# *A Better Model Is Needed to Project the Return on Additional Investments in Tax Enforcement*

**September 2005**

**Reference Number: 2005-10-159**

TREASURY INSPECTOR GENERAL
FOR TAX ADMINISTRATION

DEPARTMENT OF THE TREASURY

WASHINGTON, D.C. 20220

September 22, 2005

**MEMORANDUM FOR** COMMISSIONER EVERSON

**FROM:** Pamela J. Gardiner
Deputy Inspector General for Audit

**SUBJECT:** Final Audit Report – A Better Model Is Needed to Project the Return on Additional Investments in Tax Enforcement (Audit # 200510016)

This report presents the results of our review to evaluate the return on investment for enforcement activities based upon the expected revenues reported in the Internal Revenue Service (IRS) Fiscal Year (FY) 2006 budget request. In discussing the requested increase in its budget for new tax enforcement initiatives for FY 2006, the IRS Commissioner noted there is a yield of more than $4 in direct revenue from IRS enforcement efforts for every $1 invested in the IRS' total budget. The former Deputy Secretary of the Treasury asked the Treasury Inspector General for Tax Administration to evaluate whether 4 to 1 is an appropriate ratio to use to determine the return on additional investments in enforcement activity.

## Synopsis

In general, we do not believe there is an adequate basis to use the total IRS budget to determine a return on investment for enforcement activities. Enforcement is only one component of the IRS that collects revenue. The return on investment for the entire IRS budget is more appropriately compared with all revenues collected, $2.0 trillion in FY 2004, which provides a return on investment of approximately 200 to 1 on the total IRS budget. In contrast, enforcement revenue ($43.1 billion in FY 2004) compared to the enforcement costs ($6.1 billion in FY 2004) equates to an overall return on investment for enforcement activities of 7 to 1.

The IRS provided estimates that it will eventually achieve approximately $1.17 billion in additional revenues if additional funding for its proposed FY 2006 enforcement initiatives is approved. This would equate to a 4.4 to 1 return on investment. Officials in the Office of the Chief Financial Officer (CFO) and the Office of Research, Analysis, and Statistics (RAS) believe the 4.4 to 1 return on investment is a conservative estimate. However, our analysis indicates the estimate may be too high. Furthermore, achieving the maximum revenue through increased enforcement staffing can occur only over time. As such, the anticipated return on investment would not be achieved until the new employees hired under these initiatives are trained and fully productive in FY 2008.

The methodology for projecting revenues needs to be improved. The Office of RAS was responsible for projecting the revenue component of the return on investment of $1.17 billion for the FY 2006 enforcement initiatives. However, business units did not always provide the Office of RAS with specific information to correlate revenue projections to the goals of the initiatives. In addition, revenue projections were based on historical averages that weighted data equally from years when the priorities and technology of the IRS were substantially different than in more recent years. The use of a forecasting method that assigns a heavier weight to the most recent years' data for purposes of relevance would provide better estimates of projected revenues than a linear or moving average in most circumstances.

There were also other weaknesses in the methodology used for estimating revenue for the FY 2006 budget. The Office of RAS has recognized these weaknesses and has begun an effort to revise its methodology. Specific concerns with the methodology included problems with poor documentation, reliance on business units for financial data, and the limited number of employees that understood the Office of RAS' methodology for forecasting revenues.

Furthermore, the Office of RAS currently does not have a methodology to measure the revenue resulting from any initiatives that the IRS implements. Without such a method, it will be difficult to assess how accurately the Office of RAS estimated the revenue for the initiatives. The absence of such a measurement limits the ability of the Office of RAS to refine its method for estimating revenues to assist in budgeting for and allocating additional resources.

## Recommendations

We recommended the business units provide more information on the type of work expected to be completed by the additional Full-Time Equivalents (FTE)[1] to allow the Office of RAS to more accurately project revenues. In its revised methodology for projecting revenue, the Office of RAS should consider using a forecasting model that assigns greater weight to more recent years' data, such as exponential smoothing, when appropriate. Further, the Office of RAS and the CFO should develop a methodology to evaluate the results of increased investments in enforcement activities.

[1] A measure of labor hours in which 1 FTE is equal to 8 hours multiplied by the number of compensable days in a particular fiscal year. For FY 2004, 1 FTE was equal to 2,096 staff hours.

## Response

IRS management stated that the IRS uses information developed through the return on investment calculations to provide a general idea of the relative value of IRS enforcement programs. Management does not believe the investment of time and resources needed to generate refined estimates would be a prudent use of resources. Consequently, management did not agree with our recommendation that IRS business units should provide more specific information on the type of work expected of the additional FTEs to allow the Office of RAS to more accurately project revenues. Management agreed to consider alternative methods to forecast revenue; however, management did not agree that a benefit would be realized by using exponential smoothing to forecast the return on additional investments in enforcement and did not agree with the approximately $182 million outcome related to increased reliability of information in the instance we provided. Management stated that, when they tested the exponential smoothing methodology on enforcement revenue collected, they found it to be a less reliable tool than the current approach. Further, management did not agree with our recommendation to develop a methodology for tracking additional investments in enforcement activities because they believe the IRS already has an adequate process in place to monitor revenue. Management's complete response to the draft report is included as Appendix V.

