

**INVESTIGATING THE IMPACT OF
LIENS ON TAXPAYER LIABILITIES
AND PAYMENT BEHAVIOR**

Investigating the Impact of Liens on Taxpayer Liabilities and Payment Behavior¹

EXECUTIVE SUMMARY	108
Introduction	108
Methodology	108
Findings	109
INTRODUCTION	111
BACKGROUND	112
OBJECTIVES	115
METHODOLOGY	115
Phase 1 – Data Set Construction	115
Phase 2 – Data Analysis	118
Limitations	119
FINDINGS	119
All Lien and Non-lien Taxpayers	119
IA Taxpayers and Non-IA Taxpayers	121
OIC Taxpayers and Non-OIC Taxpayers	122
CNC Hardship Taxpayers	123
CONCLUSIONS	124
APPENDIX A: IRM LIEN FILING REQUIREMENTS	126

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Investigating the Impact of Liens on Taxpayer Liabilities and Payment Behavior

TABLE OF FIGURES

Figure 1, Total Payments - Lien vs. Non-Lien Taxpayers	109
Figure 2, Mean Entity Balance - Lien vs. Non-Lien Taxpayers	109
Figure 3, Mean Entity Balance - CNC Hardship Taxpayers with and without Liens	110
Figure 4, Total Payments - IA vs. Non-IA Taxpayers	110
Figure 5, Total Payments - CNC Hardship Taxpayers with and without OICs.....	110
Figure 6, Inflation-Adjusted Total Yield vs. Liens Issued	113
Figure 7, Criteria Captured in Model from IRM 5.12.1.13(2) & IRM 5.12.2.8(4) & (5).....	116
Figure 8, Criteria Captured in Model from IRM 5.19.4.5.2.....	116
Figure 9, Independent Variables for Propensity Scoring Model	117
Figure 10, Mean Entity Balance - Lien vs. Non-lien Taxpayers.....	120
Figure 11, Distribution of Entity Balances - Lien vs. Non-lien Taxpayers.....	120
Figure 12, Total Payments - Lien vs. Non-lien Taxpayers	120
Figure 13, Mean Entity Balance - IA vs. Non-IA Taxpayers	121
Figure 14, Distribution of Entity Balances - IA vs. Non-IA Taxpayers	121
Figure 15, Total Payments - IA vs. Non-IA Taxpayers	121
Figure 16, Mean Entity Balance - OIC vs. Non-OIC Taxpayers.....	122
Figure 17, Distribution of Entity Balances - OIC vs. Non-OIC Taxpayers.....	122
Figure 18, Total Payments - OIC vs. Non-OIC Taxpayers.....	123
Figure 19, Mean Entity Balance - CNC Hardship Taxpayers with and without Liens	123
Figure 20, Total Payments - CNC Hardship Taxpayers with and without OICs.....	123
Figure 21, Distribution of Entity Balances – CNC Hardship Taxpayers with and without OICs	124

EXECUTIVE SUMMARY

Introduction

Last year, TAS Research published its lien study, “Estimating the Impact of Liens on Taxpayer Compliance Behavior and Income,” in Volume 2 of the 2011 Annual Report to Congress.² TAS Research completed this study in response to the National Taxpayer Advocate’s concern that the IRS’s use of the Notice of Federal Tax Lien (NFTL) may be harming taxpayers, especially those experiencing economic hardships, while not significantly enhancing the IRS’s ability to collect liabilities.

The study examined the impact of lien filing on taxpayer compliance behavior and income. To conduct it, TAS Research analyzed a cohort of delinquent individual tax return filers (those who file Forms 1040, *U.S. Individual Income Tax Return*) in taxpayer delinquent account (TDA)³ status who incurred unpaid tax liabilities in 2002 and had no such liabilities at the beginning of 2002.⁴ 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.

In the current study, we analyze the impact of lien filing on the tax liabilities and revenue collected from these taxpayers and whether the installment agreement (IA) and offer in compromise (OIC) collection alternatives can improve these outcomes for both taxpayers and the IRS. We also update the 2011 propensity scoring model to incorporate some model enhancements.⁵

Methodology

This study employs a two-phase approach. In Phase 1, we construct our cohort of comparable lien and non-lien taxpayers from the initial population of delinquent taxpayers.⁶

In Phase 2, we use subsets of the study population created in Phase 1 to conduct our analyses. We look at the change in total tax liability of our various groups of taxpayers during the study period (2002 through 2010). We also look at the total dollars the IRS actually collected from these taxpayer groups.

² National Taxpayer Advocate 2011 Annual Report to Congress vol. 2, 91-111 (Research Study: *Estimating the Impact of Liens on Taxpayer Compliance Behavior and Income*).

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

⁴ The study also includes delinquent trust fund recovery penalty amounts. These are assessments against individual taxpayers who are generally officers of a corporation and who therefore have a fiduciary responsibility for unpaid employment tax amounts withheld from employees of that corporation.

⁵ The first stage of Phase 1 estimates the probability that a taxpayer will have a tax lien filed against his or her delinquent liability. The propensity score represents the probability that the IRS will file a lien against a taxpayer’s tax liability and ranges in value between 0 and 1. We used a logistic regression equation to estimate the propensity scores.

⁶ As discussed in the body of the report, TAS Research used a technique known as “propensity scoring” to identify a group of non-lien taxpayers comparable to the lien taxpayers in the study with respect to the characteristics the IRS uses to make lien filing determinations.

Investigating the Impact of Liens on Taxpayer Liabilities and Payment Behavior

Findings

Our results show that in general, and given the lien filing criteria in place during 2002–2004, lien filing was associated with unfavorable outcomes for both the IRS and the taxpayer, *i.e.*, the IRS collected significantly less revenue from lien taxpayers (see Figure 1 below) and the total tax liabilities of lien taxpayers increased more.

