Estimating the Compliance Cost of the U.S. Individual Income Tax[1]

John L. Guyton, John F. O'Hare and Michael P. Stavrianos
IBM Business Consulting Services
12902 Federal Systems Park Drive
Fairfax, VA 22033

Eric J. Toder
Internal Revenue Service
1111 Constitution Ave., NW
N:ADC:R:R
Washington, DC 20224

Presented at the 2003 National Tax Association Spring Symposium

Abstract

This paper focuses on the design, development, and use of the Individual Taxpayer Burden Model (ITBM) – a microsimulation model developed jointly by IBM and the IRS to estimate the amount of time and money that individuals spend on federal tax compliance. First, the authors summarize the methodology that was used to define, measure, and model tax compliance burden. Next, they present estimates of overall compliance burden, and results from a simulation of economic and policy changes that took place between Tax Year 2000 and Tax Year 2001. Finally, they discuss applications of the burden model and review future development plans.

Introduction

Each year, individuals and businesses in the United States submit more than 200 million tax returns (including estimated tax forms and supplemental documents) to the Internal Revenue Service (IRS). The IRS uses the information in these returns, recorded on hundreds of distinct forms, to administer a tax system whose rules span thousands of pages. Managing such a complex and broad-based tax system is costly—in FY02, the budget of the IRS was nearly $10 billion. However, these costs represent only a small fraction of the total cost of administering the tax system. The costs in terms of time and money that citizens incur in order to comply with tax laws and regulations far exceed the budget of the IRS.

Since the 1980s, IRS estimates of taxpayer burden have been based on a model developed in 1984 by the IRS and Arthur D. Little, Inc. (ADL). The model was designed to measure only a subset of total compliance burden—focusing on paperwork burden as defined by the PRA of 1980. As the economy, tax laws, and characteristics of the population have changed, the survey data that underlie the estimates in the IRS/ADL model have become increasingly out-of-date. In

addition, the model can simulate only a narrow range of policy changes because it does not adequately represent the characteristics of the tax law that generate burden.

Recognizing the need for improved measurement and management of compliance burden, IRS Commissioner Charles Rossotti established in 1998 a task force to study the issue and make recommendations regarding future research. The task force included representatives from IRS, the Department of Treasury (Office of Tax Analysis and Assistant Secretary for Management), the Office of Management and Budget, and the General Accounting Office.

In 1998, the IRS contracted with IBM (formerly PricewaterhouseCoopers) to develop an improved methodology for measuring and modeling the compliance burdens imposed by the tax system. This study will assist the IRS in its mission to provide taxpayers with top quality service—and it will help the IRS understand the burdens placed on taxpayers by tax laws, tax system administration, and changes to those factors. Specific objectives related to this overarching goal include:

- **Measure the Level of Taxpayer Burden.** Develop a measurement approach that provides detailed and accurate measures of taxpayer burden, in terms of both time and out-of-pocket costs.
- **Support Analysis of Tax Policy.** Develop a model that allows analysts to estimate the burden impact of changes in the tax system, thereby supplementing existing analyses of revenue and distributional impacts.
- **Guide IRS Administrative Initiatives.** Support the identification, evaluation, and prioritization of IRS burden reduction initiatives, including proposals to simplify tax forms, streamline reporting requirements, and alleviate record keeping burdens.

In light of the complexity and scope of this issue, the IRS is building the capacity to measure and model compliance burden in incremental steps, starting with two segments of individual taxpayers—Wage and Investment (W&I) and Self-Employed (SE). In January 2003, IBM completed the Individual Tax Burden Model (ITBM), which simulates burden experienced by individual taxpayers (both W&I and SE) during the pre-filing and filing time periods.

IBM is now working with IRS on a complementary model of compliance burden among Small Business (SB) taxpayers. Like the individual taxpayer study, the SB study focuses on compliance burdens incurred in the pre-filing and filing time periods. Unlike the W&I and SE models of individual tax burden, the scope of this new research extends beyond federal income tax compliance burden to include compliance burdens associated with employment taxes and excise taxes. It also includes costs firms incur for activities associated with income tax compliance of their employees, such as withholding income tax from wages and ensuring that employee benefits qualify for favorable tax treatment.

This paper focuses on the design, development, and use of the Individual Taxpayer Burden Model (ITBM). In the next section, we summarize the methodology that was used to define, measure, and model compliance burden among individual taxpayers.[2] Next, we present overall estimates of compliance burden, and highlight key findings. Next, we present results from a simulation of economic and policy changes that took place between Tax Year 2000 and Tax Year 2001. Finally, we discuss applications of the burden models and review future development plans.

Methodology

Definition of Burden

In theory, the total burden of the tax system includes all of the costs and inefficiencies that would disappear if the federal tax system did not exist. For the purposes of this study, it is useful to think of this burden as having two components—tax liability and excess burden. **Tax liability** is the net cost of all transfer payments between taxpayers and the IRS, including the tax bill itself, penalties or interest that are due as a result of late or incorrect payment, as well as the interest foregone or gained due to incorrect withholding of taxes during the year. **Excess burden** includes all of the remaining resource costs of the federal tax system. There are three types of excess burden:

