien filing from inception of the tax liability as the proxy lien filing date for nonlien taxpayers.

[2]We did not include this variable in our future filing model, since a single instance of suspected nonfiling is sufficient to set our dependent variable.

[3]Based on operational assumptions (all income reported by third parties, Single filing status, etc.).

Current Payment Behavior

This model investigates the tax lien's impact on the probability of the taxpayer making sufficient payments during the study period to reduce the original liability incurred in 2002. The dependent variable is a binary variable,[28] where one indicates a reduction has occurred in the balance due for the original liability during the period we are investigating (*i.e.*, the balance due is lower at the end of the study period). As mentioned above, we investigate six different study periods for this model and all the models that follow: 2002-2005, 2002-2006, 2002–2007, 2002–2008, 2002–2009, and 2002–2010.

Future Payment Behavior

This model investigates the impact of the lien on the probability of the taxpayer staying compliant with his payment of tax liabilities in all periods subsequent to 2002 (*i.e.*, after the original liability was incurred). Any new liabilities incurred subsequent to 2002 and still in existence at the end of the study period are included in the calculation. The dependent variable is a binary variable, where one indicates that any tax liabilities incurred subsequent to 2002 have been paid in full. If a balance remains for any of these liabilities at the end of the study period, the dependent variable will be zero.

Future Filing Behavior

This model investigates the tax lien's impact on the taxpayer's timely filing behavior during the study period. The dependent variable in this relationship is the timely tax filing indicator for future returns. This is a binary variable where one signifies that all required individual tax forms (*i.e.*, Forms 1040) for all years subsequent to 2002 included in the study period were filed timely. Zero signifies at least one return was not filed timely.

We determined whether a taxpayer did not timely file a required return based on the status code posted to the taxpayer's entity module on the IRS Individual Master File (IMF). The following status codes indicate that at some point during the study period the taxpayer had not filed a required return:[29]

- Module established; return not filed [status 0];
- Return not posted; letter of inquiry mailed—Delinquency Status [status 2];
- Taxpayer Delinquency Investigation (TDI) Status; occurs after 4th notice [status 3]; or
- Delinquent return not filed [status 6].

Future Income Reporting Behavior

This model investigates the impact of the lien on the taxpayer's future reported income. The dependent variable in this relationship is the change in income as measured by the change in the taxpayer's reported total positive income between the beginning and the end of the study period.[30] The dependent variable is a binary variable, where one indicates that the taxpayer's total positive income increased.[31]

Findings

Our model results suggest that taxpayers with liens filed against them were less likely than comparable taxpayers without liens to be compliant on their 2002 liabilities, less likely to timely file required returns, and less likely to report greater total positive income after 2002. Lien filing did appear to have a positive effect on payment compliance subsequent to 2002. It is unknown if the lien filing actually improves subsequent payment compliance or if the lien filing is merely reducing the likelihood that a taxpayer will report subsequent liabilities, since the lien filing also shows a negative effect on subsequent filing compliance.

The results for the signs and the marginal effects of the lien indicator variable are given in Table 5 below. The marginal effect of the lien indicator shows the increased probability that taxpayers with liens will experience the outcome we are modeling when compared to non-lien taxpayers. For example, in the case of the future filing model, a positive marginal effect would show how much more likely taxpayers with liens were to file all required returns than nonlien taxpayers, and a negative marginal effect would show how much less likely lien taxpayers were to file all required returns. As shown in Table 5, lien filing was a significant factor that had negative marginal effects for most outcome variables and most periods we analyzed.

Table 5. Signs and Marginal Effects of Lien Indicator Variable

Models[1]	2002–2005	2002–2006	2002–2007	2002–2008	2002–2009	2002–2010	Average
Current Payment	-6.36%	-6.00%	-5.99%	-5.21%	-4.78%	-4.54%	-5.48%
Future Payment	5.58%	4.69%	3.70%	2.77%	2.18%	1.23%	3.36%
Future Filing	-0.87%	-1.51%	-2.12%	-2.48%	-2.83%	-2.78%	-2.10%
Future Income	-7.89%	-7.61%	-6.70%	-6.38%	-5.78%	-5.16%	-6.59%

[1] All models, except the future payment model, produced coefficients for the lien indicator that were negative and significant. The lien coefficients for the future payment model were positive and significant.

Source: TAS Research, Lien Analysis 2011.

We found that in 2005 (our first study end point) taxpayers with liens were about 6.4 percent less likely to reduce their initial liabilities than comparable non-lien taxpayers, and that through 2008, at least 4 years after the liens were filed, taxpayers with liens were still over 5 percent less likely to reduce their initial liabilities. In addition, lien taxpayers were less likely to file all required returns, with the increased likelihood of nonfiling ranging between about one and three percent during the full study period (*i.e.*, through 2010). Also, lien tax-payers were less likely to report an increase in their TPI, with the increased likelihood of negative outcomes starting at about 7.9 percent and gradually declining to about 5.2 percent by the end of the full study period. It should be noted that we did not adjust dollars for inflation. Therefore, the nominal decreases taxpayers experi-enced in TPI at the end of the study period (*i.e.*, 2010) relative to their 2002 TPI are greater in real terms than equivalent nominal losses experienced earlier in the study period. The positive effect for lien filing on future payment compliance started at about 5.6 percent and gradually declined to about 1.2 percent by the end of the study period (2010).

In summary, lien filings for this group of delinquent taxpayers were associated with negative outcomes for current payment activities, future tax filing activities, and future total positive income but with a positive outcome on future payment activities. The size of the negative impact associated with lien filing ranged from about one percent to about eight percent for the outcome variables we analyzed. In general, our results suggest that as the time increased, the impact associated with lien filing tended to decline.

Conclusions

In this study, we analyzed the impact of lien filing on comparable groups of lien and nonlien taxpayers who acquired individual income tax liabilities in 2002 and who had no such liabilities at the beginning of 2002. Our cohort of lien taxpayers included about 93 percent of all taxpayers who acquired new individual income tax liabilities in 2002 and against whom the IRS filed liens between 2002 and 2004. The results of our research suggest that lien filing was associated with negative outcomes for current payment activities, future tax filing activities, and future total positive income and with a positive outcome on future payment activities.

These outcome measures may be interrelated. For example, declines in reported TPI may affect taxpayers' ability (or desire) to pay down their tax liabilities. Conversely, lien filing may motivate taxpayers to stay cur-rent with new liabilities. More generally, existing tax liabilities may motivate both lien and non-lien taxpayers to become nonfilers to avoid incurring additional liabilities, but may affect lien taxpayers more because they have larger liabilities or less ability to pay due to decreased TPI. These are all possible areas for future research.

As indicated in the Limitations section, TAS Research is conducting additional analyses to determine the effect of including installment agreements, installment agreement defaults, bankruptcies, or IRS reporting of an account as currently not collectible in the propensity scoring, only if the event occurred before the NFTL filing. We also plan to develop models with economic indicators (*e.g.*, state unemployment rates) to determine if these factors have an effect on the evaluation of a lien's effectiveness. We will also perform more research to investigate when NFTLs are likely to be most effective as a collection tool. Other possible areas for future research include the impact of lien filing on taxpayers in CNC status, and whether removal of these taxpayers from our study cohort would significantly improve compliance outcome measures for the remaining lien tax-payers. We may also investigate whether lien filing is more effective for taxpayers who have significant assets. Finally, we may build on previous research and further explore the extent to which payments credited to lien taxpayers were attributable to sources other than the lien.[32] We will invite the IRS to collaborate with TAS on this research.

Although our results suggest that IRS lien filing practices during the study period were generally not productive for either the IRS or taxpayers, we expect that lien filing can be an effective collection tool when fil-ing determinations are made after a careful analysis of each taxpayer's individual circumstances and financial situation.

Appendix A
IRM Lien Filing Requirements

Our analysis focuses on tax lien filings from 2002 through 2004. Consequently, we used IRM 5.12.1.13(2) with a revision date of 7/31/2001 and IRM 5.12.2.8.1(4) & (5) with a revision date of 3/1/2004.[33] These IRM sections cover IRS lien filing requirements. The criteria covered in IRM 5.12.1.13(2), revision date 7/31/2001, provide the following situations for tax lien filing:[34]

- The aggregate unpaid balance of assessment is $5,000 or more. [file an NFTL]

- An IA is $25,000 or more. [file an NFTL]

- An open account with an aggregate unpaid balance of assessment (UBA) of $5,000 or more is being reported as CNC. [file an NFTL]

- A case involving both assessed and preassessed periods will be reported CNC. [The filing of an NFTL may be held up to include both periods on the NFTL.]

- The property is exempt by the Federal Bankruptcy Code or State insolvency proceeding. [file an NFTL]

- The party on which a levy is to be served is likely to file a priority claim under IRC §6323(a) or (c). [file an NFTL even though there is no mandatory NFTL filing requirement prior to service of the notice of levy on wage, salaries, etc.]