FIGURE 1, Total Payments – Lien vs. Non-Lien Taxpayers⁷

	Number of Taxpayers	Mean Balance at Time of Lien Filing	Mean Payments	Ratio Payments/Balance
Lien	65,249	\$37,486	\$25,845	0.69
No Lien⁸	65,249	\$34,813	\$38,477	1.11

As shown in Figure 2 below, however, both the lien and non-lien taxpayer groups had difficulty paying down their tax liabilities, and, on average, were in more debt to the IRS in 2010, the end of the study, than at the time of lien filing or proxy lien filing.⁹

FIGURE 2, Mean Entity¹⁰ Balance – Lien vs. Non-Lien Taxpayers

	Number of Taxpayers	Mean Balance at Time of Lien Filing	Mean Balance 2010	Ratio 2010/Lien Date
Lien	65,249	\$37,486	\$45,314	1.21
No Lien	65,249	\$34,813	\$38,635	1.11

This problem was most severe for currently not collectible (CNC) hardship taxpayers, who on average ended up owing about 50 percent more to the IRS in 2010 than at the time of lien (or proxy lien) filing (see Figure 3 below).

⁷ Our calculations of revenue collected do not include refund offsets, which are not taxpayer payments per se. Offsets are tax return refund amounts that the IRS uses to offset outstanding tax liabilities rather than refunding them to the taxpayer. During the study period, the mean amount of refund offsets from non-lien taxpayers was \$19,738. The mean amount of offsets from lien taxpayers was \$7,858.

⁸ As discussed in the Methodology section, some non-lien taxpayers were used twice during the matching process. We are showing the weighted counts of non-lien taxpayers throughout this report, since our calculations are based on the weighted counts. The actual number of non-lien taxpayers, excluding duplicates, was 44,563.

⁹ To compute a proxy lien filing date for our non-lien taxpayers, we first calculated the median days to lien filing from the date our lien taxpayers acquired their tax liability. For our non-lien taxpayers, we then added this number of days to the date they acquired their tax liability to determine the proxy lien filing date.

¹⁰ The entity balance is the total amount including penalty and interest of all outstanding individual tax liabilities owed by the taxpayer.

Investigating the Impact of Liens on Taxpayer Liabilities and Payment Behavior

FIGURE 3, Mean Entity Balance – CNC Hardship Taxpayers with and without Liens

	Number of Taxpayers	Mean Balance at Time of Lien Filing	Mean Balance 2010	Ratio 2010/Lien Date
CNC Lien	8,321	\$55,475	\$83,263	1.50
CNC No Lien	5,659	\$27,800	\$42,403	1.53

The subgroups with IA and OIC collection alternatives had better outcomes for taxpayers and the IRS. Over 50 percent of IA taxpayers and over 70 percent of OIC taxpayers were out of debt to the IRS at the end of the study period. Further, as shown in Figure 4 below, the IRS collected about 45 percent more tax revenue from IA taxpayers than from those without IAs, and almost twice as much in percentage terms based on the amount owed at the time of lien filing or proxy lien filing.

FIGURE 4, Total Payments – IA vs. Non-IA Taxpayers

	Number of Taxpayers	Mean Balance at Time of Lien Filing	Mean Payments	Ratio Payments/Balance
IA	10,531	\$27,017	\$44,989	1.67
No IA	119,967	\$36,951	\$31,035	0.84

While the IRS collected significantly less from taxpayers with approved OICs than from the other taxpayers included in this study, the accepted offer amount represents the full amount the IRS estimated it could collect from these taxpayers. Moreover, when we looked at CNC hardship taxpayers, the study group with the most unfavorable outcomes for both the taxpayer and the IRS,¹¹ we found that they paid considerably more to the IRS if they were granted OICs and were generally out of debt at the end of the study period (see Figure 5 below).¹²

FIGURE 5, Total Payments – CNC Hardship Taxpayers with and without OICs

	Number of Taxpayers	Mean Balance at Time of Lien Filing	Mean Payments	Ratio Payments/Balance
CNC with OICs	602	\$57,428	\$22,696	0.40
CNC without OICs	13,378	\$43,680	\$15,357	0.35

¹¹ On average, CNC hardship taxpayers paid the least to the IRS and had the greatest percentage increase in their total tax liabilities.

¹² About 80 percent of CNC hardship taxpayers with OICs were out of debt to the IRS at the end of the study period, compared to only about 20 percent of CNC hardship taxpayers who did not have OICs.

These study findings demonstrate the need for continued study of IRS lien filing criteria to maximize the benefits of lien filing to the IRS and minimize its adverse effects on taxpayers. Additionally, the findings underscore the benefits of active promotion and use of the IA and OIC collection alternatives and highlight the likely benefits to the IRS and taxpayers of increased use of OICs for CNC hardship taxpayers.

INTRODUCTION

Last year, TAS Research published its lien study, “Estimating the Impact of Liens on Taxpayer Compliance Behavior and Income,” in Volume 2 of the 2011 Annual Report to Congress.¹³ TAS Research completed this study in response to the National Taxpayer Advocate’s concern that the IRS’s use of the Notice of Federal Tax Lien (NFTL) may be harming taxpayers, especially those experiencing economic hardships, while not significantly enhancing the IRS’s ability to collect liabilities.

The study examined the impact of lien filing on taxpayer compliance behavior and income. To conduct it, TAS Research analyzed a cohort of delinquent individual tax return filers (those who file Forms 1040, *U.S. Individual Income Tax Return*) in taxpayer delinquent account status (TDA),¹⁴ who incurred unpaid tax liabilities in 2002 and had no such liabilities at the beginning of 2002.¹⁵ 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. 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 income in subsequent periods.

Our study showed lien filing was associated with negative outcomes for payment compliance behavior on the taxpayers’ initial liabilities, negative filing compliance behavior, and negative outcomes for the amount of income earned by taxpayers in years subsequent to

¹³ National Taxpayer Advocate 2011 Annual Report to Congress vol. 2, 91-111 (Research Study: *Estimating the Impact of Liens on Taxpayer Compliance Behavior and Income*).

¹⁴ Our cohort includes only the delinquent taxpayers who entered TDA status. These are delinquent taxpayers who did not resolve their liabilities in response to IRS notices.

¹⁵ The study also includes delinquent trust fund recovery penalty amounts. These are assessments against individual taxpayers who are generally officers of a corporation and who therefore have a fiduciary responsibility for unpaid employment tax amounts withheld from employees of that corporation.