## Office of Audit Comment

The IRS already devotes significant resources to develop its estimate of the return on additional investments in tax enforcement. We do not believe implementing our recommendation to use data that are more specific to the initiatives would require any more effort than would be needed anyway for effective business planning. It is unclear why management makes a comparison of exponential smoothing to the approach they use to estimate total enforcement revenue collected. The approach management uses to forecast total enforcement revenue collected uses only very recent data, with frequent updates to account for actual data as they are available. This approach is very different from the 11-year linear average they used to forecast revenue from additional investments in tax enforcement and is much closer to the model we recommend. As such, we continue to believe the data we presented clearly show that a significant benefit could be realized by using our recommended model instead of the 11-year linear average that management currently uses. IRS management's response did not address our recommendation to develop a methodology for tracking additional investments in enforcement activities. The IRS' current methodology measures performance by a change in total enforcement revenues, which can be affected by case closures from past years or by other events not necessarily related to increases in resources or new FTEs. To determine if the initiatives are meeting the revenue goals that were used to justify the additional resources, revenues must be associated with the initiatives.

Because this report was requested by the former Deputy Secretary of the Treasury, we are sending a copy to the Deputy Secretary of the Treasury for consideration. Copies of this report are also being sent to the IRS managers affected by the report recommendations. Please contact me at (202) 622-6510 if you have questions or Daniel R. Devlin, Assistant Inspector General for Audit (Headquarters Operations and Exempt Organizations Programs), at (202) 622-8500.

# *Table of Contents*

# Background

Over the past 10 years, the number of Internal Revenue Service (IRS) employees who were assigned to enforcement functions has significantly declined. In Fiscal Year (FY) 1996, there were 26,333 revenue agents, revenue officers, and criminal investigators assigned to enforcement. By FY 2004, this number had decreased to 19,842 (a 25 percent reduction).

The IRS reports that it needs to increase the number of enforcement personnel to meet its strategic goals. The IRS Strategic Plan for FY 2005-2009 identifies three strategic goals guiding the future of the IRS:

1) Improve Taxpayer Service.
2) Enhance Enforcement of the Tax Law.
3) Modernize the IRS through its People, Processes, and Technology.

The IRS strives to maintain high levels of taxpayer service while focusing on areas of noncompliance. The IRS estimates that the difference between taxes that are owed and what is actually paid is between $312 billion and $353 billion annually. This figure is referred to as the "tax gap."[1]

FY 2006 is the sixth consecutive year the IRS has requested additional staffing for enforcement activities. However, until FY 2005, the IRS was unable to increase enforcement staffing, as unbudgeted costs and other priorities consumed the budget increase. Despite this, for FY 2004, the IRS reported a record $43.1 billion in enforcement revenue, an increase of $5.5 billion from the previous year.

The IRS' total FY 2006 budget request is nearly $10.7 billion. This includes an 8 percent increase for enforcement but a 1 percent reduction in Taxpayer Service and a 2 percent reduction in Business Systems Modernization. The FY 2006 budget request includes an increase of $264.6 million for new initiatives aimed at enhancing enforcement of the tax laws, with projected annual revenues of nearly $1.2 billion for these initiatives. The $264.6 million does not include additional funds needed for the Federally mandated pay raise and other costs associated with enforcement activities, which are estimated to be $235.8 million. With these costs included, the total requested increase for the enforcement budget is $500.4 million. The new initiatives call for a net increase of 1,672 Full-Time Equivalent (FTE)[2] employees for

[1] This estimate was for Tax Year 2001, which is the latest year for which a study has been completed.
[2] A measure of labor hours in which 1 FTE is equal to 8 hours multiplied by the number of compensable days in a particular fiscal year. For FY 2004, 1 FTE was equal to 2,096 staff hours.

enforcement activities. Figure 1 shows the cost, projected revenue, and estimated return on investment for each of the five enforcement initiatives.

**Figure 1: Cost, Projected Revenue, and Estimated Return on Investment for the FY 2006 Enforcement Initiatives**

| Initiative | Cost (in millions) | Projected Revenue[3] (in millions) | Return on Investment |
|---|---|---|---|
| Attack Corrosive Non-Compliance Activities Driving the Tax Gap (920 FTEs) | $149.7 | $713.4 | 4.8 |
| Deter and Detect Corporate Non-Compliance (236 FTEs) | $51.8 | $129.8 | 2.5 |
| Increase Individual Taxpayer Compliance (417 FTEs) | $37.9 | $332.0 | 8.8 |
| Curtail Fraudulent Refund Crimes[4] (22 FTEs) | $10.8 | 0 | 0 |
| Combat Abusive Transactions by Entities With Special (exempt) Tax Status (77 FTEs) | $14.5 | 0 | 0 |
| **Totals[5]** | **$264.6** | **$1,175.2** | **4.4** |

*Source: Fiscal Year 2006 Congressional Justification, Office of RAS, and TIGTA computation.*

The IRS Chief Financial Officer (CFO) is responsible for the acquisition, planning, control, and management of all IRS financial resources, including administrative and revenue accounting. The CFO computes the cost portion of the return on investment. The Office of Research, Analysis, and Statistics (RAS) provides research, analytical, statistical, and technology services to the IRS and the Department of the Treasury. Within the Office of RAS, the Office of Research has a primary responsibility to provide data and analyses on enforcement revenue.

The return on investment ratio for the new IRS enforcement initiatives is not stated in the FY 2006 budget. However, in discussing the increase in the enforcement budget, the IRS Commissioner noted there is a yield of more than $4 in direct revenue from IRS enforcement activities for every $1 invested in the IRS' total budget.[6] The total enforcement revenue for FY 2004 was $43.1 billion, compared with the total IRS budget of $10.4 billion. The IRS reported the 4 to 1 return on investment in the FY 2006 Secretary's Briefing Book. The IRS

[3] This is the annual revenue projected for FY 2008.
[4] The IRS did not estimate revenue for the last two initiatives, but they are considered to be indirectly revenue producing.
[5] Difference due to rounding.
[6] Oral Statement of Commissioner of Internal Revenue, Mark W. Everson, Before the House Committee on Appropriations, Subcommittee on Transportation, Treasury, and Housing and Urban Development, the Judiciary, District of Columbia Hearing on Internal Revenue FY 2006 Budget Request, April 19, 2005.