The criteria covered in IRM 5.12.2.8.1(4) & (5), revision date 3/1/2004, provide the following situations for filing a tax lien:[35]

- The aggregate UBA is $5,000 or more. [file an NFTL]

- An installment agreement does not meet streamlined, guaranteed, or in-business trust fund express criteria. [file an NFTL]

- There are additional assessments of $5,000 or more. [file an NFTL]

- An open account with an aggregate UBA of $5,000 or more is being reported as currently not collectible. [file an NFTL]

- A case involving both assessed and unassessed periods will be reported CNC. [file an NFTL]

- The property is exempt by the Federal Bankruptcy Code or State insolvency proceeding. [file an NFTL]

- The taxpayer resides outside the U.S. and has known assets. [file an NFTL]

We looked at these criteria as the starting point regarding the filing of an NFTL. As we built the model for measuring the propensity for filing, we used these criteria as the benchmark for building our variables from the data. Additional information for building our variables also came from the IRM Enforcement Action chapter.

The Enforcement Action chapter, IRM 5.19.4, provides additional guidance on the lien filing determination. Again, because our analysis focuses on filings in 2002 to 2004, we used IRM 5.19.4.5.2(2)-(7) with a revision date of 8/30/2001.[36] IRM 5.19.4.5.2(2)-(7) states that liens should be filed in these six situations, some of which overlap with IRM 5.12.2:[37]

- Installment agreement: file a lien when both of the following conditions exist:

  - Aggregate assessed balance is at or above $5,000.

  - A Collection Information Statement (CIS) is required.

- Currently not collectible: file a lien when both of the following conditions exist:

- Aggregate assessed balance is at or above $5,000.

- Account is being closed under hardship provisions.

- R7 cases: these are older accounts with an aggregate assessed balance at or above $5,000 that are reassigned for follow-up to a systemically issued ACS Letter 39.

- File an NFTL if collection is at risk, such as:

  - A creditor plans to seize the taxpayer's assets or the taxpayer is preparing to sell them.

  - The taxpayer is about to file bankruptcy.

- If a lien has been filed and additional liabilities with an aggregate assessed balance of $2,000 or more are received, file an additional lien only if it significantly enhances the collectability of the account.

The employee may consider lien filing in any situation where a taxpayer has:

- Broken a promise;

- Been warned of possible lien filing;

- An aggregate assessed balance at or above $5,000; and

- The employee believes filing the lien immediately will be helpful in collecting the balance due.

The Enforcement Action guidance on tax lien filing appears to expand on the conditions for lien filing to allow Collection staff some discretion in filing the lien. We used this information to further enhance our understanding of IRS lien filing practices. We limited our modeling of filing determinations to information that could be captured on the criteria described above. Data limitations prevented us from capturing all of these situations for filing an NFTL, as detailed below.

Comparison of IRM NFTL Filing Criteria and Our NFTL Model

Data availability limited the IRM 5.12 section criteria that could be captured as covariates in our tax lien filing model. Table 1 shows the criteria that were captured.

We augmented the variable list for our analysis with information from the Enforcement Action section, IRM 5.19.4.5.2 (2)-(7). This area of the IRM expanded the lien filing criteria to allow Collection staff to exercise judgment when making lien filing determinations. Due to data limitations, we were unable to model some of these criteria. Table 2 shows the criteria that were captured.

We also allowed for the possible influence of the size of the liability on lien filing behavior by including a variable for the total module balance due. Although we were unable to capture some characteristic that influence lien filing determinations due to data limitations, situations that could not be modeled (such as when Collection personnel believe that NFTL filing will be beneficial) should lead to favorable outcomes for the lien group. Therefore, results that suggest better outcomes for the non-lien group are conservative estimates.

TABLE A.1. Variables Matched to IRM 5.12, Federal Tax Liens

ID	IRS IRM 5.12	In Model	Description of Variable in Model
1	Aggregate UBA is $5,000 or more. [Appears for IRM 5.12.1.13 & IRM 5.12.2.8.1]	Yes	Indicator of aggregate assessed balance equal to or greater than $5,000
2	Installment agreement is $25,000 or more. [Appears for IRM 5.12.1.13] Installment agreement does not meet streamlined, guaranteed, or in-business trust fund express criteria. [Appears for IRM 5.12.2.8.1]	Yes	Indicator of taxpayer having an installment agreement
3	There are additional assessments of $5,000 or more. [Appears for IRM 5.12.2.8.1]	No	Included in item 1
4	An open account with an aggregate UBA of $5,000 or more is being reported as currently not collectible. [Appears for IRM 5.12.1.13 & IRM 5.12.2.8.1]	Yes	Indicator of taxpayer having CNC modules and aggregate assessed balance equal to or greater than $5,000
5	A case involving both assessed and unassessed periods will be reported as currently not collectable. [Appears for IRM 5.12.1.13 & IRM 5.12.2.8.1]	No	NA
6	The property is exempt by the Federal Bankruptcy Code or State insolvency proceeding. [Appears for IRM 5.12.1.13 & IRM 5.12.2.8.1]	Yes	Indicator of taxpayer having a bankruptcy filing
7	The party on which a levy is to be served is likely to file a priority claim under IRC 6323(a) or (c). [Appears for IRM 5.12.1.13]	No	NA
8	Taxpayer resides outside U.S. and has known assets. [Appears for IRM 5.12.2.8.1]	No	NA

Source: IRM 5.12.; NA=Not Available.

TABLE A.2. Variables Matched to IRM 5.19.4.5.2

ID	IRS IRM 5.19.4.5.2	In Model	Description of Variable in Model
1	Installment Agreement, where aggregate assessed balance is at or above $5,000 and Collection Information Statement (CIS) is required.	No	Captured in prior variables
2	CNC, where aggregate assessed balance is at or above $5,000 and account is closed hardship (closing codes 24 through 32).	Yes	Indicator of hardship, TC530 with closing codes 24 to 32
3	R7 cases, older accounts where aggregate assessed balance is at or above $5,000.	No	NA
4	Collection is at risk, where creditor plans to seize the taxpayer's assets or the taxpayer is about to file bankruptcy.	No	NA
5	A lien has been filed and additional liabilities with aggregate assessed balance of $2,000 or more are received.	Yes	Indicator that taxpayer is a repeater, i.e., taxpayer incurred another balance due

6	Consider lien filing in any situation where taxpayer has:
	  • Broken a promise;
	  • Been warned of possible lien filing
	  • An aggregate assessed balance at or above $5,000; or
	  • Where the employee believes filing the lien immediately will help collect the balance due.
		Yes	• Indicator of default of installment agreement
			• Indicator of taxpayer noncompliance with a filing requirement

Source: IRM 5.19.4.5.2; NA=Not Available.

Appendix B
Propensity Scoring and Final Model Results

TABLE B.1. Propensity Score (Tax Lien) Model Results

Variable	Coefficient	Standard Error	Marginal Effect (%)
Intercept	-5.7078*	0.0376	-
ltmodbal	0.1261*	0.00405	2.50[A]
bnkrpty_ind	-0.0833*	0.0143	-0.21
hardship_ind	0.381*	0.0233	1.16
CNC_ind	0.5493*	0.0155	1.76
col_noncompl	0.1473*	0.0117	0.37
instlmt	-1.1826*	0.0142	-3.19
default	0.6202*	0.0148	1.80
aggbal5000	4.8743*	0.0217	45.99
Log Likelihood Val			-114.586.65
Likelihood Ratio			236766.1
Wald			73375.34
Hosmer & Lemeshow			474.59
n=541,006[1]			

*(**) indicates at significance level of 1(5) percent.

[A] indicates that the marginal effect is not calculated as a categorical effect.

[1] All delinquent individual tax return filers (those who file Forms 1040, *U.S. Individual Income Tax Return*) in TDA status who incurred unpaid tax liabilities in 2002 and had no such liabilities at the beginning of 2002 are included in the propensity scoring process. Taxpayers enter TDA status if they do not resolve their liabilities in response to IRS notices.