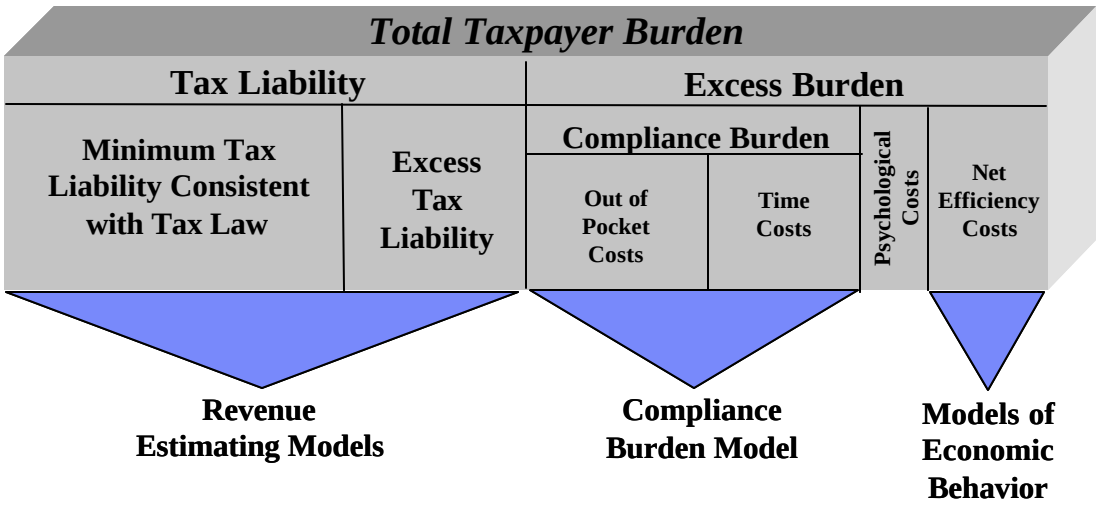
- **Taxpayer Compliance Burden,** which includes the time and money spent by taxpayers to comply with the federal tax system. In addition to completing and submitting tax forms, this category can include record keeping, tax planning, gathering tax materials, using IRS services, and working with a tax professional.
- **Efficiency Costs,** which reflect the cost of non-optimal behavior induced by the tax system. For example, taxpayers may choose to alter their labor supply, consumption patterns or investment decisions in response to tax incentives that favor selected activities.
- **Psychological Costs,** which include the dissatisfaction, frustration, and anxiety of taxpayers caused by their interaction with the tax system.

Taxpayers can affect the allocation of burden among tax liability and the three excess burden categories through their behavior and reactions to the tax system. For example, taxpayers can spend more time and money (components of excess burden) on tax planning in order to reduce the amount of tax they owe (the tax liability component of burden). Similarly, changes in tax

policy or in the administration of that policy may affect total burden by changing any of the components of excess burden. Suppose, for example, that Congress enacts a new tax credit for a selected type of investment. Some taxpayers may ignore the credit to avoid any additional costs of compliance. This would result in no change to either tax liability or excess burden. Others may claim the credit for investments they were already making, thus reducing their tax liability but increasing their compliance burden. A third group may invest more in the qualifying asset, thereby incurring additional compliance costs. This induced investment could reduce economic efficiency by re-allocating capital to assets with lower returns, assuming there are no external benefits associated with the subsidized asset.

No single measure of burden is appropriate for all purposes. IRS needs the flexibility to combine different components of burden to construct measures that are suitable for a variety of purposes. The segmented definition of total burden described above, and illustrated in Table 1, allows for this type of aggregation.

Table 1: Components of Total Taxpayer Burden



As shown in Table 1, different types of analytical models are used currently to estimate the major components of total taxpayer burden. The tax liability component of total taxpayer burden is estimated by the U.S. Treasury Department using microsimulation models based on tax return information. The efficiency cost component of excess burden is generally measured using models of economic behavior, either partial or general equilibrium. Psychological costs, which are not captured in any of the other models, are generally considered to be beyond the practical ability of computer models to estimate.[3]

While all the components of total burden are important, the focus of this study is taxpayer compliance burden—the time and money that taxpayers spend to comply with the federal income

tax system.[4] The advantages of this definition include: (1) it is an intuitive concept of compliance burden, (2) it eliminates redundancies and potential inconsistencies across burden components (e.g. avoids double counting burden that is picked up in revenue estimates), and (3) it is consistent with Office of Management and Budget (OMB) burden measurement guidelines for the Paperwork Reduction Act.

An estimate of the dollar cost of compliance burden that includes both out-of-pocket costs and a monetized value of taxpayer time is essential to support decisions that affect tradeoffs among three outcomes of IRS activities - IRS budgetary costs, tax revenue (through both direct enforcement yield and voluntary compliance rates), and taxpayer burden. Currently, there is no consensus in the research community regarding the best method for monetizing time. In light of this absence of consensus, the ITBM was designed to report time and money costs separately. This allows users to select the value or values of taxpayer time used to monetize time burdens. In addition, IRS commissioned a research paper as part of this study to review alternative monetization methodologies as they relate to tax compliance burden.[5]

Measuring Burden

IBM collected data from W&I and SE taxpayers to measure the time and out of pocket expenses incurred to comply with federal tax rules and regulations.[6] Both sets of taxpayers were asked questions about a variety of demographics, tax related activities, and compliance methods (e.g., use of a paid professional), as well as questions about the time and money they spent to comply with tax rules and regulations. Respondents provided this information either by participating in a 15 to 20 minute telephone interview or by completing a 10 to 12 page self-administered questionnaire.

In evaluating the success of our taxpayer surveys, we relied on two primary metrics—response rate and number of completed interviews relative to the desired number of completes. Our goal in the W&I survey was to complete 6,000 interviews—300 in each of the 20 sampling strata. In the end, we completed 6,366 interviews, including approximately 60 percent (3,815) by telephone and 40 percent (2,551) by mail. For the SE study, we completed 9,081 interviews—exceeding our goal of 8,000.[7] The overall response rate was 60.5 percent for the W&I study and 56.4 percent for the SE study.

Qualitative research conducted early in the study revealed that many SE taxpayers were unable to break out their paid professional expenses into, (1) fees paid for Federal income tax services, versus (2) fees paid for other services (e.g., financial planning, employment tax compliance, business tax returns). To support the decomposition of paid professional fees, IBM conducted a separate survey of paid professionals. IBM completed 415 interviews with paid professionals between October and December 2001.