Investigating the Impact of Liens on Taxpayer Liabilities and Payment Behavior

the filing of the NFTL. Lien filing was associated with a positive outcome for taxpayer payment compliance behavior on liabilities subsequent to their original ones.

In the current study, we analyze the impact of lien filing on the tax liabilities and revenue collected from these taxpayers and whether the installment agreement and offer in compromise collection alternatives can improve these outcomes for both taxpayers and the IRS. We also update the 2011 propensity scoring model to incorporate some model enhancements.¹⁶

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 ten days.¹⁷ 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.¹⁸ This lien continues against the taxpayer's property until the liability has been fully paid or is legally unenforceable.¹⁹ 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.²⁰

A lien filing determination is required for all balance due cases.²¹ The IRS 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 CNC if the unpaid balance is at least \$10,000.²² Streamlined installment agreements do not usually require an NFTL filing.²³

¹⁶ The first stage of Phase I estimates the probability that a taxpayer will have a tax lien filed against his or her delinquent liability. The propensity score represents the probability that the IRS will file a lien against a taxpayer's tax liability and ranges in value between 0 and 1. We used a logistic regression equation to estimate the propensity scores.

¹⁷ 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.

¹⁸ See IRC § 6321; Internal Revenue Manual (IRM) 5.12.2.2 (May 20, 2005).

¹⁹ IRC § 6322.

²⁰ IRC § 6323(f); Treas. Reg. § 301.6323(f)-1; IRM 5.12.2.8 (Oct. 30, 2009).

²¹ IRM 5.12.2.4 (Mar. 8, 2012).

²² IRM 5.12.2.4.1 (Mar. 8, 2012). During our study period, the lien filing threshold was \$5,000. It was increased to \$10,000 as part of the IRS's "fresh start" initiative.

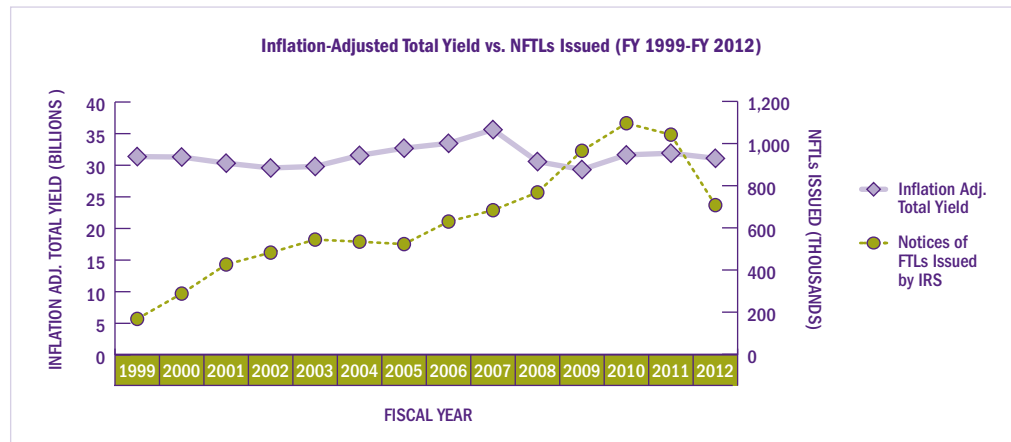
²³ IRM 5.14.5 (Mar. 11, 2011). Lien filing is not required for taxpayers entering into a streamlined installment agreement, but a lien may be filed at the discretion of the revenue officer. In January 2012, the IRS issued interim guidance which raised the threshold for obtaining a streamlined installment agreement (an agreement where the taxpayer does not have to supply the IRS with a financial statement) from \$25,000 to \$50,000. The maximum term for streamlined installment agreements was also raised to 72 months from the prior 60 month maximum. Small Business/Self Employed Division (SB/SE), Interim Guidance Memorandum, Control No. SBSE-05-0112-013 (Jan. 20, 2012).

Investigating the Impact of Liens on Taxpayer Liabilities and Payment Behavior

The IRS files more than a third of its NFTLs through the Automated Collection System (ACS), and files many of these without any significant employee review of the cases.²⁴ 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.²⁵

While NFTL filings fell to an all-time low after the enactment of the IRS Restructuring and Reform Act of 1998, they have since increased, and rose precipitously between 2005 and 2010. Because of the IRS's "fresh start" changes in NFTL filing policies,²⁶ however, the number of NFTLs dropped about 32 percent from fiscal year (FY) 2011 to approximately 707,000 in FY 2012, as shown in Figure 6 below. The graphic illustrates the volume of IRS lien filings, and the total dollars collected since 1999.

FIGURE 6, Inflation-Adjusted Total Yield vs. Liens Issued²⁷



²⁴ IRS, Collection Report NO-5000-25 (Oct. 1, 2012). Of the 707,768 NFTLs filed in FY 2012, about 35 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.

²⁵ For a detailed discussion of the National Taxpayer Advocate's concerns about IRS lien filing policies, see Most Serious Problem: *Although the IRS "Fresh Start" Initiative has reduced the Number of Lien Notices Filed, the IRS has Failed to Determine if its Lien Policies are Clearly Supported by either Increased Taxpayer Compliance or Revenue, infra*; Introduction: *Introduction to Collection Issues: The IRS "Fresh Start" Initiative Has Produced Significant Improvements in Some Collection Policies; However, Significantly More Emphasis on Service Delivery Is Necessary to Realize the Full Benefits of These Important Changes*; 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*).

²⁶ The IRS began its fresh start Initiative in 2011 to help struggling taxpayers. It is discussed in more detail below.

²⁷ IRS, *IRS Data Book, Table 16, Delinquent Collection Activities, 1999-2011*; IRS, Collection Activity Report NO-5000-23 and 5000-25, *Collection Workload Indicators* (1999-2012).

Investigating the Impact of Liens on Taxpayer Liabilities and Payment Behavior

As shown above, overall inflation-adjusted collection revenue has not kept pace with the increase in lien filings.²⁸ 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.