Oversight Board also cited the 4 to 1 return on investment in its FY 2006 IRS Budget Special Report and as justification for requesting additional enforcement funding in the December 2004 Budget Transmittal Letter of the IRS Oversight Board to the Secretary of the Treasury. The Board noted that "a 4 to 1 return on investment is a solid business decision." The former Deputy Secretary of the Treasury asked the Treasury Inspector General for Tax Administration (TIGTA) to evaluate whether 4 to 1 is an appropriate ratio to use to determine the return on additional investments in enforcement activity.

This review was performed at the IRS National Headquarters in the Office of the CFO and the Office of RAS in Washington, D.C., from February through May 2005. The audit was conducted in accordance with *Government Auditing Standards*. Detailed information on our audit objective, scope, and methodology is presented in Appendix I. Major contributors to the report are listed in Appendix II.

# Results of Review

## Return on Investment Depends on the Types of Enforcement Activities and the Time Needed to Achieve Full Productivity

In general, we do not believe there is an adequate basis to use the total IRS budget to determine a return on investment for enforcement activities. Enforcement is only one component of the IRS that collects revenue. In contrast, the return on investment for the entire IRS budget would be more appropriately compared with all revenues collected, not just those generated by enforcement activities. In FY 2004, the IRS collected $2.0 trillion in revenue, which provides a return on investment of approximately 200 to 1 on the total IRS budget.

As such, a 4 to 1 return on investment for enforcement activities would not be an appropriate baseline for the IRS to use. A more representative return on investment for enforcement activities is the comparison of enforcement revenue ($43.1 billion) to the enforcement budget. When overhead is allocated to the enforcement functions, the IRS estimates that its total enforcement costs for FY 2004 were $6.1 billion.[7] Using this estimate, the return on investment for enforcement activities is 7 to 1.

There are specific functions in the IRS that could yield a much higher return on additional investments than the initiatives selected by the IRS for FY 2006. However, the IRS has indicated that with these initiatives it is pursuing a balanced approach to tax enforcement. To accomplish this, resources are distributed among diverse types of enforcement activities with significant differences in the returns on investment. For example, employees assigned to automated functions can achieve a return on investment in excess of 20 to 1, while the return on investment to investigate high-income taxpayers who are not complying with the tax law is much less (in some instances less than 2 to 1) because of the time and resources needed. IRS officials believe the FY 2006 enforcement initiatives represent the needs most consistent with its goal of achieving balanced enforcement.

The IRS provided estimates that it will eventually achieve approximately $1.17 billion in additional revenues if additional funding for its proposed FY 2006 enforcement initiatives is approved. This would equate to a 4.4 to 1 return on investment. Officials in the Office of the CFO and the Office of RAS believe the 4.4 to 1 return on investment is a conservative estimate. However, our analysis indicates the estimate may be too high. Furthermore, achieving the maximum revenue through increased enforcement staffing can occur only over time. In the

[7] This is based on the IRS estimate of enforcement costs, including overhead. Without the allocation of overhead, the enforcement costs are $4.2 billion.

FY 2006 Secretary's Briefing Book, the IRS reported that, when calculating the return on investment, it assumed newly hired employees were not as productive as experienced employees and made adjustments to reflect it. As such, the anticipated return on investment would not be achieved until the new employees hired under these initiatives are trained and fully productive in FY 2008.

This is due to adjustment factors such as lost revenue while employees are in training, opportunity costs for the trainers, and the lower productivity of newly hired employees during the time needed to complete the learning curve. Figure 2 shows how this affects projected revenues for FYs 2006 through 2008.

**Figure 2: Projected Revenues and Return on Investment for Enforcement Initiatives (FYs 2006 Through 2008)**

| Fiscal Year | Estimated Cost[8] (in millions) | Projected Revenue (in millions) | Return on Investment |
|---|---|---|---|
| FY 2006 | 264.6 | 534 | 2.02 |
| FY 2007 | 264.6 | 909 | 3.44 |
| FY 2008 | 264.6 | 1,175 | 4.44 |

*Source: Office of the CFO and the Office of RAS.*

## The Methodology for Projecting Revenues Needs to Be Improved

The Office of RAS was responsible for projecting the revenue component of the return on investment of $1.17 billion for the FY 2006 enforcement initiatives. However, business units did not always provide the Office of RAS with specific information to correlate forecasted revenue with the goals of the initiatives. In addition, revenue projections were based on historical averages that weighted data equally from years when the priorities and technology of the IRS were substantially different than in more recent years.

### The revenues projected for the FY 2006 initiatives did not always correlate to the goals of the initiatives

The Office of RAS forecasted revenue based on historical averages without regard to the classification of workload or inventories except in the instances where the business units defined the specific use of resources. For example, the initiative to Attack Corrosive Non-Compliance Activity Driving the Tax Gap focuses partly on the concern over the proliferation of abusive trusts and shelters. The business units provided specific information on how 240 FTEs would be assigned to investigate abusive trusts and shelters. For these FTEs, the Office of RAS forecasted

[8] The CFO did not include cost of living increases when projecting costs.

revenue based on the historical productivity of other resources assigned to similar cases. However, the business units did not provide specific information on the remaining 680 FTEs that were requested for the initiative. To forecast the revenue for these FTEs, the Office of RAS used historical averages for all work completed by an entire job series or classification. For example, when projecting the yields and revenue for the 260 revenue officers requested, the Office of RAS used the combined average for revenue officers assigned to individual cases and for revenue officers assigned to business cases.