FIGURE B.1.
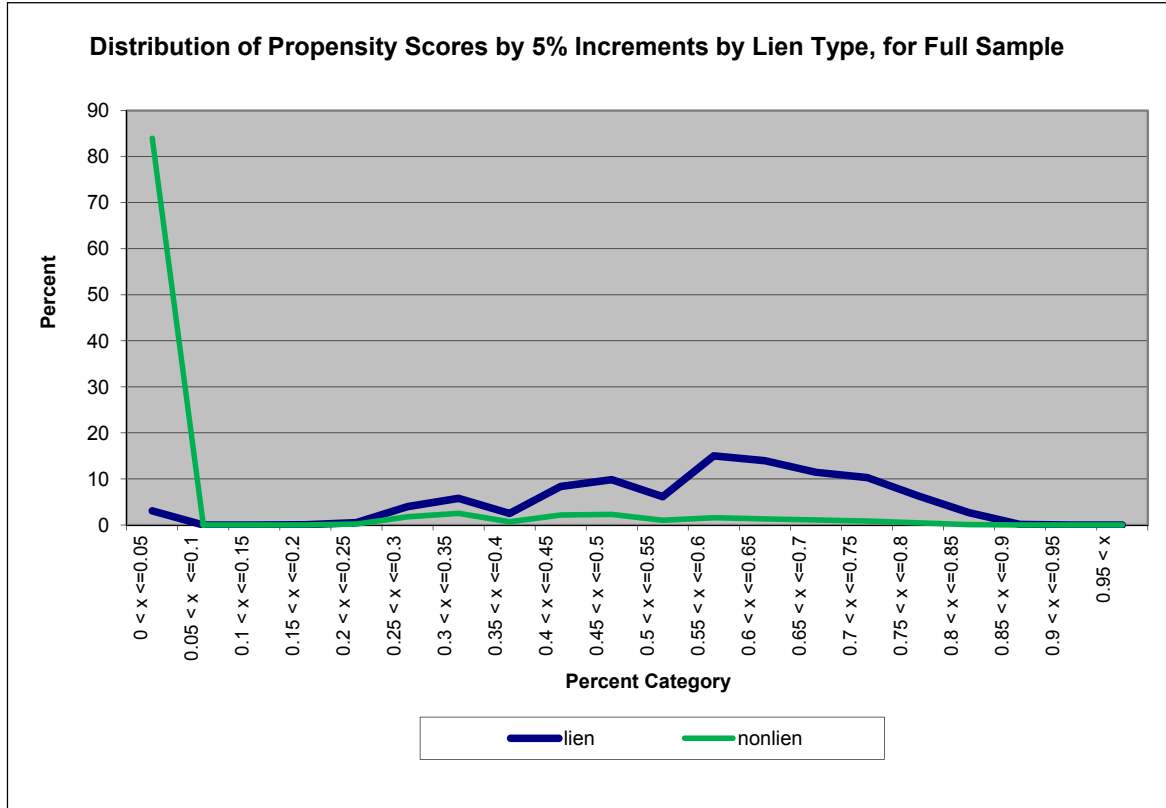
FIGURE B.2.
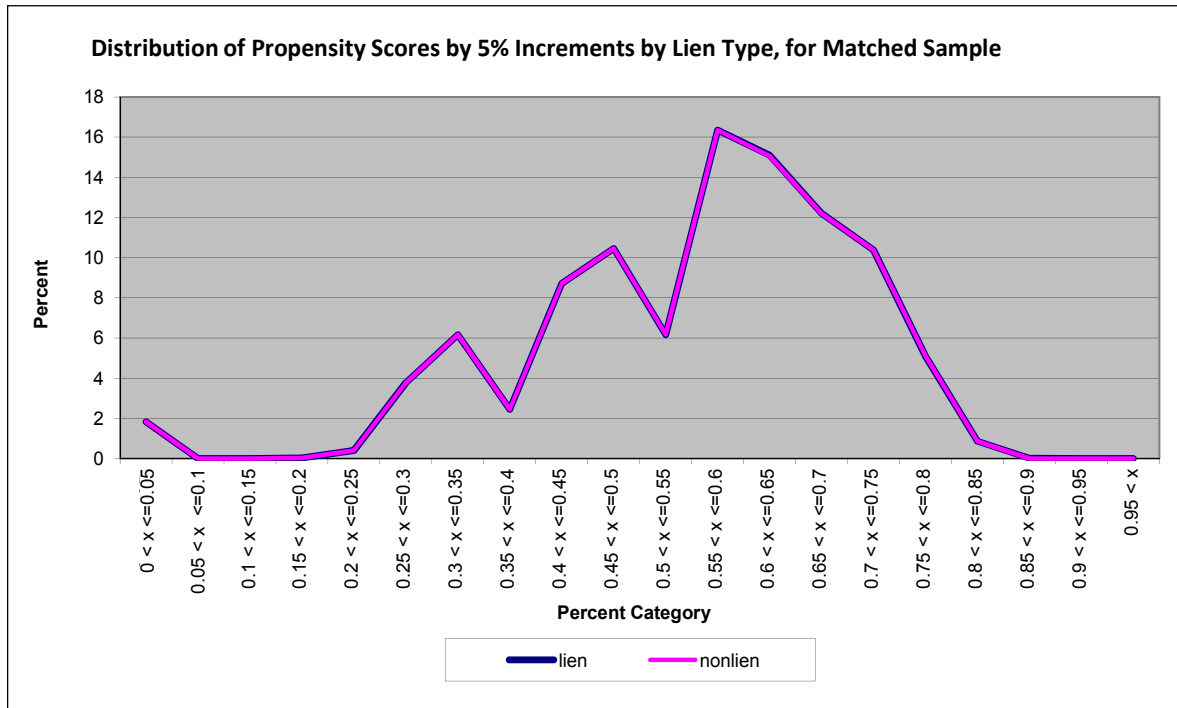
TABLE B.2.1. Current Payment Model Results[1]

Variable	2002–2005			2002–2006			2002–2007		
	Coeff.	SE	ME%	Coeff.	SE	ME%	Coeff.	SE	ME%
Intercept	1.5841*	0.0735	-	1.8171*	0.0766	-	1.8328*	0.0794	-
marry2	0.1083*	0.0154	2.58	0.2051*	0.0159	4.35	0.2868*	0.0164	5.4
TAP_age2	-0.0109	0.1084	-5.38	-0.0246	0.1489	-4.75	0.1361	0.1995	-1.4
TAP_age3	0.1497*	0.0453	-1.31	0.0785	0.0497	-2.38	0.0559	0.0568	-2.96
TAP_age4	0.2204*	0.0384	0.7	0.1887*	0.0399	0.26	0.1687*	0.0415	-0.56
TAP_age5	0.2463*	0.0362	1.63	0.1941*	0.0367	0.59	0.2092*	0.0376	0.45
TAP_age6	0.2044*	0.0354	0.63	0.1882*	0.0358	0.55	0.1926*	0.0363	0.2
TAP_age7	0.1972*	0.0351	0.46	0.2007*	0.0352	0.91	0.2166*	0.0355	0.79
TAP_age8	0.1992*	0.0355	0.41	0.1709*	0.0355	0.11	0.1984*	0.0357	0.35
TAP_age9	0.2247*	0.0364	0.95	0.1858*	0.0363	0.36	0.2155*	0.0366	0.6
TAP_age10	0.2385*	0.0392	1.08	0.2503*	0.0388	1.67	0.264*	0.0384	1.44
TAP_age11	0.4028*	0.0451	4.86	0.39778	0.0447	4.57	0.4233*	0.0438	4.17
TAP_age12	0.2253*	0.0537	0.48	0.2363*	0.0531	1.08	0.3416*	0.0527	2.55
depend2	0.2298*	0.0068	4.93[A]	0.2552*	0.0078	4.70[A]	0.2878*	0.00883	4.52[A]
l_totpos	0.0567*	0.00124	6.41[A]	0.066*	0.00132	6.57[A]	0.0655*	0.00139	5.67[A]
eic_ind2	-0.0477*	0.0167	-1.14	-0.0567*	0.0171	-1.21	-0.064*	0.0175	-1.2
l_avetotpos	0.0609*	0.00196	12.35[A]	0.0683*	0.00201	12.44[A]	0.0777*	0.00209	12.57[A]
bus_ind2	0.0236	0.0145	0.56	0.0257	0.0154	0.55	0.0367**	0.0162	0.69
nonfiler2	0.2271*	0.0141	5.39	0.2726*	0.0149	5.76	0.2315*	0.0155	4.32
ia_ind1	1.1219*	0.0299	22.69	1.2247*	0.0332	20.09	1.4811*	0.0389	19.12
ia_d	0.5082*	0.0151	11.91	0.6508*	0.0158	13.41	0.7567*	0.0164	13.69
lEmodbal_lien	-0.2101*	0.00693	47.86[A]	-0.2255*	0.0073	-45.64[A]	-0.229*	0.00762	-40.81[A]
levy3	-0.6949*	0.0143	-16.91	-0.5812*	0.0157	-11.93	-0.4416*	0.0169	-7.97
oic3	1.4709*	0.0751	26.64	1.6849*	0.0711	23.51	2.2145*	0.0813	22.25
oic_deflt3	-1.3395*	0.1398	-31.9	-1.5962*	0.129	-37.91	-1.8243*	0.1211	-42.33
dm530	-0.9602*	0.016	-23.4	-1.0701*	0.016	-24.43	-1.1427*	0.0162	-23.91
lien_ind	-0.267*	0.0137	-6.36	-0.2833*	0.0145	-6	-0.3212*	0.0152	-5.99
exam2	-0.1373*	0.0212	-3.31	-0.0241	0.0209	-0.51	-0.00792	0.0211	-0.15
No_File_req	-1.0128*	0.0887	-24.77	-1.0622*	0.0815	-25.41	-0.9987*	0.0778	-22.4
bk_ind	-0.1832*	0.0183	-4.42	-0.0211	0.0193	-0.45	0.1741*	0.0204	3.15
Log Likelihood Value	-69422.72			-63754.44			-59048.49		
Likelihood Ratio	34386.18			38226.13			40951.29		
Wald	24714.68			26169.49			26707.19		
Hosmer & Lemeshow	326.54			362.81			363.96		
n=127,406									

Footnotes at end of table.