Paid professionals who qualified for the study were presented with two different scenarios and asked to allocate their fee (in percentage terms) across the services included in each scenario.[8] Table 2 offers a snapshot of the reported allocations. For scenarios presented to paid professionals that did not include payroll, accounting or entity returns, the mean Federal tax-related portion of fees is quite high, ranging from 85 percent (Schedule E – S Corp / Partnership / Rental) to 91 percent (Form 2106). Scenarios that include payroll, accounting, or entity returns have a much lower mean tax-related proportion of fees. On average, paid professionals that were given the scenario for Schedule E – S Corp with payroll only allocated 26 percent of their fees to Federal tax-related services.

Table 2: Distribution of Paid Professional Fees Allocated to Federal Tax Related Services

Scenario	Sample n	Mean	Minimum	First Quartile	Median	Third Quartile	Maximum
Schedule C - Base	164	88%	50%	80%	90%	95%	100%
Schedule C - Accounting	71	49%	14%	30%	50%	65%	99%
Schedule C - Payroll	44	42%	12%	29%	40%	53%	90%
Form 2106	53	91%	30%	90%	95%	100%	100%
Schedule E - Rental	68	89%	40%	80%	90%	99%	100%
Schedule E - S/P - Accounting	73	31%	5%	20%	30%	40%	84%
Schedule E - S/P - Base	129	87%	0%	80%	90%	95%	100%
Schedule E - S/P - Entity Return	76	39%	10%	24%	40%	50%	90%
Schedule E - S/P - Payroll	41	26%	0%	15%	25%	35%	88%
Schedule E - S/P - Rental	29	85%	30%	80%	90%	95%	100%
Schedule E - S/P & Schedule C	44	90%	70%	83%	90%	95%	100%
Schedule E - Rental & Schedule C	30	88%	65%	85%	90%	95%	100%
Total	822	69%	0%	45%	80%	90%	100%

Estimating Factors Associated With Burden

In order to develop an empirical model of taxpayer behavior and burden, we needed a data file with information on each outcome variable, as well as a wide range of explanatory variables. To create this data file, we performed a micro-level link between survey responses and IRS administrative data records. The survey data provides information on the level of compliance burden, as well as taxpayer demographics and behavior. The administrative data provides detailed tax return information, both from the survey year and from the preceding tax year.[9]

IBM applied econometric and statistical techniques to this estimation data file to identify relationships between taxpayer characteristics, taxpayer decisions, and compliance burden. Specifically, multinomial logistic and OLS regression equations were used to simulate four key outcomes in the model: (1) preparation method, (2) submission method, (3) time burden, and (4) money burden.

IBM explored a number of different model specifications during the estimation phase of the project. Different specifications were used to test a wide array of theoretical and empirical predictor variables, and to experiment with transformations of these variables. In the end, three groups of explanatory variables were found to be major drivers of time and money burden: (1) taxpayer characteristics, including educational attainment, self-employment status, and marital

status; (2) compliance methods, particularly use of a paid professional; and (3) complexity of the tax return, as measured by an "attribute index."

Creating an Index of Tax Return Complexity

Indicator variables that represent specific filing outcomes (i.e., the lines completed by a given taxpayer) offer a proxy for the volume and complexity of compliance activities encountered by a taxpayer. Unfortunately, the sheer quantity of these indicators makes them difficult to use in an estimation model. Moreover, the fact that they are indicators only of current filing outcomes limits their value when trying to simulate the effect of future filing outcomes. To overcome these two weaknesses, a new class of variables (attribute variables) was created, with two primary objectives: (1) to quantify the volume and complexity of all filing outcomes using a smaller number of variables, and (2) to measure the volume and complexity of current filing outcomes in a way that allows future filing outcomes to be measured on an identical scale.

Attributes are characteristics of tax rules or requirements that allow us to infer, based on a taxpayer's filing outcomes, the activities and complexities faced by that taxpayer. In establishing a set of attributes to measure, several criteria must be met. First, the set of attributes should be comprehensive—describing both a wide range of factors that influence burden (e.g., activity volume, complexity, ambiguity), and a wide range of tax compliance activities (e.g., form completion, record keeping, tax planning). Second, each attribute should be objectively defined, so that the attributes associated with a filing outcome are only minimally subject to interpretation. Third, the attributes should be easy to measure, both for existing filing outcomes and for new filing outcomes.

The attribute framework we have developed attempts to balance these criteria by using three distinct types of attributes—source attributes, operation attributes, and complexity attributes.

This attribute framework was designed based on the notion that tax compliance burden is primarily a function of three things: (1) the information the taxpayer has to provide, (2) the operations the taxpayer performs on that information, and (3) the difficulty of gathering the information and performing operations. Source attributes describe the information source for a given filing outcome—such as an information return or a worksheet. Operation attributes describe the operations performed in order to realize a filing outcome—such as calculations, comparisons, or consulting a lookup table. Complexity attributes describe factors that influence the difficulty of performing the aforementioned activities—such as exceptions to the standard tax rules for certain individuals or certain income types.[10]

In principle, each of the twenty-one attributes that we measured could be used as a separate explanatory variable in the time and money burden equations. In practice, however, this approach is not practical due to the high degree of multicollinearity among the attributes. IBM addressed this issue in two steps. First, we employed principal component analysis to uncover the variation in the number of attributes recorded on different returns with a single principal component. Second, we used attribute-specific coefficients associated with the first principal component to construct an attribute index.

Representing tax return complexity through the use of a single attribute index allows analysts to simulate changes in tax burden resulting from a wide array of administrative and policy changes. By adjusting attribute counts to reflect a proposed scenario, analysts can simulate changes in return complexity, and estimate the resulting change in time and money burden. An important benefit of this approach is that it becomes possible to simulate the effects on taxpayer burdens of new tax structures (e.g., a new form) by measuring the attributes associated with the new structure. Such analyses would not be possible if return complexity were instead represented

by a series of tax form or line item dummy variables, since the estimated coefficients of these variables would not provide a link to the burden of a new tax structure.