In response to the National Taxpayer Advocate's concerns and as a part of the 2011 "fresh start" initiative to help financially struggling taxpayers, the IRS has made changes to its lien filing criteria:

- The dollar threshold for filing most NFTLs has doubled from \$5,000 to \$10,000, resulting in fewer NFTLs;²⁹
- The IRS has changed procedures for NFTL withdrawals after lien releases;³⁰
- The IRS provides for NFTL withdrawal in most cases where a taxpayer enters into a Direct Debit Installment Agreement (DDIA);³¹ and
- The IRS set the minimum NFTL filing threshold on subsequent tax periods at \$2,500 or more.³²

The IRS also reprogrammed its ACS,³³ which files NFTLs systemically, as follows:

- On February 24, 2011, ACS's systemic NFTL filing threshold was increased from \$5,000 to \$10,000; and
- On April 15, 2011, the ACS NFTL filing threshold was further increased to \$25,000.³⁴

The data for FY 2012 show that lien filings are down about 32 percent from FY 2011.³⁵ The IRS continues to file most NFTLs based on a threshold amount of liability, however, rather than considering taxpayers' individual circumstances and financial situations.³⁶

²⁸ The inflation-adjusted totals reflect the yearly total collection yields adjusted to 2012 dollars using the U.S. Consumer Price Index-All Urban 2012, U.S. Bureau of Labor Statistics.

²⁹ IRM 5.12.2.4.1 (Mar. 8, 2012); IRM 5.12.2.4.2.3 (Mar. 8 2012). The Collection Process Study (CPS), in which TAS actively participated, recommended raising the threshold to \$50,000. IRS, CPS 122 (Sept. 30, 2010).

³⁰ SB/SE, Interim Guidance Memorandum, Control No. SBSE-05-0112-008 (Jan. 4, 2012).

³¹ SB/SE, Interim Guidance Memorandum, Control No. SBSE-05-0312-029 (Mar. 13, 2012).

³² IRM 5.12.2.4.1 (Mar. 8, 2012).

³³ IRMs for both Revenue Officers and ACS generally state that the NFTL may be filed if the unpaid balance of assessment is \$10,000 or more. IRM 5.12.2.4.1 (Mar. 8, 2012); IRM 5.19.4.5.2 (May 20, 2011).

³⁴ IRS response to TAS information request (Oct. 1, 2012).

³⁵ IRS Collection Report NO-5000-25 reported Total Liens/Refiles by Enterprise Collection FY 2012, Run 10/1/2012, at 707,768.

³⁶ 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).

OBJECTIVES

In this study, TAS Research sought to better understand the impact that lien filing has on taxpayer liabilities and IRS revenue collection. We also explore whether the IA and OIC collection alternatives can improve these outcomes for both taxpayers and the IRS. To analyze these impacts we constructed the following groups from our study population:

1. All taxpayers included in our study against whom the IRS filed liens and those against whom the IRS did not file liens;
2. Taxpayers who received IAs from the IRS and those who did not;
3. Taxpayers who received OICs from the IRS and those who did not; and
4. CNC hardship taxpayers who received OICs from the IRS and those who did not.

We then explored the following research questions:

1. Whether lien filing positively or negatively impacted the amount of payments taxpayers made against their total tax liabilities during the study period;
2. Whether lien filing positively or negatively impacted taxpayer total indebtedness to the IRS during the study period;
3. Whether IAs and OICs positively or negatively impacted the amount of payments taxpayers made against their total tax liabilities during the study period; and
4. Whether IAs and OICs positively or negatively impacted taxpayer total indebtedness to the IRS during the study period.

METHODOLOGY

In Phase 1 of this study, we use a two-step method to produce our cohort of comparable lien and non-lien taxpayers from the initial population of delinquent taxpayers. In Phase 2, we use subsets of the study population created in Phase 1 to conduct our analyses.

Phase 1 – Data Set Construction

The IRS criteria that determine when tax lien filings should occur³⁷ introduce a selection bias that must be addressed, or the estimation of the tax lien's impact in the second phase would produce biased results.³⁸

To overcome the selection bias arising from IRM criteria, we used propensity scores and a matching algorithm to generate matched pairs of lien taxpayers and non-lien taxpayers who are very similar with respect to the characteristics the IRS uses to make a lien filing determination.

³⁷ See IRM 5.12.1.13(2), IRM 5.12.2.8.1(4) & (5) and IRM 5.19.4.

³⁸ We note that a variety of circumstances prevent IRS employees from always consistently following the IRM lien filing criteria. For example, revenue officers in some geographic areas will work cases with lower balances due, 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. In other words, the IRS treats two similar cases very differently.

Investigating the Impact of Liens on Taxpayer Liabilities and Payment Behavior

The propensity score we generate is an estimate of the probability that a taxpayer will have a tax lien filed against his or her delinquent liability. To determine this conditional probability we use a logistic regression equation, where the dependent variable is a binary variable (one indicates a lien has been filed and zero indicates a lien has not been filed).³⁹ The independent variables are the covariates that capture the underlying conditions for tax lien filing, which the IRM specifies.⁴⁰ Figures 7 and 8 report the lien filing criteria we identified in the IRS data and used to create our covariates. These criteria were in place at the time these delinquent taxpayers faced lien filing determinations (from 2002 to 2004).⁴¹ The use of this information permits the model to more closely reflect IRS practices.

FIGURE 7, 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).

FIGURE 8, Criteria Captured in Model from IRM 5.19.4.5.2

ID	IRM Provision
1	Currently not collectable accounts, where the 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: <ul style="list-style-type: none"> ♦ Broken a promise. ♦ 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 estimates the relationship between these criteria and the likelihood of lien filing to generate propensity scores. It 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.

³⁹ We actually model the dependent variable as a logit, which is the natural log of the odds derived from the dependent variable binary outcomes.

⁴⁰ Due to limitations in IRS data, we were not able to capture certain criteria for lien filings.

⁴¹ 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.