In total, the business units provided specific information for 440 of the 1,573 FTEs (28 percent) that the IRS requested for its 3 direct revenue-producing initiatives.[9] Although specific information on the types of cases and inventories may not be available or predictable for all of the FTEs, the business units should be able to provide more specific information for a portion of the remaining 1,133 positions. By receiving more information, such as whether employees will be assigned to business or individual cases, the Office of RAS will be able to more accurately forecast revenue.

## ***Revenue projections were based on outdated data***

The Office of RAS' revenue projections for the FY 2006 initiatives were based on an 11-year linear average. The Office of RAS used 11 years because the Enforcement Revenue Information System Database contained information for 11 years. These 11-year averages were used to calculate the historical yield per FTE, which was then applied to the number of requested new FTEs to compute expected revenue.

[9] The Office of RAS projected revenue for only the following three direct revenue-producing initiatives: Attack Corrosive Non-Compliance Activities Driving the Tax Gap, Deter and Detect Corporate Non-Compliance, and Increase Individual Taxpayer Compliance.

The Office of RAS projected yield factors for six types of employees that the IRS requested for the FY 2006 enforcement initiatives. Figure 3 shows the types of employees that were requested. As noted previously, with the exception of the 440 FTEs that were specifically tied to initiative goals, the yield factors for the FTEs within each job category were identical, regardless of the initiative or the business unit to which they were assigned.

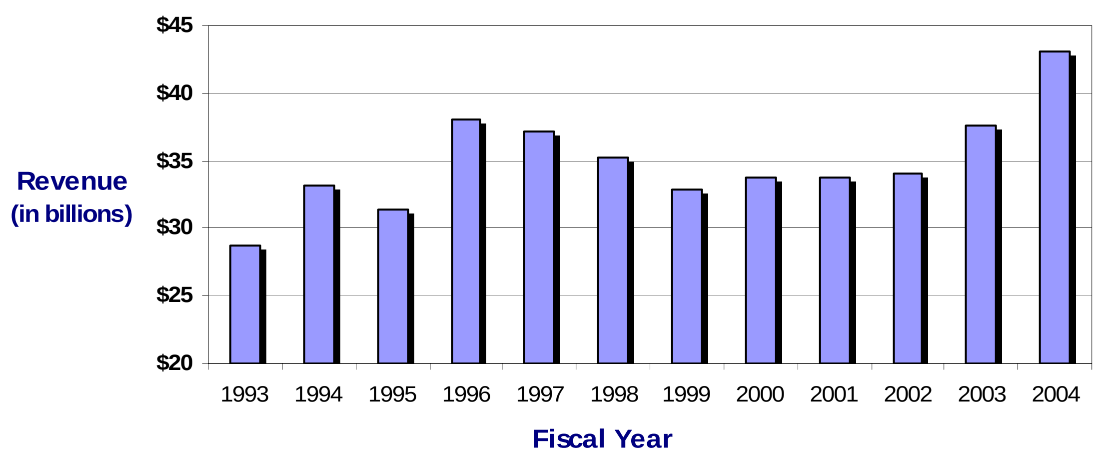
Over the past 11 years, the IRS has undergone a number of changes resulting from the IRS Restructuring and Reform Act of 1998.[11] In addition, business methods have been affected by modernization and technological advancements. These changes contributed to a significant variance in the amount of enforcement revenue the IRS has collected over the past 11 years. Figure 4 shows the amount of collected enforcement revenue from FY 1993 through FY 2004.[12]

**Figure 3: FTEs by Type for the Direct Revenue-Producing FY 2006 Enforcement Initiatives**

| Job Category | FTEs |
|---|---|
| Revenue Agents | 440 |
| Revenue Officers | 260 |
| Automated Collection System | 438 |
| Tax Compliance Officers | 50 |
| Correspondence Examiners | 186 |
| Automated Underreporter | 94 |
| **Total[10]** | **1,468** |

*Source: Office of the CFO.*

**Figure 4: Enforcement Revenues (FYs 1993 through 2004)**

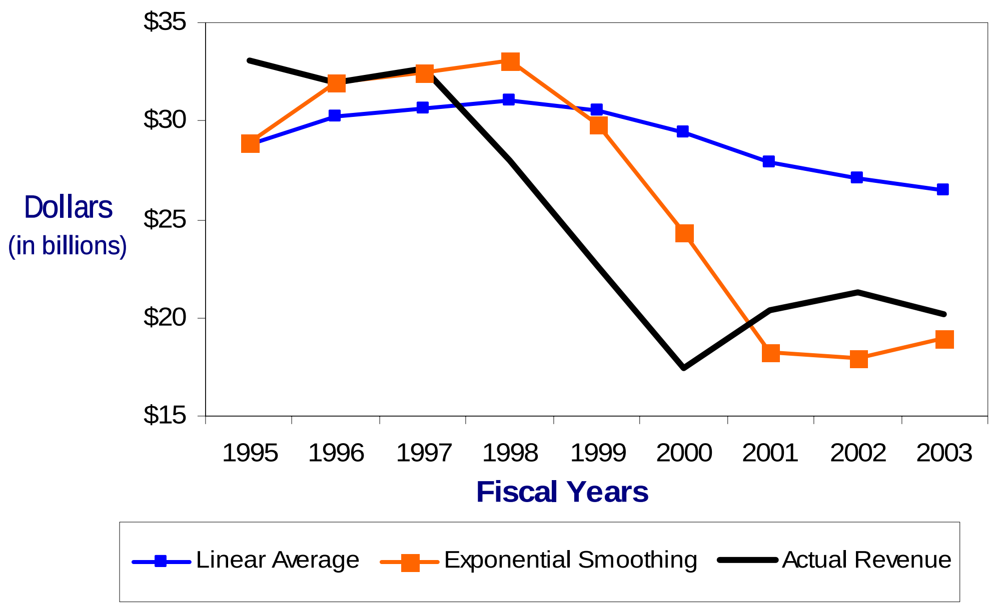



*Source: Enforcement Revenue Information System.*

[10] The total does not equal 1,573 because some FTEs are for functions that do not produce direct revenues.
[11] Pub. L. No. 105-206, 112 Stat. 685 (codified as amended in scattered sections of 2 U.S.C., 5 U.S.C. app., 16 U.S.C., 19 U.S.C., 22 U.S.C., 23 U.S.C., 26 U.S.C., 31 U.S.C., 38 U.S.C., and 49 U.S.C.).
[12] FY 2004 revenue was not available when the IRS projected revenue for the FY 2006 enforcement initiatives.