Simulating Changes in Burden

The primary source of input data for the burden model is the Continuous Work History Sample (CWHS)—a simple random sample of tax returns prepared annually by IRS's Statistics of Income Division.[11] Selected data elements from the taxpayer survey are merged to the CWHS data file through a constrained statistical match. The resulting data file contains 70,781 observations, representing a population of 125.9 million individual taxpayers in tax year 2000 (TY00).

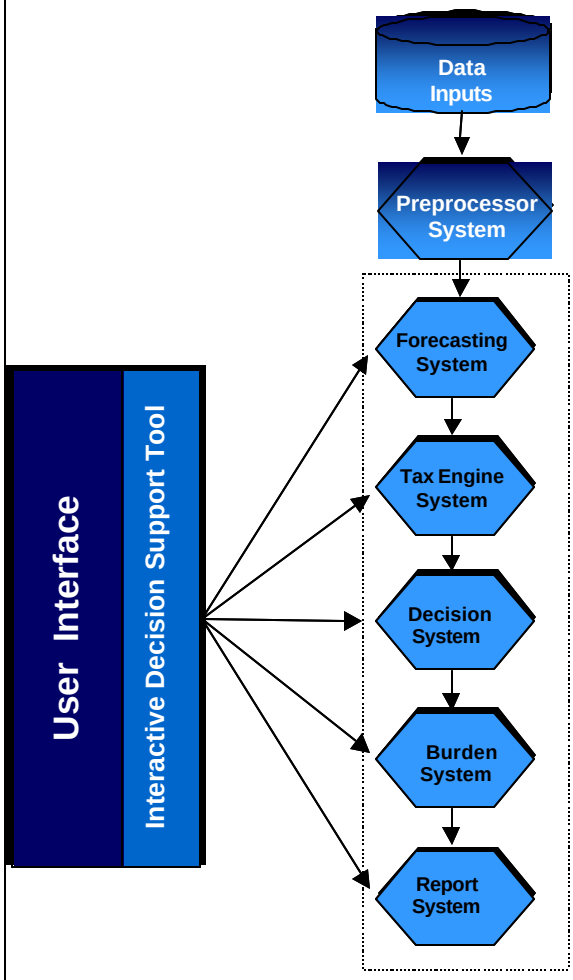
Once the input data file is prepared, it is passed through each component of the burden model to generate simulated outcomes (e.g., filing outcomes, compliance methods, burden levels). The simulated outcomes for each taxpayer are then compared against reported outcomes, and the model is calibrated to minimize the impact of any discrepancies. The nature of this calibration depends on the reason for the discrepancy and on our ability to resolve the discrepancy.

The model forecasts changes in burden through a microsimulation approach. Microsimulation is a technique widely used to investigate the impact of public policies by examining the behavior of agents at the micro-level. Microsimulation models are, in essence, computer programs that use a series of algorithms to simulate the behavior of agents, whose characteristics are provided by an input data file. Table 3 illustrates the high level functional components of the ITBM and provides a brief description of each model component.

To simulate the burden impact of a change in tax policy, administration, or other factors, a model user selects an input data file, then defines two scenarios—one that reflects the current or base state and a second that reflects an alternate state. The model then processes each taxpayer

record from the input data file, simulates its behavior under the two scenarios, and aggregates the results across all taxpayers. By comparing totals across scenarios, the user can see the projected impact of the alternate state on taxpayer behavior and burden.

Table 3: Functional Components of the Individual Taxpayer Burden Model



User Interface / IDST: A graphical user interface that gives users access to simulation levers and helps users create what-if scenarios

Data Inputs: Input to the burden model, describing taxpayer demographics, filing outcomes, and other key characteristics

Preprocessor System: A data preparation module that integrates tax return data with survey data and imputes selected data elements

Forecasting System: A data-aging module that adjusts weights and income/expense amounts based on user specifications

Tax Engine System: An enhanced tax calculator that evaluates tax rules and taxpayer characteristics to determine filing requirements and filing outcomes

Decision System: A model that simulates taxpayer decisions and behavior (e.g., preparation method, submission method, elective filing outcomes).

Burden System: A simulation model that predicts time and out-of-pocket burden based on taxpayer characteristics, filing outcomes, and compliance methods

Report System: A report generator that tabulates the distribution of burden across various dimensions and creates output data files

To illustrate the functionality of the ITBM, consider a scenario where the user wants to simulate the impact of increasing the standard deduction for married taxpayers in Tax Year 2005. The user simply adjusts the standard deduction parameter to the desired level (or specifies a set of indexing parameters), and then runs the simulation. The model simulates the following outcomes:

- **Forecast Module** ages the population to TY05 levels and computes the TY05 value of indexed tax parameters.

- **Tax Engine** computes TY05 tax liability for each taxpayer and simulates which forms they file. Due to the increase in the standard deduction, some taxpayers who previously itemized will now claim the standard deduction, and will no longer file Schedule A.
- **Decision System** simulates changes in taxpayer behavior, which could include: (1) reduced reliance on tax professionals among taxpayers who now have a simpler tax return, (2) increased use of electronic filing among taxpayers who now receive a refund, and (3) increased use of Form 1040EZ and 1040A among taxpayers who no longer itemize.
- **Burden System** computes a new attribute index for each taxpayer, and then simulates the level of time and money burden based on simulated outcomes under the scenario.

Note that the model does not simulate second order economic impacts that may occur under the scenario. For example, if there is an increase in the tax rate on capital gains, there may be a second order decrease in transactions that produce capital gains. The model does not simulate this outcome endogenously, but it does allow users to apply off-model data or analysis to study the burden impact of this outcome.

Main Differences with Prior Burden Methodology

From both a methodological and functional standpoint, IRS's new burden model represents a significant step forward relative to the model IRS has-used since the mid-1980s. Some of the most important advantages of the new model are listed below.

- **Computes Taxpayer-Level Burden Estimates.** Unlike the old model, which produces estimates of burden for each tax form, the new model produces estimates of burden at the taxpayer level. This has two important advantages. First, it allows IRS to examine the distribution of burden (or changes in burden) across different subgroups of taxpayers. Second, taxpayer-level burden estimates are conceptually more defensible than form-level

burden estimates, particularly for taxpayers who use tax software or paid professionals, and therefore do not interact directly with tax forms.

