Effects of Recent Reductions in the Internal Revenue Service's Appropriations on Returns on Investment

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Since 2010, funding for the Internal Revenue Service (IRS) has dropped by 24 percent, after adjustment for inflation.[2] The cuts have been deepest in enforcement activities, including audits and collections. As a consequence, the percentage of taxpayers who are audited has fallen by nearly half.

Nonetheless, a decline in resources could cause enforcement revenues to increase *relative* to the costs of audits and collections. For any level of appropriations, the IRS should—ignoring all other considerations—select the cases known to have the highest returns on investment (ROIs) to be audited. Therefore, as appropriations fall, the average return on investment should increase.

Other factors, however, may hinder the IRS from allocating resources based solely on historic ROIs. The period has been marked by other changes that affect efficiency. Additional responsibilities (resulting from newly enacted legislation, for example) and changing expectations for the agency (such as increased demand for high-quality customer service) place greater pressures on the agency's flexibility. Meanwhile, the IRS infrastructure is weakening as its skilled workforce retires and its computer systems become increasingly outdated. As a result, ROIs may, on average, decline. Because the impact of the new responsibilities and faltering infrastructure may hinder some types of enforcement actions more than others, the impact of funding reductions may also differ by the type of enforcement activity.

Still another constraint may be the IRS's concern over public perception. For example, if the cost of auditing lower-income taxpayers is substantially lower than the expense of examining high-income individuals, the efficient choice may be to allocate more resources to auditing people with limited ability to dispute the IRS's assessments. But that may not be the image that the IRS's officials and staff want to project—in part, because that perception may increase evasion by higher-income taxpayers.

In this paper, we use confidential IRS data to compare the costs and returns on examinations that were initiated or in progress in 2010 and 2017. Our estimates exclude the indirect effects of IRS enforcement activities—that is, the reduction in voluntary compliance that may occur when the IRS conducts fewer audits. We find, on average, that the ROI fell slightly between those 2 years. The average ROIs increased for low-cost audits (those conducted through the mail) but generally declined for the more expensive audits that require face-to-face interactions with taxpayers and which cover more complicated issues. We use the findings of this investigation to estimate the effect on the Federal budget if the IRS enforcement budget were restored to 2010 levels.

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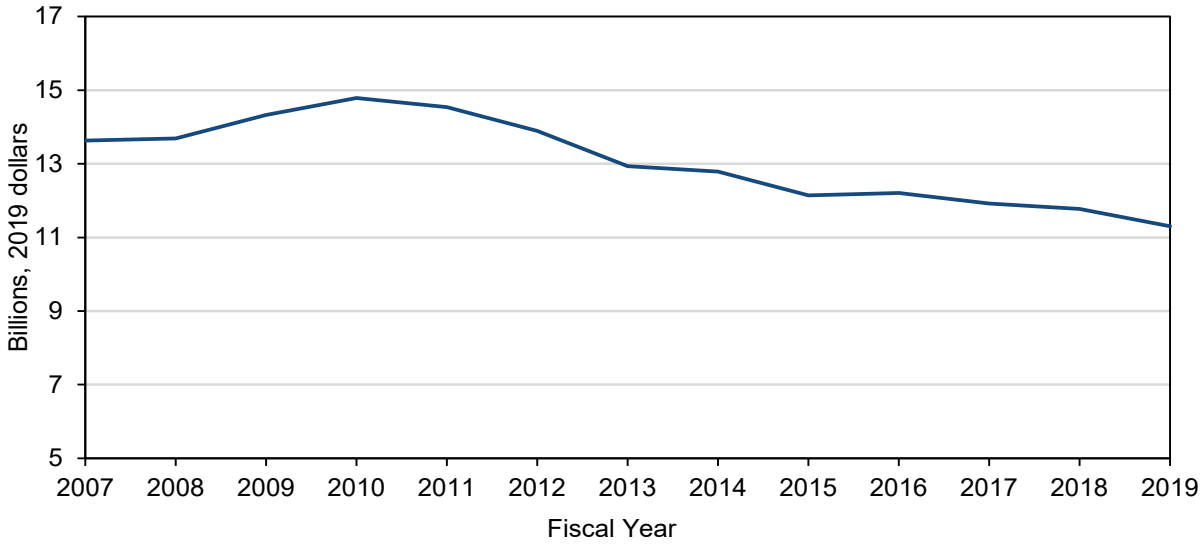
[2] Unless otherwise noted, all years referred to in the paper are fiscal years, and dollar amounts have not been adjusted for inflation.