TABLE B.2.1. Current Payment Model Results[1]—Continued

Variable	2002–2008			2002–2009			2002–2010		
	Coeff.	SE	ME%	Coeff.	SE	ME%	Coeff.	SE	ME%
Intercept	2.0252*	0.082	-	2.1687*	0.0839	-	2.3278*	0.0851	-
marry2	0.3244*	0.017	5.28	0.3612*	0.0174	5.3	0.3863*	0.0176	5.18
TAP_age2	-0.0436	0.2366	-3.78	-0.1256	0.2444	-4.55	-0.325	0.2488	-7.3
TAP_age3	-0.0166	0.0671	-3.29	-0.0326	0.0835	-2.98	-0.00828	0.1107	-2.16
TAP_age4	0.1161*	0.0437	-0.87	0.0816	0.046	-1.11	0.0322	0.049	-1.56
TAP_age5	0.1599*	0.0386	0.03	0.1161*	0.0396	-0.48	0.078	0.0405	-0.84
TAP_age6	0.1618*	0.0369	0.15	0.129*	0.0371	-0.2	0.097*	0.0373	-0.5
TAP_age7	0.1599*	0.0359	0.17	0.1291*	0.036	-0.17	0.1108*	0.0359	-0.25
TAP_age8	0.1709*	0.0359	0.36	0.158*	0.0357	0.34	0.1499*	0.0354	0.37
TAP_age9	0.1946*	0.0367	0.72	0.2033*	0.0364	1.02	0.1779*	0.0359	0.74
TAP_age10	0.2226*	0.0383	1.11	0.2008*	0.0378	0.89	0.1945*	0.037	0.91
TAP_age11	0.3607*	0.0431	3.18	0.3354*	0.042	2.73	0.3231*	0.0409	2.5
TAP_age12	0.3346*	0.0514	2.63	0.375*	0.05	3.1	0.4113*	0.0485	3.41
depend2	0.3057*	0.00985	4.14[A]	0.3346*	0.0107	3.97[A]	0.3743*	0.012	3.85[A]
l_totpos	0.0754*	0.00147	6.08[A]	0.0801*	0.00153	5.38[A]	0.0769*	0.00161	4.55[A]
eic_ind2	-0.0844*	0.018	-1.38	-0.0542*	0.0183	-0.79	-0.0315	0.0185	-0.42
l_avetotpos	0.0821*	0.00218	11.64[A]	0.0886*	0.00223	11.33[A]	0.095*	0.00228	11.08[A]
bus_ind2	0.0305	0.0169	0.5	-0.00831	0.0175	-0.12	-0.0182	0.0179	-0.24
nonfiler2	0.239*	0.0163	3.89	0.215*	0.0169	3.15	0.2117*	0.0174	2.83
ia_ind1	1.745*	0.0454	17.55	1.9184*	0.0503	16.18	2.0371*	0.0537	14.9
ia_d	0.8396*	0.0171	13.19	0.8892*	0.0177	12.54	0.9122*	0.0181	11.7
lEmodbal_lien	-0.248*	0.00793	-38.40[A]	-0.2614*	0.00817	-36.35[A]	-0.2785*	0.00832	-35.22[A]
levy3	-0.3499*	0.018	-5.48	-0.2377*	0.0189	-3.37	-0.1365*	0.0195	-1.78
oic3	2.5206*	0.0895	19.4	2.4674*	0.0865	16.9	2.7561*	0.0951	15.65
oic_deflt3	-1.65*	0.1154	-36.69	-1.6642*	0.1112	-35.4	-1.7873*	0.1114	-36.87
dm530	-1.1521*	0.0166	-21.63	-1.1747*	0.0169	-20.2	-1.2081*	0.0171	-19.21
lien_ind	-0.3212*	0.016	-5.21	-0.3283*	0.0165	-4.78	-0.3421*	0.0169	-4.54
exam2	-0.0185	0.0209	-0.3	-0.047**	0.0209	-0.69	-0.0253	0.0212	-0.34
No_File_req	-0.9073*	0.0739	-18.37	-0.8904*	0.0709	-16.61	-0.8882*	0.0688	-15.41
bk_ind	0.2643*	0.0214	4.07	0.359*	0.0224	4.84	0.4452*	0.0232	5.34
Log Likelihood Value	-54864.1			-52220.08			-50304.72		
Likelihood Ratio	42800.99			43744.41			43892.29		
Wald	26848			26618.48			26060.74		
Hosmer & Lemeshow	386.2			417.94			459.69		
n=127,406									

[1]* indicates significance level at 1 percent and ** indicates significance level at 5 percent. The following abbreviations are used: "coeff." for coefficient; "SE" for standard error; and "ME%" for percent marginal effect. An 'A' indicates that the marginal effect is not calculated as a categorical effect.

TABLE B.2.2. Future Payment Model Results[1]

Variable	2002–2005			2002–2006			2002–2007		
	Coeff.	SE	ME%	Coeff.	SE	ME%	Coeff.	SE	ME%
Intercept	2.8661*	0.0718	-	2.8268*	0.0711	-	2.9207*	0.0716	-
marry2	-0.0493*	0.0152	-1	-0.0559*	0.0151	-1.13	-0.0656*	0.0151	-1.29
TAP_age2	-0.25	0.1182	2.98	-0.1966	0.1632	2.74	-0.0181	0.2324	5.15
TAP_age3	-0.3691*	0.0511	0.39	-0.2882*	0.0538	0.81	-0.1749*	0.0597	2.29
TAP_age4	-0.4456*	0.0444	-1.66	-0.3425*	0.0445	-0.61	-0.3044*	0.0445	-0.51
TAP_age5	-0.4347*	0.0426	-1.8	-0.3419*	0.0419	-0.95	-0.3192*	0.0413	-1.14
TAP_age6	-0.425*	0.0419	-1.78	-0.3701*	0.0411	-1.77	-0.3307*	0.0404	-1.57
TAP_age7	-0.4226*	0.0417	-1.78	-0.3444*	0.0407	-1.26	-0.2965*	0.0398	-0.9
TAP_age8	-0.4397*	0.042	-2	-0.3652*	0.0409	-1.62	-0.3395*	0.0399	-1.81
TAP_age9	-0.4286*	0.0427	-1.5	-0.3823*	0.0415	-1.81	-0.3291*	0.0405	-1.39
TAP_age10	-0.4096*	0.0451	-0.73	-0.3539*	0.0435	-0.89	-0.316*	0.0419	-0.9
TAP_age11	-0.3615*	0.0504	0.55	-0.355*	0.0483	-0.66	-0.3112*	0.0462	-0.56
TAP_age12	-0.3067*	0.0593	1.78	-0.3168*	0.0563	0.27	-0.2483*	0.0544	0.84
depend2	0.0374*	0.00589	0.68[A]	0.0473*	0.00601	0.82[A]	0.0622*	0.00617	1.03[A]
l_totpos	-0.0245*	0.00123	-2.36[A]	-0.0204*	0.00124	-1.09[A]	-0.0139*	0.00124	-1.27[A]
eic_ind2	0.0939*	0.0161	1.89	0.1126*	0.0157	2.26	0.1387*	0.0155	2.69
l_avetotpos	-0.0504*	0.0022	8.71[A]	-0.0506*	0.00227	-8.76[A]	-0.0488*	0.00233	-8.33[A]
bus_ind2	-0.1263*	0.0139	-2.57	-0.1234*	0.0141	-2.48	-0.1193*	0.0143	-2.34
nonfiler2	-0.1562*	0.0136	-3.19	-0.228*	0.0136	-4.6	-0.246*	0.0136	-4.84
ia_ind1	-0.2059*	0.0252	-4.34	-0.1509*	0.026	-3.12	-0.0477	0.0278	-0.95
ia_d	-0.6759*	0.0146	-14.15	-0.7156*	0.0146	-14.76	-0.7077*	0.0147	-14.21
lEmodbal_lien	-0.0561*	0.00611	-10.89[A]	-0.0388*	0.00608	-7.47[A]	-0.0427*	0.0062	-8.03[A]
levy3	-0.2863*	0.0137	-5.76	-0.3962*	0.014	-7.8	-0.4525*	0.0145	-8.62
oic3	0.5748*	0.0623	10.2	0.6041*	0.0536	10.54	0.8132*	0.0538	13.06
oic_deflt3	-0.9798*	0.1235	-22.97	-0.886*	0.1116	-20.52	-0.7307*	0.1039	-16.42
dm530	-0.0884*	0.0162	-1.82	-0.1122*	0.0159	-2.29	-0.144*	0.0158	-2.88
lien_ind	0.2745*	0.0134	5.58	0.2329*	0.0135	4.69	0.1879*	0.0136	3.7
exam2	-0.2988*	0.02	-6.37	-0.3317*	0.0187	-7.03	-0.3818*	0.018	-7.97
No_File_req	0.2242**	0.1045	4.33	0.1346	0.0947	2.63	0.0823	0.0898	1.59
bk_ind	-0.0897*	0.0173	-1.84	-0.1381*	0.017	-2.84	-0.1669*	0.0168	-3.37
Log Likelihood Value	-73686.84			-73112.12			-72054.84		
Likelihood Ratio	7964.02			8345.7			8241.71		
Wald	7067.06			7398.53			7307.81		
Hosmer & Lemeshow	176.27			192.49			194.6		
n=127,406									

Footnotes at end of table.