- **Provides Access to More Simulation Levers.** The old model computes burden as a function of a few simple determinants, such as the number of lines on a tax form and the number of words in the instructions. A model that measures burden based on the number of forms and words on a form has little value as a simulation tool because it can generate very misleading results. For example, adding a few more lines to make instructions clearer instead of referring the taxpayer to a code section for clarification would be seen to increase burden in such a model. In contrast, the ITBM assesses burden based on a wide range of variables related to tax policy, tax system administration, tax complexity, compliance methods, taxpayer behavior, demographic trends, and economic conditions.
- **Supports Integrated Evaluation of Tax Policy.** Because the ITBM includes a Tax Engine as one of its components, users can simulate changes in tax policy and trace through the resulting impacts on tax form usage rates and taxpayer burden. With the old model, users would have to conduct off-model analysis to simulate the impact of a policy change and tabulate changes in the use of various tax forms and schedules, then apply those results to form-level burden estimates produced by the ADL model.
- **Increases the Scope and Detail of Burden Estimates.** Unlike the old model, which produces burden estimates only in terms of time, the ITBM produces separate estimates of time and money burden, and allows the user to test alternative assumptions regarding the monetization rate for taxpayer time. Moreover, the ITBM measures and simulates a broader range of activities associated with burden than was addressed in the prior model, which focused on paperwork burden as defined by the PRA of 1980.

Overall Estimates of Compliance Costs

Tables 4 through 6 provide descriptive statistics on the overall level of compliance burden in tax year 2000 (TY00), as estimated using the ITBM. Key findings include:

- In TY00, 125.9 million individual taxpayers experienced a total compliance burden of 3.21 billion hours and $18.8 billion. This translates into an average burden of 25.5 hours and $149 per taxpayer. (Table 4)
- Although SE taxpayers represent only about 25 percent of all individual taxpayers, they experience approximately 60 percent of the time and money burden. As a result, the average time and money burden of SE taxpayers (59.5 hours, $363) is substantially greater than that of W&I taxpayers (13.8 hours, $75). (Table 4)
- Average time burden is higher among taxpayers who use software (40.1 hours) or a paid professional (26.1 hours) than it is among taxpayers who prepare their return independently (18.2 hours), although this is likely due to differences in the average complexity of their returns. Not surprisingly, taxpayers who use a paid professional spend much more money on tax compliance ($244) than do software users or self-preparers ($47 and $20, respectively). (Table 4)
- Average time and money burden are greater among taxpayers who have a more complex primary form (Form 1040 instead of 1040A or 1040EZ), and among taxpayers who have higher adjusted gross income. An exception to the latter pattern is that taxpayers with negative AGI have relatively high time and money burden, probably because many of these taxpayers have complex returns with a significant amount of positive income offset by business losses. (Table 4)

- Average return complexity—as measured by the attribute index—is dramatically higher for SE returns than for W&I returns. Similarly, returns that are prepared by a paid professional or with tax software tend to be more complex than returns that are self-prepared (Table 4).
- By applying a dollar value to each hour of time burden, we obtain an estimate of total monetized compliance costs for individual taxpayers. The authors make no recommendations regarding the appropriate monetization rate, but note that alternative rates (between $15 and $25 per hour) yield a total compliance cost that varies between $67 billion and $99 billion. Roughly 60 percent of these total compliance costs are experienced by SE taxpayers. (Table 5)
- Average compliance burden is consistently higher among taxpayers who have more complex tax returns, and this pattern applies to both W&I and SE taxpayers. For example, W&I taxpayers who itemize their returns spend an average of 21.3 hours and $114 on tax compliance, compared with 11.4 hours and $63 for W&I taxpayers who do not itemize. Similarly, SE taxpayers who file Form 6251 (Alternative Minimum Tax) spend an average of 97.3 hours and $752 on tax compliance, compared with 56.6 hours and $334 for SE taxpayers who do not file Form 6251. (Table 6)
- The attribute index appears to provide a reasonable proxy for overall return complexity. The index score is: (1) consistently higher for SE taxpayers than for comparable W&I taxpayers, and (2) consistently higher for taxpayers that file complex forms (e.g., itemizers, Schedule D filers) than it is for taxpayers who lack those forms. (Table 6)

Table 4 - Compliance Burden of Individual Taxpayers in TY00, by Selected Characteristics

	Hours per Return	Dollars per Return	Complexity Measure per Return
All Tax Returns	25.5	$149	0.304
By Taxpayer Type			
Wage and Investment	13.8	$75	(1.220)
Self-Employed	59.5	$363	4.714
By Preparation Method			
Paid Preparation	26.1	$244	1.221
Self Preparation w/o Software	18.2	$20	(1.708)
Software Preparation	40.1	$47	1.059
By Submission Method			
Paper	28.7	$155	0.696
TeleFile	8.2	$2	(4.367)
Other e-File	18.8	$151	(0.228)

	Hours per Return	Dollars per Return	Complexity Measure per Return
By Primary Form			
1040	33.8	$205	2.016
1040A	10.9	$64	(1.847)
1040EZ	8.1	$17	(4.355)
By Adjusted Gross Income			
Negative AGI	35.6	$215	1.496
$0 to <$15K	14.4	$86	(1.667)
$15K to <$30K	17.3	$106	(0.892)
$30K to <$45K	22.1	$127	(0.271)
$45K to <$60K	28.0	$157	0.861
$60K to <$90K	38.1	$206	2.603
$90K to <$120K	48.4	$257	4.062
$120K or more	70.8	$461	7.085

Table 5 - Monetized Compliance Burden of Individual Taxpayers in TY00, by Selected Characteristics