Investigating the Impact of Liens on Taxpayer Liabilities and Payment Behavior

The propensity scoring model we use in our study incorporates changes to the model we used in our 2011 study. In 2011, we defined our population of lien taxpayers as those who had received their lien between 2002 and 2004, and we excluded taxpayers who received their liens after 2004 from our dataset (we will refer to these taxpayers as late-lien taxpayers). Subsequently, we determined that these late-lien taxpayers should be included as part of the population of non-lien taxpayers during the Phase I propensity scoring and matching processes, since they were part of the population of delinquent taxpayers we were analyzing⁴² and were non-lien taxpayers prior to 2005.

We also made another change to the propensity scoring process. As discussed above, propensity scoring uses the values for the variables that drive the lien filing determination to calculate the probability that the IRS will file a lien against each taxpayer included in our dataset. These variables should therefore be set to their values at the time the lien filing determination was made. During our review of the Phase I propensity scoring process, TAS Research determined that four variables should be reconstructed to ensure that their values reflected their status at the time of lien filing. The affected variables appear in italics in Figure 9 below, along with a description of how we defined them. The figure describes all the variables used in the Phase I propensity scoring process.

FIGURE 9, Independent Variables for Propensity Scoring Model

Label	Variable Description
<i>aggbal5000</i>	A binary indicator where one indicates that an aggregate assessed balance equal to or greater than \$5,000 existed at the date of the lien filing for lien taxpayers or proxy lien filing for non-lien taxpayers. ⁴² Otherwise, it is zero.
<i>bnkrpty_ind</i>	A binary indicator where one indicates the taxpayer declared bankruptcy at or before the date of lien filing for lien taxpayers or proxy lien filing for non-lien taxpayers. Otherwise, it is zero.
<i>col_noncompl</i>	A binary indicator where one indicates the taxpayer failed to file a required return at or before the date of lien filing for lien taxpayers or proxy lien filing for non-lien taxpayers. Otherwise, it is zero.
<i>CNC_ind</i>	A binary indicator where one indicates the taxpayer was in CNC status at the date of lien filing for lien taxpayers or proxy lien filing for non-lien taxpayers. Otherwise, it is zero.
<i>default</i>	A binary indicator where one indicates the taxpayer defaulted on an installment agreement at or before the date of lien filing for lien taxpayers or proxy lien filing for non-lien taxpayers. Otherwise, it is zero.
<i>hardship_ind</i>	A binary indicator where one indicates the taxpayer was in CNC status due to economic hardship at the date of lien filing for lien taxpayers or proxy lien filing for non-lien taxpayers. Otherwise, it is zero.
<i>instlmt</i>	A binary indicator where one indicates the taxpayer was in installment agreement status at the date of lien filing for lien taxpayers or proxy lien filing for non-lien taxpayers. Otherwise, it is zero.
<i>ltnmodbal</i>	The logarithm of the dollar amount of the total balance of all delinquent modules at the time the IRS filed a lien (between 2002 and 2004) against the taxpayer's delinquencies. The proxy lien date was used for non-lien taxpayers. This variable is not in the IRM criteria, but significantly affected the lien filing determination.

⁴² TAS Research analyzed the population of delinquent individual tax return filers (*i.e.*, those who file Forms 1040, *U.S. Individual Income Tax Return*) in TDA status who incurred unpaid individual tax liabilities in 2002 and had no such liabilities at the beginning of that year. The study also includes delinquent trust fund recovery penalty amounts. These are assessments against individual taxpayers who are generally officers of a corporation and who therefore have a fiduciary responsibility for unpaid employment tax amounts withheld from employees of that corporation.

⁴³ To compute a proxy lien filing date for our non-lien taxpayers, we first calculated the median days to lien filing from the date our lien taxpayers acquired their tax liability. For our non-lien taxpayers, we then added this number of days to the date they acquired their tax liability to determine the proxy lien filing date.

Investigating the Impact of Liens on Taxpayer Liabilities and Payment Behavior

We use the estimated propensity scores to create matched pairs of lien taxpayers with non-lien taxpayers. To ensure the best possible match between the lien and non-lien taxpayers, we matched taxpayers who were entering into CNC status at the time of lien filing against other non-lien taxpayers in CNC status. We matched the remaining lien taxpayers against the non-CNC population of delinquent non-lien taxpayers.

We used a propensity score matching technique known as the “nearest available neighbor” method.⁴⁴ The matched pairs allow the two groups (tax lien taxpayers and non-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 non-lien 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 non-lien 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.

Phase 2 – Data Analysis

As discussed above, we used propensity scoring and a matching process to create matched pairs of lien and non-lien taxpayers. We then divided the pairs into comparable groups of lien and non-lien taxpayers. Finally, we analyzed these groups to create several subgroups of taxpayers:

- Those who were or were not recipients of installment agreements;
- Those who were or were not recipients of offers in compromise; and
- Those who entered into currently not collectible status due to economic hardship prior to or within 90 days after the time of lien filing or proxy lien filing (we broke out CNC hardship taxpayers who received OICs separately).

To determine the change in total tax liability for our various groups of taxpayers, we calculated the ratio of the 2010 ending entity balance (the balance including penalty and interest of all outstanding individual tax liabilities owed by the taxpayer) to the entity balance of the taxpayer at the time of lien filing or proxy lien filing.⁴⁵

⁴⁴ We used a nearest-neighbor technique for matching the lien units and non-lien units that is called the “greedy” matching technique and was developed by Jon Kosanke and Erik Bergstralh.

⁴⁵ To compute a proxy lien filing date for our non-lien taxpayers, we first calculated the median days to lien filing from the date our lien taxpayers acquired their tax liability. For our non-lien taxpayers, we then added this number of days to the date they acquired their tax liability to determine the proxy lien filing date.

We also looked at the total dollars the IRS actually collected from our various groups of taxpayers. We used the total payments from the Accounts Receivable Dollar Inventory (ARDI) module table to compute the amounts collected from these taxpayers between 2002 and 2010 and calculated a ratio, which compares the amount actually paid to the amount owed at the time of lien filing or proxy lien filing.⁴⁶

Limitations

We matched about 93 percent of all lien cases (taxpayers against whom the IRS filed liens between 2002 and 2004). We could not match many of the lien cases with propensity scores of .85 and higher, because fewer non-lien than lien cases had scores that high. Therefore, we excluded those cases from our dataset and this study does not pertain to those scores. We conducted two matches of lien cases against the population of non-lien cases to create more matches, so some non-lien cases were used twice and have a weight of two.⁴⁷

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 show better outcomes for the non-lien group are conservative estimates. See Appendix A for an in-depth discussion of how we implemented the IRS's lien filing practices in the process.