Studies by the National Institute of Standards and Technology have shown that in most circumstances the use of exponential smoothing provides a better estimate of projected revenues than use of linear or moving averages. Exponential smoothing is a method of forecasting revenue that uses historical data but assigns heavier weights to the most recent years' data for purposes of relevance. According to the Institute for Forecasting Education, exponential smoothing is the most widely practiced method of extrapolative forecasting. We compared the forecast for recommended assessments using linear averaging and exponential smoothing[13] with the actual recommended assessments for the past 9 years[14] in Examination. Figure 5 shows how exponential smoothing provides a more accurate estimate of projected recommended assessments for Examination:[15]

**Figure 5: Forecasting Examination Recommended Assessments Using Different Forecasting Models**




*Source: Office of RAS and TIGTA analysis.*

For examination-recommended assessments, the forecast using exponential smoothing was closer to actual recommended assessments for 8 of the 9 years. Figure 6 shows the differences,

---

[13] We used triple exponential smoothing for our examples.

[14] Forecasting requires at least 2 years of historical data for computation. Therefore, we compared projected recommended assessments from FY 1995 through FY 2003.

[15] Revenue based on recommended dollars, prior to the reduction for collectibility ratios. This comparison was based on the data that were available at that time for each fiscal year.

in terms of recommended assessments, between the assessments projected using linear averaging and exponential smoothing and the actual assessments from FYs 1995 through 2003.

While the projected recommended assessments using the linear average were within 16 percent of the actual recommended assessments, the projected assessments using exponential smoothing were within 4 percent of actual recommended assessments. This analysis shows that, over the past 8 years, exponential smoothing would have provided a more reliable projection of IRS enforcement assessments than the use of linear averaging.

***Figure 6: Examination-Recommended Assessment Projections FYs 1995 Through 2003 (in billions)***

| Forecasts of: | Exponential Smoothing | Linear Average |
|---|---|---|
| Actual Recommended Assessments | $ 227.6 | $ 227.6 |
| Projected Assessments | 235.8 | 262.3 |
| **Differences** | **$ 8.2** | **$ 34.7** |

Source: *Office of RAS and TIGTA analysis.*

To demonstrate the effect exponential smoothing would have on the IRS FY 2006 enforcement initiatives, we applied exponential smoothing to 1 type of FTE, the 438 Automated Collection System employees that the IRS requested. This analysis showed that exponential smoothing projected significantly less revenue compared with the linear average used by the Office of RAS.

Figure 7 shows the difference between the two forecasting models. The projected revenue using exponential smoothing was $182 million less than the $597 million forecasted by the Office of RAS. The analysis demonstrates that the reported return on investment may not be a conservative estimate, as indicated by officials from the Office of the CFO and the Office of RAS, but may actually be too high. We believe the Office of RAS should evaluate the use of a forecasting model that assigns greater weight to more recent years' data, such as exponential smoothing, rather than linear averaging to improve its estimates of future revenue.

***Figure 7: Difference in Expected Revenue for the 438 Automated Collection System FTEs in the FY 2006 Enforcement Initiatives***

| Forecasting Technique | Projected Revenue |
|---|---|
| Linear Average | $597 million |
| Exponential Smoothing | $415 million |
| **Difference** | **$182 million** |

Source: *Office of RAS and TIGTA analysis.*

There were also other weaknesses in the methodology used for estimating revenue for the FY 2006 enforcement initiatives. The Office of RAS has recognized these weaknesses and has begun an effort to revise its methodology. Specific concerns with the methodology included:

- Poor documentation – The Office of RAS had difficulty explaining how some of its revenue estimates were computed because its methodology was poorly documented. The employee who prepared the revenue projections had left the organization.
- Reliance on business units for financial data – The Office of RAS could not complete estimates of revenue until it obtained information from each of the business units, which delayed the process.
- Breadth of knowledge – The complete methodology and process for projecting revenues was known by only one individual; only one other employee had partial knowledge of the process.

The Office of RAS is addressing these weaknesses in its revised methodology and expects to implement corrective changes for the FY 2007 budget submission. While these changes will improve the process for projecting revenues, the business units should provide more information on the type of work that employees will be assigned, and the Office of RAS should consider revising its practice of using linear averaging as the basis for estimating productivity yields and projecting revenue.

## Recommendations

***Recommendation 1:*** During the budget process, the business units should provide more information on the type of work expected of the additional FTEs to allow the Office of RAS to more accurately project revenues.

> ***Management's Response:*** IRS management agreed more information on the sort of work expected of new FTEs might be helpful in the budget process but responded that the business units were unable to provide such information. IRS management added that, in general, the business units do provide work plans from which the Office of Research uses information to compute revenue projections for initiatives. The information used from the work plans includes the type and numbers of employees to be hired and the sort of work expected of the new FTEs. IRS management believes this type of information is sufficient to support the task of projecting expected future revenues generated by the initiatives. Management also noted that the business units must provide estimates of projected hiring approximately 18 months before the beginning of the fiscal year to which each budget relates.
>
> ***Office of Audit Comment:*** We believe our recommendation to use data that are more specific to the initiatives will improve forecasting as well as produce effective business planning. IRS business units were able to specify the type of work expected for fewer than one-third (440 of 1,573) of the FTEs used to justify the budget needed for the tax enforcement initiatives. The Office of RAS used overall averages when specific information was not provided, which reduces the reliability of its estimates. Further,

management did not explain why the need to plan 18 months in advance would prevent them from determining the number of FTEs needed for each type of work to accomplish the goals of each initiative.