	Returns (millions)	Hours (billions)	Money ($billions)	Monetized Time Plus Money ($billions)			
				Monetize Time @ $15/Hour	Monetize Time @ $20/Hour	Monetize Time @ $25/Hour	Average @20/Hour (dollars)
All Tax Returns	125.9	3.21	$18.8	$67.0	$83.0	$99.1	$532
By Taxpayer Type							
Wage and Investment	93.6	1.29	$7.0	$26.4	$32.8	$39.3	$282
Self-Employed	32.3	1.92	$11.7	$40.6	$50.2	$59.8	$1,255
By Preparation Method							
Paid Preparation	70.8	1.84	$17.2	$44.9	$54.1	$63.3	$635
Self Preparation w/o Software	38.5	0.70	$0.8	$11.3	$14.8	$18.3	$292
Software Preparation	16.7	0.67	$0.8	$10.8	$14.1	$17.5	$648
By Submission Method							
Paper	89.8	2.58	$13.9	$52.5	$65.4	$78.3	$585
TeleFile	3.9	0.03	$0.0	$0.5	$0.6	$0.8	$124
Other e-File	32.3	0.61	$4.9	$14.0	$17.0	$20.0	$432

	Returns (millions)	Hours (billions)	Money ($billions)	Monetized Time Plus Money ($billions)			
				Monetize Time @ $15/Hour	Monetize Time @ $20/Hour	Monetize Time @ $25/Hour	Average @20/Hour (dollars)
By Primary Form							
1040	82.6	2.79	$16.9	$58.8	$72.8	$86.8	$712
1040A	24.0	0.26	$1.5	$5.5	$6.8	$8.1	$228
1040EZ	19.3	0.16	$0.3	$2.7	$3.4	$4.2	$138
By Adjusted Gross Income							
Negative AGI	0.9	0.03	$0.2	$0.7	$0.9	$1.0	$749
$0 to <$15K	32.5	0.47	$2.8	$9.8	$12.2	$14.5	$303
$15K to <$30K	31.2	0.54	$3.3	$11.4	$14.1	$16.8	$365
$30K to <$45K	20.0	0.44	$2.5	$9.2	$11.4	$13.6	$458
$45K to <$60K	13.3	0.37	$2.1	$7.7	$9.5	$11.4	$577
$60K to <$90K	14.9	0.57	$3.1	$11.6	$14.4	$17.3	$778
$90K to <$120K	6.1	0.30	$1.6	$6.0	$7.5	$9.0	$982
$120K or more	7.0	0.49	$3.2	$10.6	$13.1	$15.5	$1,523

Table 6 - Average Compliance Burden of Individual Taxpayer Burden in TY00, by Selected Characteristics

Time Burden	**Wage and Investment**			**Self-Employed**		
	Returns (millions)	Average Hours	Average Complexity	Returns (millions)	Average Hours	Average Complexity
Itemizer	22.5	21.3	1.405	19.3	69.0	6.181
Non-Itemizer	71.1	11.4	(2.050)	13.0	45.3	2.543
Filed Schedule D	14.3	23.8	2.892	13.0	78.9	7.611
Did Not File Schedule D	79.3	12.0	(1.958)	19.4	46.4	2.770
Paid Estimated Taxes	4.9	25.3	3.893	8.0	81.8	7.969
Did Not Pay Estimated Taxes	88.7	13.1	(1.504)	24.3	53.1	3.638
File Form 6251	1.3	24.6	4.715	2.2	97.3	10.044
Did Not File Form 6251	92.3	13.7	(1.304)	30.1	56.6	4.316
Money Burden	**Wage and Investment**			**Self-Employed**		
	Returns (000s)	Average Dollars		Returns (000s)	Average Dollars	
Itemizer	22	$114	1.405	19	$428	6.181
Non-Itemizer	71	$63	(2.050)	13	$266	2.543
Filed Schedule D	14	$153	2.892	13	$516	7.611
Did Not File Schedule D	79	$61	(1.958)	19	$261	2.770
Paid Estimated Taxes	5	$185	3.893	8	$553	7.969
Did Not Pay Estimated Taxes	89	$69	(1.504)	24	$300	3.638
File Form 6251	1	$264	4.715	2	$752	10.044
Did Not File Form 6251	92	$72	(1.304)	30	$334	4.316

Illustrative Simulations

In this section, we present simulation results from the Individual Taxpayer Burden Model. To demonstrate a wide range of model functionality, we chose to run a series of scenarios, which collectively simulate the change in compliance burden between Tax Year 2000 and Tax Year 2001. By running these scenarios incrementally, we are able to isolate the impact of the following factors:

- Changes resulting from the change in year, including demographic changes, economic changes, indexing of tax parameters, and implementation of 2001 provisions of prior law.[12]

- Changes resulting from IRS administrative initiatives
- Changes resulting from the new tax law
- Changes related to temporary changes and taxpayer behavioral response (or lack thereof)

Description of Scenarios

Our analysis includes four incremental scenarios, which are described in the bullets below. Two of these scenarios (Scenarios 2 and 4) were implemented in multiple steps, in order to isolate the marginal impact of specific changes in tax law. In addition, to distinguish between the short-term and long-term impact of the reduction in tax rates, we ran this component of the scenario in two ways. First, we estimated the short-term impact, by assuming: (1) advance payment of the rate reduction, a worksheet for certain dependents, and a rate reduction credit, rather than a reduced tax rate, and (2) no behavioral response with respect to tax withholding and estimated tax payments. Second, we estimated the long-term impact, by assuming the converse outcomes (i.e., a reduced tax rate and a reduction in tax withholding and estimated tax payments that totally offset the effects of the tax cut on refunds).[13]