To do our analyses, we needed to observe taxpayer behavior over an extended period of time (our study period runs from 2002 through 2010). In 2011, the IRS began its "fresh start" initiative and has made a number of changes to its lien filing criteria. Additional research is required to determine whether these changes will impact the outcomes we observed in our current study.

FINDINGS

All Lien and Non-lien Taxpayers

As shown in Figure 10 below, we found that on average, the total tax liabilities of both lien taxpayers and non-lien taxpayers was greater at the end of the study period than at the time of lien filing (or proxy lien filing for non-lien taxpayers), but that the liabilities of lien taxpayers grew more.

⁴⁶ Our calculations of revenue collected do not include refund offsets, which are not taxpayer payments *per se*. Offsets are tax return refund amounts that the IRS uses to offset outstanding tax liabilities rather than refunding them to the taxpayer. During the study period, the mean amount of refund offsets from non-lien taxpayers was \$19,738. The mean amount of offsets from lien taxpayers was \$7,858.

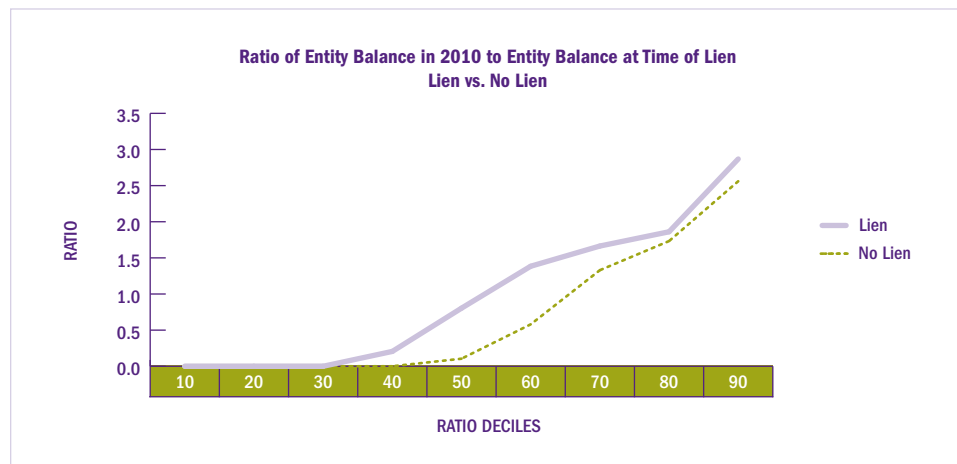
⁴⁷ We note that we also calculated the changes in taxpayers' entity balances excluding duplicates and found no significant differences from our reported results.

Investigating the Impact of Liens on Taxpayer Liabilities and Payment Behavior

FIGURE 10, Mean Entity Balance – Lien vs. Non-lien Taxpayers⁴⁸

	Number of Taxpayers	Mean Balance at Time of Lien Filing	Mean Balance 2010	Ratio 2010/Lien Date
Lien	65,249	\$37,486	\$45,314	1.21
No lien	65,249	\$34,813	\$38,635	1.11

When we looked at the distribution of taxpayer liabilities, we found that nearly 50 percent of lien taxpayers owed at least as much in 2010 as they did at the time of lien filing, and that nearly 40 percent owed at least 40 percent more.

FIGURE 11, Distribution of Entity Balances – Lien vs. Non-lien Taxpayers

We also found that lien taxpayers paid significantly less on average towards their total IRS liabilities than non-lien taxpayers (see Figure 12 below).

FIGURE 12, Total Payments – Lien vs. Non-lien Taxpayers

	Mean Balance at Time of Lien Filing	Mean Payments	Ratio Payments/Balance
Lien	\$37,486	\$25,845	0.69
No Lien	\$34,813	\$38,477	1.11

Concerned with the overall poor performance of both lien and non-lien taxpayers in paying down their tax liabilities, we then looked at whether the IA and OIC collection alternatives appeared to help taxpayers become current on their tax debts.

⁴⁸ As discussed in the Methodology section, some non-lien taxpayers were used twice during the matching process. We are showing the weighted counts of non-lien taxpayers throughout this report, since our calculations are based on the weighted counts. The actual number of non-lien taxpayers, excluding duplicates, was 44,563.

Investigating the Impact of Liens on Taxpayer Liabilities and Payment Behavior

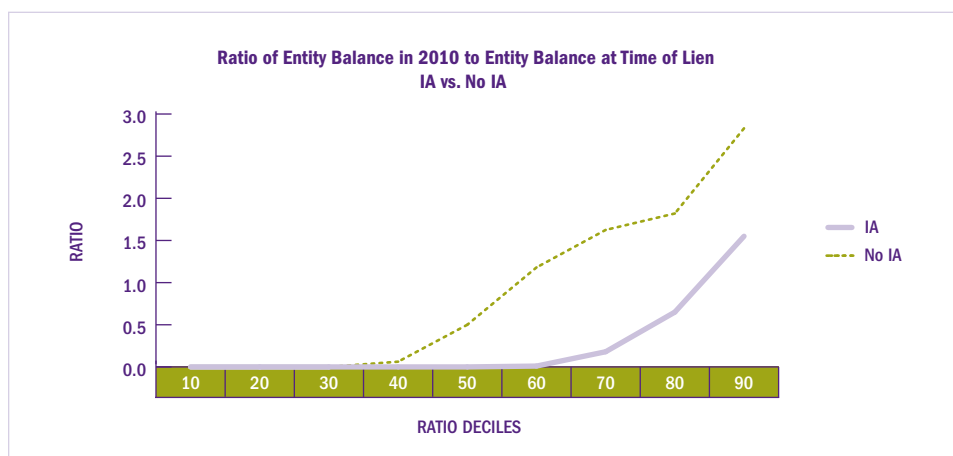
IA Taxpayers and Non-IA Taxpayers

As shown in Figure 13 below, we found that on average, taxpayers with IAs did significantly better than those without IAs in reducing their total indebtedness to the IRS.