IRS Resources

In 2019, the Internal Revenue Service received appropriations totaling $11.3 billion—about 24 percent less than it received in 2010. Appropriations for the IRS have been declining (in 2019 dollars) continuously over the past decade (Figure 1). These reductions have been accompanied by other developments that affect the IRS's efficiency—including the incremental expansions of the agency's role, the steady departure of its most skilled staff, and the continued aging of its computer systems.

FIGURE 1. IRS Appropriations, Fiscal Years 2007–2019



SOURCE: Appropriation Acts and Internal Revenue Service, *Budget in Brief*, various years. Amounts were adjusted to 2019 levels: For personnel costs, inflation was measured using the employment price index for wages and salaries of private industry workers; for all other spending, the measure of inflation was the chain-type price index for U.S. gross domestic product.

IRS Budget Accounts

Congress's Appropriations Committees distribute the IRS's funding among four different accounts:

- Taxpayer services, which funds pre-filing taxpayer assistance and submission processing;
- Enforcement, including examinations and collections;
- Operations support, which maintains the IRS's infrastructure (from facilities maintenance to computer systems used by more than one division); and
- Business systems modernization, which underwrites investments in technology.

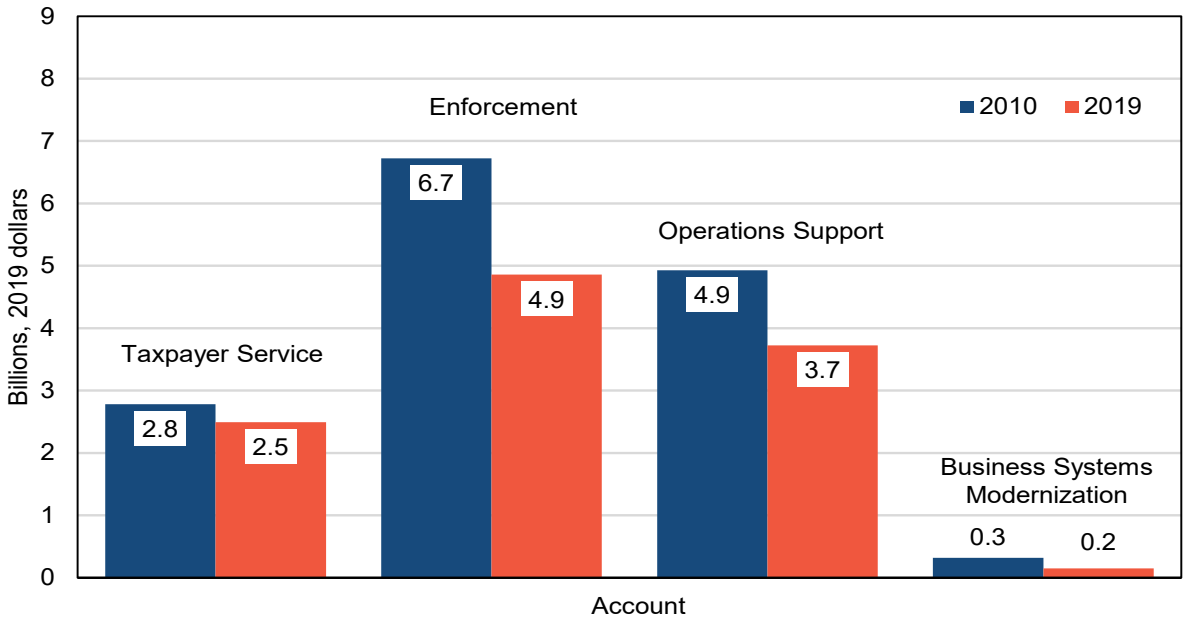
The largest of those accounts is enforcement, with funding in FY 2019 set at $4.9 billion, and the smallest is business systems modernization with a budget of $150 million.

Each budget account has experienced substantial cutbacks since 2010. The biggest cutbacks occurred in the enforcement account with funding falling by nearly $2 billion (28 percent) from 2010 levels (Figure 2).[3] In some years, the appropriated amounts for IRS enforcement have been further diminished because funds were shifted to other IRS accounts after the appropriations legislation had been enacted.[4]

[3] In dollars, the cuts in funding of business systems modernization were the smallest among the IRS accounts, but the relative reduction was greatest; appropriations were cut by half relative to 2010 levels.