***Recommendation 2:*** In its revised methodology for projecting revenue, the Office of RAS should consider using a forecasting model that assigns greater weight to more recent years' data, such as exponential smoothing, when appropriate.

***Management's Response:*** IRS management agreed to consider alternative methodologies for forecasting revenues, including the most appropriate ways to incorporate the historical data on enforcement revenue. Management noted that these efforts were ongoing, and the methodology would be reviewed prior to each budget submission. However, management did not agree that a benefit would be realized by using exponential smoothing to forecast the return on additional investments in enforcement and did not agree with the $182 million outcome related to increased reliability of information in the instance we provided. Management stated that, when they tested the exponential smoothing methodology on enforcement revenue collected, they found it to be a less reliable tool than the current approach.

***Office of Audit Comment:*** It is unclear why management makes a comparison of exponential smoothing to the approach they use to estimate total enforcement revenue collected. The approach management uses to forecast total enforcement revenue collected uses only very recent data, with frequent updates to account for actual data as they are available. This approach is very different from the 11-year linear average they used to forecast revenue from additional investments in tax enforcement and is much closer to the model we recommend. As such, we continue to believe the data we presented clearly show that a significant benefit could be realized by using our recommended model instead of the 11-year linear average that management currently uses.

## Actual Revenues Will Not Be Identifiable by the Amount Invested in Each Initiative

The Office of RAS currently does not have a methodology to measure the revenue resulting from any initiatives that the IRS implements. Without such a method, it will be difficult to assess how accurately the Office of RAS estimated the revenue for the initiatives. The absence of such a measurement limits the ability of the Office of RAS to refine its method for estimating revenues to assist in budgeting for and allocating additional resources.

While the placement of additional FTEs in enforcement would likely increase revenue over time, a change in FTEs will not necessarily correlate to a direct increase in revenue in the short term. For example, although the IRS realized a $5.5 billion increase in revenue between FYs 2003 and

2004, the increase was not caused by an increase in FTEs. The majority of the increase (nearly $4 billion) resulted from closing tax shelter cases, high-income cases, and one particularly large case. Furthermore, economic conditions and inflation will also affect the revenue collected.

The IRS should estimate and report the expected benefits when requesting additional resources. However, if new resources are provided by initiative, it is not possible to report back to the Office of Management and Budget, or to Congress, if the benefits were ever realized. Officials from the Office of RAS advised us that they have used a method in the past to try to track associated revenue increases; however, it becomes more difficult with time, especially if increases or reductions in enforcement staff occur in subsequent years. The CFO noted that the IRS cannot keep track of newly hired employees throughout their career to monitor the type of work completed and whether they are achieving yields expected under the hiring initiatives. The CFO also noted that the IRS' budget was not consistent, and priorities can change based on fluctuations in budget levels.

Notwithstanding these concerns, we believe the ability to demonstrate the results of additional investments in enforcement activities could add a significant benefit to the budget process. As such, the IRS should develop a means of evaluating the results of increases (or changes) to resources in its enforcement activities.

## Recommendation

***Recommendation 3:*** The CFO and the Office of RAS should develop a methodology to evaluate the results of increased investments in enforcement activities.

> ***Management's Response:*** IRS management believes they already have in place a rigorous process for determining, reviewing, and monitoring the performance impact of investments in enforcement activities. The IRS includes specific projections with and without requested initiative funding for performance measures in each budget submission. The measures are closely monitored by each business unit. Management is confident their current methodology is sufficient to evaluate the results of increased investments in enforcement activities.
>
> ***Office of Audit Comment:*** IRS management's response does not address our recommendation. The inclusion of projections for budget submissions does not provide the same information as measuring actual revenue generated from new initiatives. To determine if the initiatives are meeting the revenue goals that were used to justify the additional resources, revenues must be directly associated with the initiatives. The IRS' current methodology measures performance by a change in total enforcement revenues, which can be affected by case closures from past years or by other events not necessarily related to increases in resources or new FTEs.

**Appendix I**

# Detailed Objective, Scope, and Methodology

The overall objective of this review was to evaluate the return on investment for enforcement activities based upon the expected revenues reported in the Internal Revenue Service (IRS) Fiscal Year (FY) 2006 budget request. In discussing the requested increase in its budget for new tax enforcement initiatives for FY 2006, the IRS Commissioner noted there is a yield of more than $4 in direct revenue from IRS enforcement efforts for every $1 invested in the IRS' total budget. To accomplish our audit objective, we:

I. Evaluated the methodology used to develop the reported return on investment.

   A. Interviewed Office of Research, Analysis, and Statistics (RAS) and Chief Financial Officer officials to determine how the return on investment was computed.

   B. Reviewed supporting data and documentation used to develop the return on investment.

   C. Interviewed business unit officials responsible for providing the data used to develop the return on investment.

   D. Identified any nonfinancial components of the return on investment computation, such as the learning curve for newly hired employees.

   E. Assessed how the Office of RAS and the Chief Financial Officer applied nonfinancial considerations into the return on investment computation and how they affected the reported amount.