FIGURE 13, Mean Entity Balance – IA vs. Non-IA Taxpayers

	Number of Taxpayers	Mean Balance at Time of Lien Filing	Mean Balance 2010	Ratio 2010/Lien Date
IA	10,531	\$27,017	\$15,270	0.57
No IA	119,967	\$36,951	\$44,319	1.20

When we looked at the distribution of taxpayer liabilities, we found that more than half of the taxpayers with IAs had fully paid off their tax liabilities by 2010.

FIGURE 14, Distribution of Entity Balances – IA vs. Non-IA Taxpayers

We also found that IA taxpayers paid significantly more on average towards their total IRS liabilities than non-IA taxpayers (see Figure 15 below).

FIGURE 15, Total Payments – IA vs. Non-IA Taxpayers

	Mean Balance at Time of Lien Filing	Mean Payments	Ratio Payments/Balance
IA	\$27,017	\$44,989	1.67
No IA	\$36,951	\$31,035	0.84

Investigating the Impact of Liens on Taxpayer Liabilities and Payment Behavior

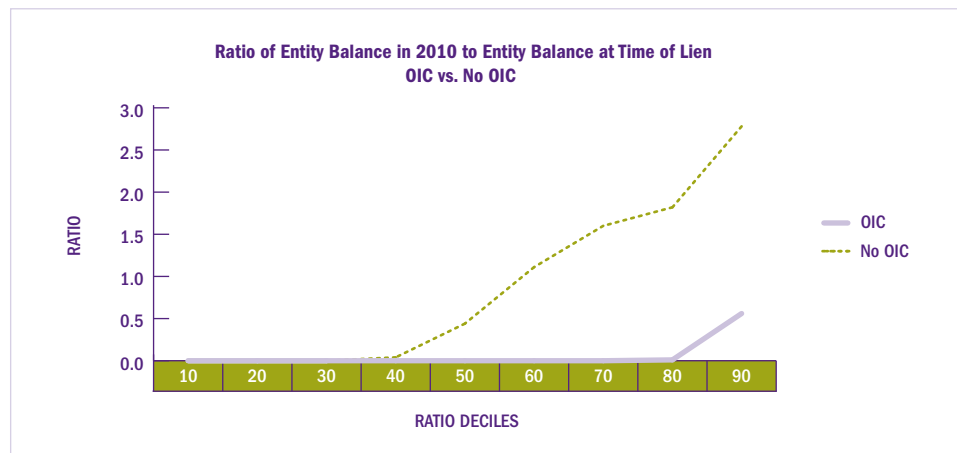
OIC Taxpayers and Non-OIC Taxpayers

As shown in Figure 16 below, we found that on average, taxpayers with OICs fared significantly better than those without OICs in reducing their total indebtedness to the IRS.

FIGURE 16, Mean Entity Balance – OIC vs. Non-OIC Taxpayers

	Number of Taxpayers	Mean Balance at Time of Lien Filing	Mean Balance 2010	Ratio 2010/Lien Date
OIC	4,026	\$68,917	\$8,763	0.13
No OIC	126,472	\$35,106	\$43,032	1.23

When we looked at the distribution of taxpayer liabilities, we found that more than 70 percent of the taxpayers with OICs had no tax liabilities in 2010.

FIGURE 17, Distribution of Entity Balances – OIC vs. Non-OIC Taxpayers

We found, however, that on average, OIC taxpayers paid significantly less than non-OIC taxpayers toward their tax liabilities, suggesting that their reductions in liabilities were primarily due to IRS write-downs based on reasonable collection potential (RCP) (see Figure 18 below).⁴⁹

⁴⁹ The IRS calculates RCP as an amount equal to the value of all of the taxpayer's equity in assets, plus future income (net of reasonable living expenses). See IRM 5.8.5 (Oct. 22, 2010). When the IRS calculates a taxpayer's reasonable collection potential, it will now look at only one year of future income for offers paid in five or fewer months, down from four years, and two years of future income for offers paid in six to 24 months, down from five years. All offers must be fully paid within 24 months of the date the offer is accepted. See IRS news release IR-2012-53, May 21, 2012.

Investigating the Impact of Liens on Taxpayer Liabilities and Payment Behavior

FIGURE 18, Total Payments – OIC vs. Non-OIC Taxpayers

	Mean Balance at Time of Lien Filing	Mean Payments	Ratio Payments/Balance
OIC	\$68,917	\$28,959	0.42
No OIC	\$35,106	\$32,263	0.92

We note, however, that in these cases the IRS has determined that OIC taxpayers have limited ability to pay. The accepted offer amount represents the full amount the IRS estimates it can collect from these taxpayers. We therefore decided to look at the impact of OICs on taxpayers that the IRS has identified as having limited ability to pay, *i.e.*, CNC hardship taxpayers.

CNC Hardship Taxpayers

We found that on average CNC hardship taxpayers ended up owing more relative to their liabilities at the time of lien filing or proxy lien filing than the other groups of taxpayers we studied (see Figure 19 below).

FIGURE 19, Mean Entity Balance – CNC Hardship Taxpayers with and without Liens

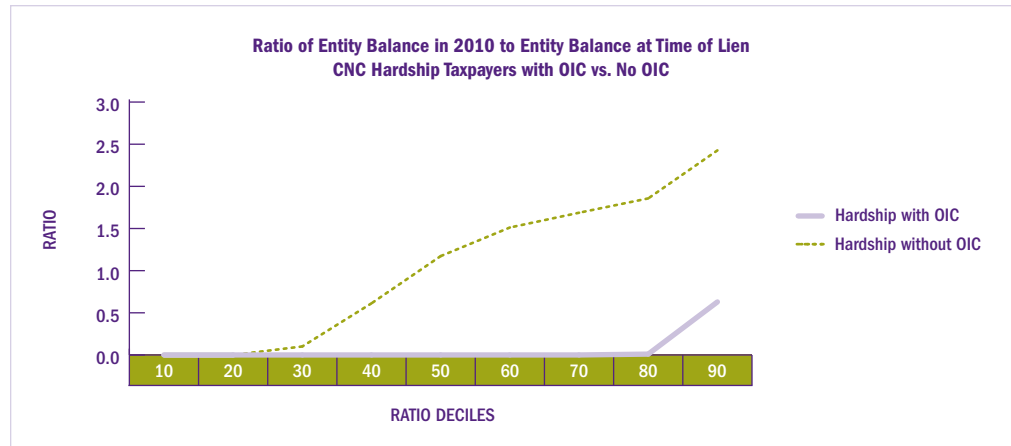
	Number of Taxpayers	Mean Balance at Time of Lien Filing	Mean Balance 2010	Ratio 2010/Lien Date
CNC Lien	8,321	\$55,475	\$83,263	1.50
CNC No Lien	5,659	\$27,800	\$42,403	1.53