- **Scenario 1: Tax Year 2000 Baseline.** Demographics, tax law, and administrative rules simulated at TY00 levels.
- **Scenario 2: Tax Year 2000 Law (including 2001 provisions) at 2001 Levels.** Same as Scenario 1, but projects demographic and economic variables at 2001 levels, and uses TY01 indexed tax parameters. Adds provisions of prior law that take effect in 2001, incrementally.
  - 2.1) TY2000 law (without 2001 provisions) & attributes at 2001 levels
  - 2.2) Add tax calculations for selected 2001 provisions of prior law:
    - Qualified 5-year gains on Schedule D (and corresponding changes to AMT)
    - Increase in MAGI phaseout for the IRA deduction

- Increase in the maximum deductible qualified student loan interest
- Change in the estimated tax penalty safe harbor for higher income taxpayers

- **Scenario 3: Tax Year 2000 Law (including 2001 provisions), at 2001 Levels and with 2001 IRS Administrative changes.** Same as Scenario 2, but adjusts burden attributes to reflect selected IRS administrative initiatives for TY2001 as well as administrative changes resulting from provisions newly active in 2001. IRS administrative changes include: (1) simplification of Schedule D for taxpayers having neither 28 percent gains nor unrecaptured Section 1250 gains, (2) simplification of state and local tax worksheet, (3) 1040/1040A/1040EZ third-party designee option added, (4) Form 4136 modification, and (5) changes in instructions to various forms.
- **Scenario 4: 2001 Tax Law (2001 provisions only), at 2001 Levels.** Same as Scenario 3, but with 2001 provisions of TY2001 tax law changes added incrementally:
  - 4.1) Lower income tax rates (including ten percent bracket)[14]
  - 4.2) Marriage penalty relief for AMT Exemption
  - 4.3) Modify rules for child tax credit (CTC) and additional child tax credit (ACTC)
  - 4.4) Advance payment of ten percent bracket rate reduction (in place of ten percent bracket) [15]

This scenario is illustrative and should not be viewed as an estimate of the long-run effect of the 2001 Tax Act on taxpayer burdens. In particular, we did not model provisions of the 2001 Act that take effect after tax year 2001, including provisions that sunset the entire tax law after 2010 and selected provisions of the tax law in earlier years. In addition, we did not model a number of minor tax provisions affecting individuals and businesses. Provisions affecting individuals that we did not model include: tax benefits for parents of kidnapped children,

Holocaust victims restitution, tax relief for victims of terrorist attacks, and the designation of Afghanistan as a combat zone. We also did not consider the effect of the additional child tax credit on welfare benefits. Provisions affecting businesses that we did not model include the election of the cash method of accounting for qualifying small businesses, the election of the installment method, the election to re-designate estimated tax payments, the election to rollover gain from the sale of empowerment zone assets.

Scenario Results

Table 7 reports time and money burden for the incremental scenarios in the simulation of individual compliance burden changes from 2000 to 2001. Incremental, sub-total, and total changes in burden are reported. For each scenario, a brief description is given of the primary factors driving its change in compliance burden compared with the preceding scenario.

Table 7: Projected 2001 Burden Impact of 2001 Federal Individual Income Tax Changes and Related IRS Administration Changes as Compared with 2000 Burden

Scenario Definition	Burden Impact			
	Time Burden (millions of hours)		Money Burden (millions of $)	
	Total	Change	Total	Change
1. TY00 Baseline	**3,213**	**N/A**	**$18,780**	**N/A**
+ 2. TY00 Tax Law and Administration at TY01 Levels	3,271	58.2	$19,960	$1,181
2.1 Demographic and economic growth to TY01	3,271	57.8	$19,957	$1,178
+ 2.2 2001 Provisions of 2000 Law	3,271	0.4	$19,960	$3
+ 3. TY01 Tax Administration Changes	3,299	28.0	$19,827	-$134
+ 4. TY01 Tax Law Changes (2001 Provisions)	3,304	5.2	$20,009	$182
4.1 Rate Reduction (including 10% bracket)	3,305	6.3	$19,961	$134
+ 4.2 Marriage penalty relief for AMT exemption	3,298	-7.0	$19,887	-$74
'+ 4.3 Modify rules for CTC and ACTC	3,302	3.7	$19,952	$65
+ 4.4 Advance Payment & Rate Reduction Credit	3,304	2.3	$20,009	$57
TY01 Projection (net change from TY01 base)	**3,304**	**91.4**	**$20,009**	**$1,230**

We project an increase in overall individual taxpayer compliance burden of 91.4 million hours (2.8 percent) and $1.23 billion (6.5 percent) between 2000 and 2001, but only a small fraction of that increase in burden (six percent of increased hours and five percent of increased dollars) is attributable to the 2001 Tax Act. We attribute approximately 63 percent of the increase in time burden (57.8 million hours) and 96 percent of the increase in money burden ($1.18 billion) to demographic changes and economic growth from 2000 to 2001, most of which reflects an increase in the taxpaying population. The 2001 Tax law changes were estimated to increase time burdens by about five million hours (about 0.2 percent) and money burdens by about $182 million (0.9 percent) in 2001. This overall increase reflects the combined effects of provisions that increased and reduced burdens. Marriage penalty relief in the form of an increased AMT exemption for married taxpayers reduced time and money burdens by 7.0 million

hours and $74.0 million, respectively. The rate reduction increased burdens, largely because it increased the number of taxpayers subject to the AMT. The advanced payment of the ten percent bracket rate reduction combined with a rate reduction credit and a worksheet for certain dependents increased taxpayer compliance burden by an additional 2.3 million hours and $56.8 million dollars, compared with the effect on burden from simply lowering the rate to ten percent for 2001.

These results are preliminary because they are based on a forecast from TY2000 records using limited data from TY2001. We emphasize again that the simulation includes only selected portions of the tax changes in effect in 2001 and omits the important changes that will occur only after 2001. It does, however, illustrate how the model can be used to simulate the effect of changes in the tax law on taxpayer burdens.

Conclusions and Future Developments

The Individual Taxpayer Burden Model shows great promise as an analytical tool, and represents a significant step forward in IRS's ability to measure, model, and manage tax compliance burden. The model has a strong empirical foundation, built around survey data from more than 15,000 taxpayers, and predictive algorithms derived through rigorous econometric analysis. Moreover, the development of a microsimulation model based on these data and algorithms gives analysts the ability to explore a wide range of issues surrounding taxpayer compliance burden.