   F. Determined whether the historical data used to develop the return on investment were appropriate.

II. Determined the reasonableness of the reported enforcement costs and revenues.

   A. Traced the revenues and costs to supporting documentation and data sources.

   B. Determined whether the sources and components of the computation were reasonable.

   C. Determined whether the costs and revenues were compiled by specific enforcement functions.

   D. Determined whether reported revenues were based on amounts actually collected, rather than amounts assessed.

E. Determined the causes for any period(s) of unusually high or low revenues or costs.

III. Evaluated the methodology for forecasting revenue in each of the five initiatives.

A. Determined how the IRS computed expected revenue and costs for each of the five initiatives.

B. Determined whether the computations for each initiative were consistent with the goals of each initiative and whether each initiative had a unique methodology for forecasting revenue.

C. Determined whether the IRS can measure the revenue generated by each initiative.

**Appendix II**

# *Major Contributors to This Report*

Daniel R. Devlin, Assistant Inspector General for Audit (Headquarters Operations and Exempt Organizations Programs)
Michael E. McKenney, Director
Carl L. Aley, Audit Manager
Richard J. Viscusi, Lead Auditor
Janice M. Pryor, Senior Auditor
Chinita M. Coates, Auditor
Michael Della Ripa, Auditor

**Appendix III**

## *Report Distribution List*

Deputy Secretary of the Treasury
Office of the Commissioner – Attn: Chief of Staff C
Deputy Commissioner for Operations Support OS
Deputy Commissioner for Services and Enforcement SE
Chief Counsel CC
National Taxpayer Advocate TA
Director, Office of Legislative Affairs CL:LA
Director, Office of Program Evaluation and Risk Analysis RAS:O
Office of Management Controls OS:CFO:AR:M
Audit Liaisons:

- Chief Financial Officer OS:CFO
- Director, Office of Research, Analysis, and Statistics RAS

## Appendix IV

# Outcome Measures

This appendix presents detailed information on the measurable impact that our recommended corrective actions will have on tax administration. This benefit will be incorporated into our Semiannual Report to the Congress.

### ***Type and Value of Outcome Measure:***

Reliability of Information – Actual; approximately $182 million in reported expected revenues for 438 Automated Collection System Full-Time Equivalents (FTE)[1] requested in the Fiscal Year (FY) 2006 enforcement initiatives. This amount represents only 438 of the 1,468 (30 percent) requested FTEs and will change when the Office of Research, Analysis, and Statistics (RAS) revises its revenue projection for the remaining 1,030 requested positions that we did not recalculate for this review (see page 5).

### ***Methodology Used to Measure the Reported Benefit:***

The Office of RAS projected revenues for the FY 2006 initiatives based on the linear average of the employees' yields over the past 11 years. The average weighted data equally from years when the priorities and technology of the IRS were substantially different than in more recent years. The use of a forecasting method which assigns a heavier weighting to the most recent years' data would provide better estimates of projected revenues than a linear or moving average. The Office of RAS estimated that the 438 Automated Collection System employees would increase revenue by $597 million annually. If the Office of RAS projected revenue using exponential smoothing, which weighs most recent years' data more heavily, the projected revenue for these employees would be $415 million, for a difference of $182 million.

[1] A measure of labor hours in which 1 FTE is equal to 8 hours multiplied by the number of compensable days in a particular fiscal year. For Fiscal Year 2004, 1 FTE was equal to 2,096 staff hours.

## Appendix V

# *Management's Response to the Draft Report*

DEPARTMENT OF THE TREASURY
INTERNAL REVENUE SERVICE
WASHINGTON, D.C. 20224

RECEIVED
SEP 0 2 2005

AUG 3 1 2005

MEMORANDUM FOR DEPUTY INSPECTOR GENERAL FOR AUDIT

FROM: Mark J. Mazur
Director, Office of Research, Analysis and Statistics

SUBJECT: Draft Audit Report – A Better Model Is Needed to Project the Return on Additional Investments in Tax Enforcement (Audit # 200510016)

This memorandum provides comments from the Internal Revenue Service (IRS) concerning the subject draft audit report. The IRS appreciates the time and effort that auditors from the Office of the Treasury Inspector General for Tax Administration (TIGTA) devoted to understanding our Return on Investment (ROI) methodology. Nonetheless, we are unable to endorse all the report's recommendations. One point we want to stress is that the ROI calculations are projections that will not be realized until several years after the FY 2006 budget is enacted, and then only if the initiative funding is received as requested. Only at that future point will we know whether our approach was reasonable.

The IRS continually reviews its revenue estimating methodology to ensure it incorporates the most current information available about the productivity of IRS staff. In fact, the IRS had already updated and improved its revenue estimation model and shared this with TIGTA during the audit. In addition to containing several methodological enhancements, the model has been simplified through the consolidation of data sources and workbooks and a front-end user interface was created to decrease response times to requests for updated revenue estimates. We expect to use this model to forecast enforcement revenue associated with new enforcement initiatives in the FY 2007 Budget request.

The IRS uses information developed through the ROI calculations to provide a general idea of the relative value of IRS enforcement programs. In this context, we believe it is reasonable to conclude that the current methodology for projecting ROI is appropriate. This methodology was reflected in the IRS' FY 2006 budget request to the Department of the Treasury (Treasury), which identified a 4-to-1 ROI for IRS enforcement initiatives. The budget request also noted that the IRS expected the annual 4-to-1 ROI from the proposed enforcement initiatives to materialize only *after* any new hires reach full performance. This 4 to 1 return is based on cost figures supplied by the IRS Chief

Financial Officer (CFO) and revenue projections by the Office of Research and is computed by comparing the fully burdened cost of $265 million for five enforcement initiatives to the projected revenue of $1.17 billion for the three enforcement initiatives that would directly produce revenue.