We also determined that the IRS collected relatively little from CNC hardship taxpayers compared to the other groups discussed above, and that the IRS collected significantly more from CNC hardship taxpayers when they had accepted OICs (see Figure 20 below).

FIGURE 20, Total Payments – CNC Hardship Taxpayers with and without OICs

	Number of Taxpayers	Mean Balance at Time of Lien Filing	Mean Payments	Ratio Payments/Balance
CNC with OICs	602	\$57,428	\$22,696	0.40
CNC without OICs	13,378	\$43,680	\$15,357	0.35

When we looked at the distribution of taxpayer liabilities, we found that about 80 percent of the CNC hardship taxpayers with OICs had no tax liabilities in 2010, while only about 20 percent of CNC hardship taxpayers without OICs had zero balances.

FIGURE 21, Distribution of Entity Balances – CNC Hardship Taxpayers with and without OICs

CONCLUSIONS

Our study covers taxpayers against whom the IRS filed liens, and comparable non-lien taxpayers. For these taxpayers, our results show that in general, and given the lien filing criteria in place during 2002–2004, lien filing was associated with unfavorable outcomes for both the IRS and the taxpayer, *i.e.*, the IRS collected less revenue from lien taxpayers and the total tax liabilities of lien taxpayers increased more.

It is noteworthy, however, that both the lien and non-lien taxpayer groups had difficulty paying down their tax liabilities, and while non-lien taxpayers fared better, on average, both groups were in more debt to the IRS in 2010, the end of the study, than they were at the time of lien filing or proxy lien filing. This problem was most severe for CNC hardship taxpayers, who on average ended up owing about 50 percent more to the IRS in 2010 than they did at the time of lien filing or proxy lien filing.

The IA and OIC collection alternatives were associated with better outcomes for taxpayers and the IRS. Over 50 percent of IA taxpayers and over 70 percent of OIC taxpayers were out of debt to the IRS at the end of the study period. Furthermore, the IRS collected about 45 percent more tax revenue from IA taxpayers than from taxpayers without IAs, and almost twice as much in percentage terms based on the amount owed at the time of lien filing or proxy lien filing.⁵⁰

While the IRS collected significantly less from taxpayers with approved OICs than from the other taxpayers included in this study, the accepted offer amount represents the full amount the IRS estimated it could collect from these taxpayers. Moreover, when we looked

⁵⁰ As reported in the Findings section of this study, the IRS collected \$44,989 on average from IA taxpayers, which is about 167 percent of the amount they owed at the time of lien filing, and \$31,035 on average from taxpayers without IAs, which is about 84 percent of the amount these taxpayers owed at the time of lien filing.

at CNC hardship taxpayers, the study group with the most unfavorable outcomes for both the taxpayer and the IRS,⁵¹ we found that they paid considerably more to the IRS if they were granted OICs, and were generally out of debt at the end of the study period.⁵²

These study findings demonstrate the need for continued study of the lien filing criteria to maximize the benefits of lien filing to the IRS and minimize its adverse effects on taxpayers. Additionally, the findings underscore the benefits of active promotion and use of the IA and OIC collection alternatives, and highlight the likely benefits to the IRS and taxpayers of increased use of OICs for CNC hardship taxpayers.

⁵¹ On average, CNC hardship taxpayers paid the least to the IRS and had the greatest percentage increase in their total tax liabilities.

⁵² CNC hardship taxpayers with approved OICs paid \$22,696 on average, compared to \$15,357 for CNC hardship taxpayers who did not have OICs. About 80 percent of CNC hardship taxpayers with OICs were out of debt to the IRS at the end of the study period, compared to only about 20 percent of CNC hardship taxpayers who did not have OICs.

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 3/1/2004.⁵³ 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:⁵⁴

- 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:⁵⁵

- 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

⁵³ The next revision to IRM 5.12.2.4.1 occurred May 5, 2005.

⁵⁴ IRM 5.12.1.13(2) (July 31, 2001).

⁵⁵ IRM 5.12.2.8.1(4) & (5) (Mar. 1, 2004).

Investigating the Impact of Liens on Taxpayer Liabilities and Payment Behavior

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 8/30/2001.⁵⁶ IRM 5.19.4.5.2(2)-(7) states that liens should be filed in these six situations, some of which overlap with IRM 5.12.2:⁵⁷

- 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.

⁵⁶ The next revision to IRM 5.19.4 occurred Aug. 1, 2005.

⁵⁷ IRM 5.19.4.5.2(2)-(7) (Aug. 30, 2001).

Investigating the Impact of Liens on Taxpayer Liabilities and Payment Behavior

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.

TABLE 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 collectible. [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.

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 captured.

Investigating the Impact of Liens on Taxpayer Liabilities and Payment Behavior

TABLE 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>i.e.</i> , taxpayer incurred another balance due.
6	Consider lien filing in any situation where taxpayer has: <ul style="list-style-type: none"> ♦ 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	<ul style="list-style-type: none"> ♦ Indicator of default of installment agreement. ♦ Indicator of taxpayer noncompliance with a filing requirement.

Source: IRM 5.19.4.5.2; NA=Not Available.

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 characteristics 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.

Investigating the Impact of Liens on Taxpayer Liabilities and Payment Behavior

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