TABLE B.2.2. Future Payment Model Results[1]—Continued

Variable	2002–2008			2002–2009			2002–2010		
	Coeff.	SE	ME%	Coeff.	SE	ME%	Coeff.	SE	ME%
Intercept	2.824*	0.0706	-	2.8671*	0.0707	-	2.8731*	0.07	-
marry2	-0.0693*	0.0151	-1.34	-0.0613*	0.0153	-1.15	-0.0567*	0.0152	-1.06
TAP_age2	0.5527	0.3397	12.81	0.7827**	0.3751	14.57	1.4533*	0.5168	19.09
TAP_age3	-0.1591**	0.068	2.16	-0.0188	0.0858	4.32	0.0332	0.1144	4.71
TAP_age4	-0.2688*	0.045	-0.15	-0.257*	0.0462	-0.1	-0.1426*	0.048	1.64
TAP_age5	-0.2742*	0.0408	-0.53	-0.2191*	0.0407	0.43	-0.2308*	0.0403	-0.23
TAP_age6	-0.3021*	0.0396	-1.31	-0.296*	0.0389	-1.36	-0.2623*	0.038	-1.09
TAP_age7	-0.3126*	0.0389	-1.67	-0.2839*	0.0382	-1.22	-0.2658*	0.0371	-1.28
TAP_age8	-0.3041*	0.0388	-1.44	-0.3194*	0.0379	-2	-0.2726*	0.0367	-1.46
TAP_age9	-0.2893*	0.0394	-0.96	-0.2813*	0.0385	-1.03	-0.2846*	0.0371	-1.61
TAP_age10	-0.3006*	0.0406	-1.03	-0.3068*	0.0395	-1.41	-0.2677*	0.038	-1.11
TAP_age11	-0.296*	0.0442	-0.71	-0.2909*	0.0427	-0.86	-0.2772*	0.0409	-1.1
TAP_age12	-0.2464*	0.0518	0.43	-0.2032*	0.0501	0.99	-0.1374*	0.0479	1.73
depend2	0.0705*	0.00632	1.14[A]	0.0725*	0.00647	1.11[A]	0.0767*	0.00664	1.11[A]
l_totpos	-0.0104*	0.00127	-1.00[A]	-0.00279**	0.00125	-0.24[A]	-0.00566*	0.00127	-0.47[A]
eic_ind2	0.122*	0.0153	2.33	0.1364*	0.0153	2.53	0.1306*	0.015	2.41
l_avetotpos	-0.0474*	0.00241	-8.02[A]	-0.0501*	0.00246	-8.27[A]	-0.0517*	0.00252	-8.49[A]
bus_ind2	-0.139*	0.0145	-2.68	-0.1545*	0.0148	-2.89	-0.1456*	0.0149	-2.7
nonfiler2	-0.2887*	0.0138	-5.57	-0.3088*	0.0141	-5.76	-0.3302*	0.0142	-6.09
ia_ind1	0.0693**	0.0292	1.32	0.12038	0.03	2.2	0.0987*	0.0298	1.8
ia_d	-0.646*	0.0147	-12.71	-0.602*	0.0148	-11.5	-0.5604*	0.0148	-10.62
lEmodbal_lien	-0.0242*	0.00614	-4.47[A]	-0.0158**	0.00618	-2.83[A]	-0.00858	0.00616	-1.53[A]
levy3	-0.5095*	0.015	-9.45	-0.6004*	0.0158	-10.64	-0.6418*	0.0163	-11.19
oic3	0.8662*	0.0531	13.43	0.9044*	0.0535	13.38	0.8724*	0.0521	12.91
oic_deflt3	-0.7958*	0.0961	-17.83	-0.7745*	0.0924	-16.97	-0.6503*	0.0895	-13.91
dm530	-0.1396*	0.0157	-2.75	-0.1434*	0.0157	-2.74	-0.1561*	0.0156	-2.96
lien_ind	0.1433*	0.0137	2.77	0.1161*	0.0139	2.18	0.0657*	0.0139	1.23
exam2	-0.3795*	0.0172	-7.78	-0.4166*	0.0168	-8.35	-0.4254*	0.0166	-8.47
No_File_req	0.1526	0.0871	2.85	0.0355	0.0814	0.66	0.0489	0.0796	0.9
bk_ind	-0.178*	0.0166	-3.54	-0.1581*	0.0168	-3.05	-0.1264*	0.0169	-2.41
Log Likelihood Value	-71327.64			-69947.13			-69628.73		
Likelihood Ratio	8067.12			8191.88			8215.79		
Wald	7123.29			7183.55			7151.52		
Hosmer & Lemeshow	202.45			167.73			108.1		
n=127,406									

[1]* indicates significance level at 1 percent and ** indicates significance level at 5 percent. The following abbreviations are used: "coeff." for coefficient; "SE" for standard error; and "ME%" for percent marginal effect. An 'A' indicates that the marginal effect is not calculated as a categorical effect.

TABLE B.2.3. Future Filing Model Results[1]

Variable	2002–2005			2002–2006			2002–2007		
	Coeff.	SE	ME%	Coeff.	SE	ME%	Coeff.	SE	ME%
Intercept	2.0417*	0.0675	-	2.0389*	0.0664	-	2.009*	0.0654	-
marry2	-0.1613*	0.0145	-3.93	-0.163*	0.0143	-4.07	-0.1718*	0.0142	-4.29
TAP_age2	-0.4882*	0.1103	11.69	-0.2092	0.1511	19.42	-0.3594	0.1899	16.07
TAP_age3	-0.7284*	0.0453	5.76	-0.8374*	0.0471	4.66	-0.8329*	0.0517	4.39
TAP_age4	-1.0601*	0.0383	-3.68	-1.1249*	0.0379	-3.95	-1.0728*	0.0377	-2.95
TAP_age5	-1.1699*	0.0363	-7.86	-1.2419*	0.0351	-8.65	-1.2411*	0.0344	-9
TAP_age6	-1.1517*	0.0355	-8.03	-1.232*	0.0344	-9.11	-1.2333*	0.0334	-9.62
TAP_age7	-1.1671*	0.0353	-8.64	-1.2216*	0.0339	-9.2	-1.191*	0.0328	-8.95
TAP_age8	-1.0687*	0.0357	-5.28	-1.1321*	0.0342	-6.12	-1.1171*	0.033	-6.46
TAP_age9	-1.0367*	0.0364	-3.71	-1.0621*	0.0349	-3.41	-1.0267*	0.0336	-3.14
TAP_age10	-0.8222*	0.039	2.86	-0.8839*	0.0369	2.39	-0.9028*	0.0351	1.06
TAP_age11	-0.6976*	0.0441	6.49	-0.689*	0.0416	8.1	-0.661*	0.0392	8.06
TAP_age12	-0.4647*	0.0529	11.99	-0.5549*	0.0493	11.64	-0.5181*	0.0466	12.09
depend2	0.1202*	0.00587	2.64[A]	0.1053*	0.00583	2.28[A]	0.1121*	0.00583	2.36[A]
l_totpos	0.0523*	0.00116	6.04[A]	0.069*	0.00117	8.08[A]	0.0645*	0.00116	7.48[A]
eic_ind2	0.553*	0.0158	13.03	0.5458*	0.0149	13.38	0.5134*	0.0144	12.73
l_avetotpos	0.0339*	0.00181	7.02[A]	0.0161*	0.0019	3.45[A]	0.014*	0.00195	3.03[A]
bus_ind2	-0.086*	0.0135	-2.09	-0.0558*	0.0135	-1.39	-0.0529*	0.0134	-1.32
ia_ind1	-0.0471**	0.0237	-1.15	-0.1595*	0.0239	-3.98	-0.1383*	0.0246	-3.45
ia_d	0.3439*	0.0142	8.3	0.1852*	0.0139	4.61	0.1344*	0.0138	3.36
lEmodbal_lien	-0.1387*	0.0061	-32.27[A]	-0.1308*	0.00604	-31.14[A]	-0.1264*	0.00599	-30.17[A]
levy3	-0.4033*	0.0131	-9.75	-0.4961*	0.0131	-12.26	-0.5629*	0.0131	-13.96
oic3	0.3287*	0.0527	7.75	0.1736*	0.0427	4.3	0.0592	0.0386	1.48
oic_deflt3	0.0336	0.1262	0.82	0.0416	0.1128	1.04	-0.0952	0.1015	-2.38
dm530	0.4719*	0.0154	11.17	0.4451*	0.0149	10.95	0.4178*	0.0146	10.38
lien_ind	-0.0358*	0.0128	-0.87	-0.0604*	0.0127	-1.51	-0.0848*	0.0127	-2.11
exam2	-0.0636*	0.0198	-1.56	-0.1947*	0.0184	-4.86	-0.2329*	0.0176	-5.8
No_File_req	-2.1825*	0.1152	-44.66	-2.1576*	0.1104	-41.4	-2.2431*	0.1097	-40.59
bk_ind	-0.0977*	0.017	-2.39	-0.1126*	0.0166	-2.81	-0.1175*	0.0162	-2.94
Log Likelihood Value	-79116.69			-79937.92			-80465.97		
Likelihood Ratio	15736.13			16461.45			15690.29		
Wald	13398.96			13993.38			13362.46		
Hosmer & Lemeshow	83.78			170.88			134.39		
n=127,406									