[4] The actual amounts allocated to each of the IRS accounts sometimes differ from the amounts contained in appropriations acts. Transfers between the accounts have been allowed, though the amounts transferable are capped by the appropriations acts and are subject to the approval of the Appropriations Committees. The Consolidated Appropriations Act of 2017, for example, stated "Not to exceed 5 percent of any appropriation made available in this Act to the Internal Revenue Service may be transferred to any other Internal Revenue Service appropriation upon the advance approval of the Committees on Appropriations." Accordingly, $220 million was transferred from Enforcement to Taxpayer Services ($90 million) and Operations Support ($130 million).

FIGURE 2. IRS Appropriations by Account, Fiscal Years 2010 and 2019



SOURCE: Appropriation Acts and Internal Revenue Service, *Budget in Brief*, various years. Amounts were adjusted to 2019 levels: For personnel costs, inflation was measured using the employment price index for wages and salaries of private industry workers; for all other spending, the measure of inflation was the chain-type price index for U.S. gross domestic product.

Funding for New Responsibilities

As IRS appropriations have declined, Congress enacted legislation that assigned new responsibilities to the agency, including:

- Administration of new tax credits for health insurance coverage and the enforcement of health coverage mandates (Affordable Care Act—ACA—in 2010);
- Processing of reports of financial assets held abroad by U.S. citizens and related enforcement actions (Foreign Account Tax Compliance Act—FATCA—in 2010);
- Acceleration of processing and matching of W-2s to tax returns combined with a delay of payments of certain refundable tax credits so that claimants' earnings could be verified (Protecting Americans from Tax Hikes Act—PATH—in 2015); and
- Major changes to the tax code and forms in the 2017 tax act (P.L. 115-97, commonly referred to as the Tax Cuts and Jobs Act or TCJA).

Without additional funding, those new responsibilities would compete with the ongoing activities of the IRS for resources.

In some cases, funds were provided for a portion of the costs of implementing the new responsibilities. The largest amount—$488 million over a 3-year span—was for the development of the administrative infrastructure for the ACA. Those resources were on top of the annual IRS appropriations (and thus not included in Figure 1) and came from the Health Insurance Reform Implementation Fund. The fund was managed by the Department of Health and Human Services and provided support for Government agencies with ACA-related responsibilities. After 2012, the IRS no longer received funding specifically intended for administration of their new health responsibilities.

Funding specifically provided for the implementation of other initiatives was either smaller than the amounts transferred from the health fund (and like ACA, temporary) or nonexistent. The IRS received about

$397 million in the 2018 and 2019 appropriations acts for implementation of the 2017 tax act. The 2016 appropriations act—the first appropriations act after PATH's enactment—did not explicitly contain funding for carrying out PATH, which required the costly acceleration of the matching of tax returns and information returns. However, the act included $290 million to be spread—at the IRS's discretion—across taxpayer services, enforcement, or operations support for several different initiatives, one of which was the improvement of prevention of refund fraud and identity. No arrangements were made for the implementation of the new FATCA requirements, despite an estimate by the Treasury Inspector General for Tax Administration that its implementation cost $380 million (largely for information technology) from 2010 through 2017 (Treasury Inspector General for Tax Administration (2018)).

Personnel

Even before the recent cutbacks in IRS funding, the agency's workforce was shrinking. The average number of full-time-equivalent (FTE) staff fell from about 112,000 in 1990 to nearly 95,000 in 2010. From 2010 to 2018, however, the number of FTEs decreased by more than it had in the prior 20 years—a drop of an additional 21,000 FTEs.

Over two-thirds of the decrease in personnel occurred in examinations and collections, with FTEs declining from about 45,000 in 2010 to nearly 31,000 in 2018. Revenue agents and officers are trained to conduct the most difficult types of audits, but their numbers fell from nearly 20,000 in 2010 to about 12,000 in 2018.

Technology

The IRS's ability to enforce the tax code is also closely linked to the state of its computers and the long-term challenges of the IRS's computer modernization program. A 2016 report from the Government Accountability Office (GAO) found that the IRS's individual master file and business master file still relied on computer programming language developed more than 50 years ago (Government Accountability Office (2016)). Former IRS Commissioner John Koskinen likened the IRS's technology "to driving a Model T automobile that has satellite radio and the latest GPS system" (Koskinen (2015)).