During the FY 2006 budget process, Treasury conducted a review of our ROI methodology similar to the current TIGTA review. It involved the Office of Tax Analysis and the Office of the Assistant Secretary for Management. A May 2004 memo from staff of the Office of Tax Analysis concluded that the IRS approach was conservative. In part, the memo stated that the conservative nature of the estimates reflects the fact that the ROI calculations divide estimates of enforcement revenue collected in future years by fully loaded costs, *i.e.*, the salaries of new hires *plus* managerial and support staffing and various overhead costs, as opposed to only using the direct cost of new hires. Furthermore, the calculations do not take into account the indirect effect of enforcement actions. These generally exhibit themselves as improved voluntary compliance by those who are not directly subject to enforcement actions and include the effect of activities, such as criminal investigations, that do not directly generate revenue.

Finally, the model reviewed by both Treasury and TIGTA contained numerous adjustment factors to dampen the estimates of revenue collected. For example, the IRS averaged the expected additional tax recommended for each type of employee to be hired in order to smooth anomalies in the raw data. The IRS also applied collectibility rates (based on a multi-year average of actual experience) to recommended amounts so that all measures were expressed in terms of dollars collected. These estimates were then adjusted to account for lower productivity of new hires while they are in training and for lost revenue associated with diverting experienced employees to be trainers. Reduction factors were also applied to account for the lower returns associated with initiative work because new employees generally are assigned less complex and, therefore, somewhat less productive work than more experienced employees. In short, all these adjustments were intended to make the projections more conservative and should thus increase confidence that the revenue estimates are not overstated.

Our comments related to the report's specific recommendations follow.

**RECOMMENDATION 1**

During the budget process, the business units should provide more information on the type of work expected of the additional FTEs to allow the Office of RAS to more accurately project revenues.

**CORRECTIVE ACTION**

While we agree that more information on the type of work expected of new FTEs might be helpful in the budget process, the business units are unable to provide such detailed information. Furthermore, beyond feasibility, we do not believe the investment of time and resources needed to generate more fine-grained estimates would be a prudent use of resources. In general, business units provide, at a strategic level, descriptions of the type of work that would be performed under their proposed enforcement initiatives. The business units then develop work plans that support the requested FTE and use these plans to project targets for performance measures. The Office of Research uses information from these work plans to compute revenue projections for each initiative. Generally, the work plan information indicates the type and numbers of employees to be hired and the sort of work they will do. We believe this type of information is sufficient to support the task of projecting expected future revenues generated by proposed enforcement initiatives. Finally, we note the extended period between development of an enforcement initiative and its actual implementation: the business units must provide estimates of projected hiring at the time the budget proposal is built, approximately 18 months before the beginning of the fiscal year to which the budget proposal relates, and even longer before hiring begins once funding is approved by Congress. Many factors over this period of time may affect the actual ROI from any particular initiative.

**IMPLEMENTATION DATE**
N/A

**RESPONSIBLE OFFICIAL**
N/A

**CORRECTIVE ACTION MONITORING PLAN**
N/A

**RECOMMENDATION 2**
In its revised methodology for projecting revenue, the Office of RAS should consider using a forecasting model that assigns greater weight to more recent years' data, such as exponential smoothing, when appropriate.

**CORRECTIVE ACTION**
We will consider alternative methodologies for forecasting revenue. Indeed, the Office of Research routinely considers enhancements to its model, including the most appropriate ways to incorporate the historical data on enforcement revenue. However, IRS does not agree that any tangible benefit will be realized by using exponential smoothing in this instance, as discussed below.

**IMPLEMENTATION DATE**
Ongoing.

**RESPONSIBLE OFFICIAL**
Janice Hedemann, Director, Office of Research

**CORRECTIVE ACTION MONITORING PLAN**
Review methodology prior to each budget submission and modify if necessary.

4

**RECOMMENDATION 3**
The CFO and the Office of RAS should develop a methodology to evaluate the results of increased investment in enforcement activities.

**CORRECTIVE ACTION**
The IRS is confident that its current methodology, along with the continuing reviews thereof, is sufficient to evaluate the results of increased investment in enforcement activities. The IRS already has a rigorous process for determining, reviewing, and monitoring the performance impact of investments in enforcement activities. We include specific projections with and without requested initiative funding for performance measures in each budget submission. These measures (of which enforcement revenue is only one) are closely monitored by each IRS business unit, and are reviewed regularly with top IRS management, Treasury, and the IRS Oversight Board.

Moreover, revenue is one of many indicators that are monitored at the business unit level to determine whether a particular program is meeting its goals and objectives. As TIGTA noted in its report, the IRS followed a balanced approach with its initiatives and did not focus solely on maximizing enforcement revenue. If the IRS base and enforcement initiatives contained in the Administration's FY 2006 Budget Request are fully funded, the IRS expects to be able to articulate performance levels associated with this infusion of resources.

**IMPLEMENTATION DATE**
N/A

**RESPONSIBLE OFFICIAL**
N/A

**CORRECTIVE ACTION MONITORING PLAN**
N/A

**OUTCOME MEASURE**
Your report requests our concurrence or nonconcurrence with the outcome measure of $182 million that the report identifies. We are concerned with the assertion that such a measurable benefit can be achieved using exponential smoothing, and therefore cannot concur. Whether or not exponential smoothing techniques will yield better forecasts is not a simple matter. For example, we tested the exponential smoothing methodology on enforcement revenues collected and found it to be a less reliable forecast tool then the current approach. In this specific case, both the IRS and TIGTA have estimated enforcement revenue associated with investments in the Automated Collection System using different approaches and assumptions, and both estimates demonstrate this initiative should be very cost effective. However, the outcome in terms of actual revenue collected will not be known until IRS estimates the portion of actual collected revenue that can be attributed to the initiative.

If you have any questions, please contact me at (202) 874-0100.