Footnotes at end of table.

TABLE B.2.3. Future Filing Model Results[1]—Continued

Variable	2002–2008			2002–2009			2002–2010		
	Coeff.	SE	ME%	Coeff.	SE	ME%	Coeff.	SE	ME%
Intercept	1.9482*	0.0645	-	1.9615*	0.0642	-	1.9608*	0.0636	-
marry2	-0.1869*	0.0142	-4.65	-0.1756*	0.0143	-4.34	-0.1903*	0.0142	-4.65
TAP_age2	-0.2797	0.223	18.07	-0.6176*	0.2222	10.3	-0.5757**	0.2371	10.8
TAP_age3	-0.8376*	0.0589	4.33	-0.8633*	0.0724	4.01	-0.7893*	0.0952	5.39
TAP_age4	-1.0702*	0.038	-2.7	-1.0925*	0.039	-2.78	-1.0488*	0.0405	-1.91
TAP_age5	-1.2499*	0.0338	-9	-1.2611*	0.0336	-8.64	-1.2494*	0.0336	-8.36
TAP_age6	-1.2581*	0.0326	-10.2	-1.2906*	0.0319	-10.63	-1.3005*	0.0312	-11.09
TAP_age7	-1.1946*	0.0319	-9.07	-1.2313*	0.031	-9.73	-1.2209*	0.0302	-9.74
TAP_age8	-1.1137*	0.0318	-6.56	-1.1546*	0.0308	-7.58	-1.1648*	0.0298	-8.38
TAP_age9	-1.0282*	0.0324	-3.42	-1.0286*	0.0313	-3.35	-1.0141*	0.0301	-3.58
TAP_age10	-0.9292*	0.0336	0.08	-0.9457*	0.0323	-0.31	-0.9208*	0.031	-0.34
TAP_age11	-0.6721*	0.0371	7.77	-0.6593*	0.0353	8.23	-0.6796*	0.0337	7.05
TAP_age12	-0.5099*	0.0438	12.3	-0.5489*	0.0415	11.54	-0.5179*	0.0392	11.76
depend2	0.1135*	0.00587	2.36[A]	0.1129*	0.00589	2.27[A]	0.1202*	0.00601	2.28[A]
l_totpos	0.0641*	0.00119	7.93[A]	0.0675*	0.00117	7.69[A]	0.0646*	0.00119	7.05[A]
eic_ind2	0.4772*	0.0141	11.87	0.4726*	0.0139	11.71	0.4452*	0.0138	10.95
l_avetotpos	0.00943*	0.00205	2.05[A]	0.00446**	0.00209	0.97[A]	0.00334	0.00212	0.72[A]
bus_ind2	-0.0359*	0.0135	-0.89	-0.0446*	0.0137	-1.1	-0.0543*	0.0138	-1.33
ia_ind1	-0.0931*	0.025	-2.31	-0.0904*	0.0251	-2.22	-0.0614**	0.0252	-1.5
ia_d	0.1028*	0.0137	2.56	0.0999*	0.0137	2.47	0.0879*	0.0138	2.15
lEmodbal_lien	-0.119*	0.00594	-28.30[A]	-0.117*	0.00595	-27.69[A]	-0.1162*	0.00592	-27.13[A]
levy3	-0.6438*	0.0132	-15.96	-0.7019*	0.0135	-17.34	-0.767*	0.0136	-18.84
oic3	0.0306	0.0368	0.76	0.0624	0.0358	1.55	0.0797**	0.0351	1.96
oic_deflt3	-0.1619	0.0949	-4	-0.177	0.0916	-4.32	-0.2612*	0.0884	-6.23
dm530	0.3697*	0.0145	9.21	0.3345*	0.0144	8.3	0.306*	0.0144	7.54
lien_ind	-0.0994*	0.0127	-2.48	-0.1146*	0.0128	-2.83	-0.1139*	0.0128	-2.78
exam2	-0.3096*	0.017	-7.62	-0.3317*	0.0167	-8.05	-0.3145*	0.0165	-7.54
No_File_req	-2.2939*	0.1094	-39.07	-2.3441*	0.1089	-37.76	-2.4291*	0.1091	-36.88
bk_ind	-0.12*	0.016	-2.98	-0.1061*	0.0161	-2.61	-0.0872*	0.0161	-2.12
Log Likelihood Value	-80301.74			-79533.54			-79135.12		
Likelihood Ratio	15681.45			16434.91			16235.58		
Wald	13290.02			13854.59			13682.83		
Hosmer & Lemeshow	200.14			187.57			205.2		
n=127,406									

[1]* indicates significance level at 1 percent and ** indicates significance level at 5 percent. The following abbreviations are used: "coeff." for coefficient; "SE" for standard error; and "ME%" for percent marginal effect. An 'A' indicates that the marginal effect is not calculated as a categorical effect.

TABLE B.2.4. Future Income Model Results[1]

Variable	2002–2005			2002–2006			2002–2007		
	Coeff.	SE	ME%	Coeff.	SE	ME%	Coeff.	SE	ME%
Intercept	-2.236*	0.0708	-	-2.2191*	0.0708	-	-2.0823*	0.0699	-
marry2	-0.0322	0.0154	-0.72	-0.041*	0.0154	-0.92	-0.0539*	0.0153	-1.22
TAP_age2	1.5131*	0.1112	11.61	1.3824*	0.1511	8.82	1.4648*	0.1934	11.06
TAP_age3	1.6144*	0.0536	15.36	1.664*	0.0555	16.82	1.5588*	0.0598	14.06
TAP_age4	1.4678*	0.0484	13.12	1.5074*	0.048	14.32	1.5076*	0.0475	14.31
TAP_age5	1.2473*	0.0469	8.56	1.2532*	0.0458	9.07	1.2782*	0.0448	9.76
TAP_age6	1.0746*	0.0464	4.64	1.0651*	0.0453	4.72	1.0708*	0.0441	4.95
TAP_age7	0.9879*	0.0463	2.55	1.0089*	0.0449	3.54	1.0251*	0.0436	4.16
TAP_age8	0.9869*	0.0465	2.07	0.9845*	0.0451	2.54	1.0238*	0.0436	3.84
TAP_age9	0.9463*	0.0472	0.5	0.954*	0.0457	1.22	0.9912*	0.0442	2.39
TAP_age10	0.9121*	0.0494	-1.15	0.8831*	0.0476	-1.26	0.9236*	0.0455	0.04
TAP_age11	0.6856*	0.0552	-6.62	0.6644*	0.0528	-6.66	0.6243*	0.0503	-7.33
TAP_age12	0.6474*	0.0637	-7.63	0.5371*	0.0616	-9.43	0.4479*	0.0594	-11.07
depend2	0.4871*	0.00597	9.78	0.5576*	0.00624	10.87[A]	0.5976*	0.0064	11.39[A]
bus_ind2	0.1349*	0.0135	3.01	0.1429*	0.0138	3.2	0.1306*	0.0139	2.95
nonfiler2	-0.3804*	0.0136	-8.4	-0.4904*	0.0136	-10.93	-0.4596*	0.0135	-10.38
ia_ind1	0.8833*	0.0242	21.25	0.9512*	0.0249	22.98	0.9322*	0.0257	22.6
ia_d	0.6405*	0.0143	14.55	0.6795*	0.0144	15.44	0.6676*	0.0143	15.24
lEmodbal_lien	0.0293*	0.00587	6.24	0.027*	0.00598	5.79[A]	0.0105	0.00597	2.27[A]
levy3	-0.2149*	0.0138	-4.82	-0.1683*	0.0141	-3.8	-0.1503*	0.0144	-3.43
oic3	0.4852*	0.0515	11.5	0.6475*	0.0434	15.57	0.6338*	0.0402	15.29
oic_deflt3	-0.1931	0.1393	-4.17	-0.4447*	0.131	-9.18	-0.2037	0.1133	-4.46
dm530	-0.4731*	0.017	-10.05	-0.485*	0.0168	-10.38	-0.4312*	0.0165	-9.4
lien_ind	-0.3539*	0.0136	-7.89	-0.3396*	0.0138	-7.61	-0.2964*	0.0138	-6.7
exam2	0.096*	0.0207	2.17	0.0872*	0.0198	1.98	0.1391*	0.0189	3.2
No_File_req	-1.3926*	0.1635	-22.55	-1.1738*	0.1446	-20.35	-1.1612*	0.1368	-20.5
bk_ind	0.0224	0.0179	0.5	0.0398**	0.0178	0.9	0.017	0.0175	0.39
Log Likelihood Value	-70769.68			-69198.87			-69250.04		
Likelihood Ratio	24929.31			28715.7			29196.35		
Wald	19350.7			21373.73			21457.89		
Hosmer & Lemeshow	1542.87			1724.95			2219.04		
n=127,406									

Footnotes at end of table.