Going forward, IRS faces a number of challenges related to the effective use, maintenance, and expansion of its burden models. With respect to model use, IRS is continuing to test the model, running a wide range of scenarios to verify that the model produces plausible and consistent results. The ITBM is a complex tool that requires considerable sophistication and

judgment on the part of model users in order to be used effectively. Understanding its strengths and limitations is a critical step in building confidence in the new model within the tax community.

With respect to model maintenance, IRS is taking steps to ensure that the ITBM does not become dated, as did the prior model developed by ADL in the early 1980s. IRS is building a core technical team which, in conjunction with IBM, will be responsible for periodically refreshing the model to reflect more recent administrative data, updated economic forecasts, and changes in tax law. IRS also recognizes the need for periodic, targeted supplements to the survey data and—on a less frequent basis—replication of the core taxpayer survey and re-estimation of the econometric equations that underlie the model.

Finally, IRS is working towards expansion of its suite of models to measure compliance burden beyond that associated with individual income tax compliance. This expansion is planned along three dimensions: (1) across taxpayer types (i.e., individual taxpayers, small businesses, large and midsize businesses, tax exempt and government entities); (2) across tax types (e.g., income tax, employment tax, excise tax); and (3) across time period (i.e., pre-filing, filing, post-filing).

---

[1] The authors wish to thank Sean Hennessy, Sarah Myers, and Sarah Tuohy of IBM Business Consulting Services for research and technical assistance. The authors would also like to thank Michael Udell from the staff of the Joint Committee on Taxation for his comments on an earlier version of this paper.

[2] For a more detailed discussion of the ITBM development methodology, please see the IBM report titled, "Individual Taxpayer Burden Model -- Project Documentation." Copies of this report are available through the IRS National Headquarters Office of Research.

[3] Although psychological costs are not measured directly, their existence affects other components of the burden measure. For example, if taxpayers fail to minimize their taxes because they fear the consequences of tax avoidance, actions to reduce psychological costs will increase their tax liability. Alternatively, if taxpayers use preparers to reduce their stress over completing tax returns, the result will be higher out of pocket costs. The psychological costs that remain (e.g., taxpayer anxiety) are real, but are not measured.

[4] Many activities and costs commonly associated with tax compliance are necessary not only to comply with the federal income tax system, but also for other purposes such as state taxes or loan applications. In cases where a single activity is motivated both by federal tax requirements and by other requirements or interests, the joint costs of the activity must be allocated. A reasonable approach is to designate one set of activities as foundational, and assign all joint costs to the foundational activity set. The definition used in this study treats federal tax requirements as

foundational to state tax requirements, and other requirements (e.g., financial planning and reporting) as foundational to both federal and state tax requirements.

[5] Dr. Trudy Ann Cameron. "Revealed And Stated Preference Estimation of the Value of Time Spent for Tax Compliance." May 2000. Copies of this report are available through the IRS National Headquarters Office of Research.

[6] The IRS selected the W&I and SE taxpayer samples from the Returns Transaction File (RTF) and Midwest Automated Compliance System (MACS) databases, respectively, based on specifications provided by IBM. IBM collected data from W&I taxpayers between May 1, 2000 and October 31, 2000, and from SE taxpayers between May 1, 2001 and October 31, 2001.

[7] Of the 6,366 W&I responses, 5,851 were successfully matched to TY99 RTF data. Of the 9,081 SE responses, 8,192 were successfully matched to TY00 MACS data. Only those responses that were matched to an administrative data record were included in the model estimation.

[8] In order to more efficiently target respondents, we created three questionnaires. One questionnaire focused on professionals providing payroll and/or accounting services to Schedule E taxpayers. A second focused on professionals providing payroll and/or accounting services to Schedule C taxpayers. The final questionnaire focused on professionals providing financial advice to taxpayers filing Schedules C, Schedule E, and/or Form 2106.

[9] To preserve the anonymity of survey respondents and avoid disclosure of Social Security Numbers, the data match was performed in two steps: (1) IRS appended a unique (non-SSN) identifier to each administrative data record and sent this file to IBM, then (2) IBM collected survey data from these taxpayers and linked the survey responses to administrative data records based on the unique identifier.

[10] In all, we measured the prevalence of 21 distinct attributes on all of the most common forms completed by individual taxpayers. Included in the 21 attributes are six source attributes (Personal Information, Information Return, Third Party Records, Taxpayer Records, Same Form or Worksheet, and Other Form or Worksheet), seven operation attributes (Compare, Evaluate Conditions, Calculate, Decide, Document, Consult Lookup Table, and Refer to Instructions), and eight complexity attributes (Tax Tip or Caution, Exclusion, Exception, Temporal Rules, Reference to Publication, Reference to Instructions – Same Form, Reference to Instructions – Other Form, and Reference to Internal Revenue Code).

[11] The CWHS data file provided by IRS contains 63,435 records; of which 46,962 represent TY00 W&I returns and 16,174 represent TY00 SE returns. A small number of observations on the file represent prior-year tax returns that were submitted in calendar year 2001—these observations were dropped as they are outside the scope of the model.

[12] Note that these simulations are run using on a TY2000 data file. Consequently, all baseline 2001 demographic and economic characteristics for the 2001 scenarios are forecast.

[13] These assumptions with respect to withholding behavior have important implications for the simulated level of burden, due to the fact that the ITBM simulates a lower level of burden for taxpayers who receive a refund than for those who have an amount due.

[14] Assumes presence of ten percent bracket at filing time in place of advance payment, tax worksheet for certain dependents, and rate reduction credit.

[15] Assumes ten percent bracket is replaced with advance payment, tax worksheet for certain dependents, and rate reduction credit. Estimates include the impact on burden from erroneous claims of the rate reduction credit.