TABLE B.2.4. Future Income Model Results[1]—Continued

Variable	2002–2008			2002–2009			2002–2010		
	Coeff.	SE	ME%	Coeff.	SE	ME%	Coeff.	SE	ME%
Intercept	-1.8959*	0.0682	-	-2.0157*	0.069	-	-2.1421*	0.0698	-
marry2	-0.0395*	0.0151	-0.92	-0.0221	0.0152	-0.5	-0.0449*	0.0154	-0.99
TAP_age2	1.6041*	0.2209	15.31	1.9418*	0.2245	20.53	2.305*	0.232	28.35
TAP_age3	1.5827*	0.0655	15.24	1.6306*	0.08	13.03	1.6408*	0.1045	12.08
TAP_age4	1.4651*	0.0464	13.72	1.6437*	0.0483	14.81	1.7062*	0.0508	14.97
TAP_age5	1.2935*	0.0428	10.76	1.4389*	0.0438	11.12	1.5374*	0.0448	12.24
TAP_age6	1.085*	0.0418	5.93	1.2771*	0.0424	7.91	1.3471*	0.0428	8.59
TAP_age7	1.0412*	0.0411	5.24	1.1787*	0.0417	5.89	1.2264*	0.0421	6.09
TAP_age8	1.035*	0.041	4.91	1.1721*	0.0415	5.72	1.2398*	0.0417	6.6
TAP_age9	0.955*	0.0416	2.19	1.1418*	0.0419	4.31	1.1877*	0.042	4.71
TAP_age10	0.8969*	0.0426	0.05	1.0366*	0.0428	0.95	1.0569*	0.0428	0.84
TAP_age11	0.633*	0.0465	-6.89	0.7556*	0.0463	-6.31	0.8463*	0.0459	-4.78
TAP_age12	0.4081*	0.055	-11.99	0.4395*	0.0548	-12.89	0.5502*	0.0534	-11.03
depend2	0.6628*	0.00672	12.93[A]	0.6471*	0.00669	11.96[A]	0.7042*	0.00693	12.08[A]
bus_ind2	0.0997*	0.0139	2.33	0.1182*	0.0141	2.68	0.1454*	0.0144	3.2
nonfiler2	-0.4279*	0.0135	-10	-0.4838*	0.0136	-11.02	-0.4324*	0.0139	-9.63
ia_ind1	0.8479*	0.0262	20.77	0.8487*	0.0264	20.58	0.734*	0.0267	17.5
ia_d	0.6427*	0.0142	15.08	0.6086*	0.0143	13.9	0.5509*	0.0145	12.28
lEmodbal_lien	-0.00352	0.00593	-0.79[A]	-0.00624	0.00598	-1.35[A]	-0.00794	0.00607	-1.68[A]
levy3	-0.0891*	0.0146	-2.09	-0.1158*	0.0149	-2.65	-0.1004*	0.0154	-2.24
oic3	0.5652*	0.0388	13.82	0.4847*	0.0378	11.6	0.4492*	0.0377	10.53
oic_deflt3	-0.2394**	0.1048	-5.41	-0.1926	0.1003	-4.24	-0.2478**	0.098	-5.24
dm530	-0.385*	0.0161	-8.75	-0.3998*	0.0162	-8.78	-0.3946*	0.0164	-8.43
lien_ind	-0.2731*	0.0138	-6.38	-0.2548*	0.0139	-5.78	-0.2335*	0.0141	-5.16
exam2	0.0516*	0.0182	1.21	0.0529*	0.0178	1.21	0.0607*	0.0178	1.35
No_File_req	-1.145*	0.1258	-21.47	-1.1984*	0.1273	-21.07	-1.2313*	0.1286	-20.57
bk_ind	0.0445*	0.0172	1.04	0.0369**	0.0173	0.84	0.0129	0.0176	0.29
Log Likelihood Value	-69827.86			-68794.5			-67190.82		
Likelihood Ratio	30495.93			30213.8			31091.19		
Wald	21780.82			21621.55			21788.07		
Hosmer & Lemeshow	2254.27			1932.74			2337.24		
n=127,406									

[1]* indicates significance level at 1 percent and ** indicates significance level at 5 percent. The following abbreviations are used: "coeff." for coefficient; "SE" for standard error; and "ME%" for percent marginal effect. An 'A' indicates that the marginal effect is not calculated as a categorical effect.

TABLE B.3. PHASE I: Propensity Score Model

Actual vs. Predicted	2002–2004	% of Actual
0 vs 0	428,349	79.2%
0 vs 1	29,012	5.4%
1 vs 0	28,509	5.3%
1 vs 1	55,136	10.2%
Total count	541,006	
Prediction Accuracy		89.4%

[Sum of percents may not equal 100% due to rounding.]

TABLE B.4.1. PHASE II: Current Payment Model

Actual vs. Predicted	2002–2005	% of Actual	2002–2006	% of Actual	2002–2007	% of Actual	2002–2008	% of Actual	2002–2009	% of Actual	2002–2010	% of Actual
0 vs 0	33,650	26.4%	26,345	20.7%	22,641	17.8%	19,907	15.6%	18,289	14.4%	16,681	13.1%
0 vs 1	19,684	15.5%	18,870	14.8%	17,679	13.9%	16,540	13.0%	15,892	12.5%	15,728	12.3%
1 vs 0	14,639	11.5%	12,045	9.5%	10,506	8.3%	9,471	7.4%	8,802	6.9%	8,249	6.5%
1 vs 1	59,433	46.7%	70,146	55.1%	76,580	60.1%	81,488	64.0%	84,423	66.3%	86,748	68.1%
Total count	127,406		127,406		127,406		127,406		127,406		127,406	
Prediction Accuracy		73.1		75.8		77.9		79.6		80.7		81.2%

[Sum of percents may not equal 100% due to rounding.]

TABLE B.4.2. PHASE II: Future Payment Model

Actual vs. Predicted	2002–2005	% of Actual	2002–2006	% of Actual	2002–2007	% of Actual	2002–2008	% of Actual	2002–2009	% of Actual	2002–2010	% of Actual
0 vs 0	1,878	1.5%	2,217	1.7%	1,775	1.4%	1,480	1.2%	1,280	1.0%	1,164	0.9%
0 vs 1	36,157	28.4%	35,373	27.8%	34,575	27.1%	33,999	26.7%	32,852	25.8%	32,665	25.6%
1 vs 0	2,138	1.7%	2,480	2.0%	1,956	1.5%	1,536	1.2%	1,314	1.0%	1,209	1.0%
1 vs 1	87,233	68.5%	87,336	68.6%	89,100	70.0%	90,391	71.0%	91,960	72.2%	92,368	72.5%
Total count	127,406		127,406		127,406		127,406		127,406		127,406	
Prediction Accuracy		70.0%		70.3%		71.4%		72.2%		73.2%		73.4%

[Sum of percents may not equal 100% due to rounding.]

TABLE B.4.3. PHASE II: Future Filing Model

Actual vs. Predicted	2002–2005	% of Actual	2002–2006	% of Actual	2002–2007	% of Actual	2002–2008	% of Actual	2002–2009	% of Actual	2002–2010	% of Actual
0 vs 0	26,314	20.7%	35,328	27.7%	39,926	31.3%	45,170	35.5%	49,998	39.2%	54,183	42.5%
0 vs 1	28,213	22.1%	25,363	19.9%	23,774	18.7%	21,810	17.1%	19,674	15.4%	17,719	13.9%
1 vs 0	15,265	12.0%	18,857	14.8%	21,531	16.9%	23,995	18.8%	25,307	19.9%	26,966	21.2%
1 vs 1	57,614	45.2%	47,858	37.6%	42,175	33.1%	36,431	28.6%	32,427	25.5%	28,538	22.4%
Total count	127,406		127,406		127,406		127,406		127,406		127,406	
Prediction Accuracy		65.9%		65.3%		64.4%		64.1%		64.7%		64.9%

[Sum of percents may not equal 100% due to rounding.]

TABLE B.4.4. PHASE II: Future Income Model

Actual vs. Predicted	2002–2005	% of Actual	2002–2006	% of Actual	2002–2007	% of Actual	2002–2008	% of Actual	2002–2009	% of Actual	2002–2010	% of Actual
0 vs 0	70,489	55.3%	70,339	55.2%	70,139	55.1%	67,777	53.2%	70,840	55.6%	73,896	58.0%
0 vs 1	11,077	8.7%	10,658	8.4%	10,326	8.1%	10,221	8.0%	9,526	7.5%	8,513	6.7%
1 vs 0	25,402	19.9%	24,119	18.9%	24,297	19.1%	24,178	19.0%	24,290	19.1%	23,883	18.8%
1 vs 1	20,438	16.0%	22,290	17.5%	22,644	17.8%	25,230	19.8%	22,750	17.9%	21,114	16.6%
Total count	127,406		127,406		127,406		127,406		127,406		127,406	
Prediction Accuracy		71.3%		72.7%		72.9%		73.0%		73.5%		74.6%

[Sum of percents may not equal 100% due to rounding.]

Endnotes

1 IRS, Collection Activity Report NO-5000-23, *Collection Workload Indicators* (Oct. 30, 2011).

2 IRS, Media Relations Office, IRS Announces *New Effort to Help Struggling Taxpayers Get a Fresh Start; Major Changes to Lien Process*, IR-2011-20 (Feb. 24, 2011).

3 Our cohort includes only the delinquent taxpayers who entered taxpayer delinquent account (TDA) status. These are delinquent taxpayers who did not resolve their liabilities in response to IRS notices.

4   Internal Revenue Code (IRC) §§6321 and 6322. IRC §6201 authorizes the IRS to assess all taxes owed. IRC §6303 provides that within 60 days of the assessment the IRS must provide notice and demand for payment to any taxpayer liable for an unpaid tax.

5   See IRC §6321; Internal Revenue Manual (IRM) 5.12.2.2 (Oct. 30, 2009).

6   IRC §6322.

7   IRC §6323(f); Treas. Reg. §301.6323(f)-1; IRM 5.12.2.8 (Oct. 30, 2009).

8   IRM 5.12.2.4 (Oct. 30, 2009).

9   IRM 5.12.2.4.1 (Oct. 30, 2009). The lien filing threshold was increased to $10,000 as part of the IRS's "fresh start" initiative. See *Adjustments to IRS Lien Policies*, available at http://www.irs.gov/businesses/small/article/0,,id=239095,00.html (last visited Dec. 9, 2011).

10 IRM 5.14.5 (Mar. 11, 2011). Lien filing is not required for taxpayers entering into a streamlined installment agreement, but a lien may be filed at the discretion of the revenue officer. Following are current IA criteria:

    Streamlined installment agreements may be approved for taxpayers under the following circumstances:

    a. The aggregate unpaid balance of assessments (the SUMRY balance) is $25,000 or less. The unpaid balance of assessments includes tax, assessed penalty and interest, and all other assessments on the tax modules. It does not include accrued penalty and interest.

    b. If pre-assessed taxes are included, the pre-assessed liability plus unpaid balance of assessments must be $25,000 or less.

    c. The aggregate unpaid balance of assessments will be fully paid in 60 months, or the agreement will be fully paid prior to the expiration of the collection statute, whichever comes first.

11 IRS, Collection Activity Report NO-5000-C23, *Collection Workload Indicators* (Oct. 30, 2011). Of the 1,042,230 NFTLs filed in FY 2011, some 45.6 percent were filed by the ACS. An analysis TAS conducted prior to 2011 showed that about 58 percent of ACS liens were filed systemically and without significant employee review. *See* National Taxpayer Advocate 2010 Annual Report to Congress, vol. 2, 93 (Status Update: *Estimating the Impact of Liens on Taxpayer Compliance Behavior—an Ongoing Research Initiative*). On February 24, 2011, the IRS increased the threshold for systemically filing liens to $10,000 and raised it again to $25,000 on April 15, 2011. See IRS response to information request (Oct. 12, 2011). TAS will continue to monitor IRS lien filing volumes to determine the impact of these lien filing threshold changes.

12 For a detailed discussion of the National Taxpayer Advocate's concerns about IRS lien filing policies, see National Taxpayer Advocate 2011 Annual Report to Congress 109–128 (Most Serious Problem: *Changes to IRS Lien Filing Practices Are Needed To Improve Future Compliance, Increase Revenue Collection, and Minimize Economic Harm Inflicted on Financially Struggling Taxpayers*). See also National Taxpayer Advocate 2010 Annual Report to Congress 302–310 (Status Update: *The IRS Has Been Slow To Address the Adverse Impact of Its Lien-Filing Policies on Taxpayers and Future Tax Compliance*).

13 IRS, *IRS Data Books, Table 16, Delinquent Collection Activities, 1999–2010*; IRS, Collection Activity Report NO-5000-23, *Collection Workload Indicators* (Oct. 30, 2011).

14 The inflation-adjusted totals reflect the yearly total collection yields adjusted to 2010 dollars using the U.S. Consumer Price Index-All Urban 2010, U.S. Bureau of Labor Statistics.

15 The propensity score for this study is an estimate of the likelihood that the IRS will file a NFTL.

16 See IRM 5.12.1.13(2), IRM 5.12.2.8.1(4) & (5) and IRM 5.19.4.

17 While deviations from official procedures due to workload issues that vary by geographic area or other unknown factors could potentially influence the propensity scoring and matching processes, we note that the mean values for the official criteria included in the model are well balanced between the lien and non-lien groups.

18 Our cohort of lien taxpayers included about 93 percent of all taxpayers who acquired their individual income tax liabilities in 2002 and against whom the IRS filed liens between 2002 and 2004.

19 We actually model the dependent variable as a logit, which is the natural log of the odds derived from the dependent variable binary outcomes.

[20] Due to limitations in IRS data, we were not able to capture certain criteria for lien filings. See Appendix A for a more detailed discussion of how we implemented the IRS's lien filing criteria in the propensity scoring process.

[21] See Appendix A and the Limitations section for a discussion of the official lien criteria that we could not include in our analysis.

[22] In IRM 5.12, *Federal Tax Lien*, we used IRM 5.12.1.13(2) with a revision date of 7/31/2001 and IRM 5.12.2.8.1(4) & (5) with a revision date of 3/1/2004. In the Enforcement Action chapter, IRM 5.19.4, we found additional guidance on lien filing determinations. Because our analysis focuses on tax lien filings in 2002 to 2004, we used IRM 5.19.4.5.2(2)-(7) with a revision date of 8/30/2001.

[23] For a detailed description of how the model addresses the IRM lien filing criteria, please see Appendix A.

[24] We used a nearest-neighbor technique for matching the lien units and nonlien units that is called the "greedy" matching technique and was developed by Jon Kosanke and Erik Bergstralh.

[25] We captured the value of the TPI at the end of each year included in the study period and took the average of these values.

[26] This amount is EITC claimed on the return after IRS validity checks during math error processing.

[27] We controlled for the influence of IRS actions on taxpayer behavior. It is possible that in some cases taxpayer behavior influenced IRS actions, which might have affected the coefficient values of the independent variables representing these actions (such variables are known as endogenous variables).

[28] We actually model the dependent variable in all of our models as a logit, which is the natural log of the odds derived from the dependent variable binary outcomes.

[29] In some cases IRS will subsequently determine that the taxpayer did not have a filing requirement and will reverse this code. We did not check for reversals, but did check to see if the taxpayer subsequently filed the required return.

[30] TPI is calculated by summing the positive values from the following income fields from a taxpayer's individual return: wages; interest; dividends; distribution from partnerships, small business corporations, estates, or trusts; Schedule C net profits; Schedule F net profits; and other income such as Schedule D profits and capital gains distributions. Losses reported for any of these values are treated as zero.

[31] We plan to include the State unemployment rate in a future model to control for possible regional differences in economic activity.

[32] In prior research, TAS found that most payments for lien taxpayers were attributable to sources other than the lien, such as refund offsets. See National Taxpayer Advocate 2009 Annual Report to Congress vol. 2, 1–18 (*The IRS's Use of Notices of Federal Tax Lien*).

[33] The next revision to IRM 5.12.2.4.1 occurred 5/20/2005.

[34] IRM 5.12.1.13(2) (July 31, 2001).

[35] IRM 5.12.2.8.1(4) & (5) (Mar. 1, 2004).

[36] The next revision to IRM 5.19.4 occurred 8/1/2005.

[37] IRM 5.19.4.5.2(2)-(7) (Aug. 30, 2001).