The legacy design of the IRS's computer system often delays implementation of its new responsibilities. For example, PATH moved up the deadline for filing W-2s to January 31st from the end of February for paper forms and from March 31st for electronic transmission. The intent of that acceleration was to enable the IRS to match the W-2s to tax returns during processing and to verify earnings before refunds were paid. PATH also delayed payment of the earned income tax credit (EITC) and the refundable portion of the child tax credit (formally called the additional child tax credit) until mid-February. In 2017, however, the W-2s could be downloaded to the IRS's computer system only once a week, and the resulting delays in matching prevented the agency from verifying the earnings of more than half of returns claiming those two credits before refunds were paid out (Government Accountability Office (2018)). A year later, the IRS was able to verify wage income on 87 percent of returns claiming the EITC and additional child tax credit.

Have There Been Offsetting Efficiency Savings?

Reductions in administrative costs could free up money, which could be used instead for enforcement or customer services. The IRS's officials often cite examples of efforts to reduce the costs of its organization. Those examples include reductions in training and travel, with savings of $248 million between 2010 and 2014, and initiatives to reduce office space and rent payments, with annual savings of about $50 million (Koskinen (2015)).

Although the direct monetary savings from reductions in training, travel, and rent are easily observable, quantifying the impact of those cutbacks on the IRS's efficiency is not. Reducing office space shrinks the amount of space the IRS leases and hence the rent it pays, but it may also reduce workers' productivity. To some extent, the IRS may respond by offering more workers the option to work remotely, but it is unclear whether workers' productivity increases because of fewer disruptions from their colleagues or declines due to fewer face-to-face interactions with those colleagues or less monitoring by supervisors.

A stronger indicator of efficiency improvements is the growth in electronic filing, which grew from 50 percent of returns in 2010 to over 70 percent in 2018. In 2013, the IRS spent 18 cents to process each electronic return—compared to $3.54 per paper return (Government Accountability Office (2014b)). Although those savings do not directly affect the enforcement budget, the greater utilization of electronic filing has the potential of reducing enforcement costs because more information can be captured at lower cost than from paper returns.

IRS Enforcement

Nearly everything that the IRS does can be characterized as a way to improve compliance, but certain of its activities are more directly related to enforcement than others. In this paper, we focus on the cost of the automated underreporting program, audits, collections, and appeals.

Automated Underreporting Program

One type of enforcement action is the automated underreporting (AUR) program. After the processing season ends, information returns (such as W-2s and 1099s) are edited and matched to tax returns.[5] Discrepancies between the items reported on tax returns and the amounts shown on the information returns may result in a notice to the taxpayer indicating the additional amount of taxes that may be owed. Although its name suggests that the process is mechanical, it becomes more labor intensive beyond the initial identification of discrepancies.

Not all discrepancies lead to notices. Before a notice is sent, the AUR examiners review the return and other information available to the IRS to determine whether the discrepancy can be resolved without contacting the taxpayer. If the discrepancy cannot be resolved internally, the IRS will send a CP 2000 notice informing the taxpayer of the additional taxes that are owed. Taxpayers who agree with the assessment pay the additional taxes due. Those who disagree with that assessment can provide the IRS with documentation in support of their reported income. If the examiner determines that the documentation is insufficient, a notice of deficiency is issued, and the taxpayer can appeal to the U.S. Tax Court.

Because of resource constraints, the IRS sets criteria—including a dollar threshold—to prioritize the cases worked. Over the period from 2009 through 2013, only about one in five discrepancies was selected for investigation each year (Treasury Inspector General for Tax Administration (2015)). The threshold (which is not publicly disclosed) is probably raised when funding and personnel decline as occurred over the past decade. Between 2010 and 2018, the number of closed cases dropped by 30 percent as the number of AUR staff fell by 40 percent.

Audits

IRS conducts three different types of audits, which vary in scope and the types of taxpayers affected. The three types also differ in timing and cost.

The simplest type of audit is conducted through correspondence with the taxpayer and focuses on a small number of selected items (such as whether a child is related and resides with the taxpayer, which are criteria for determining eligibility for certain child-related tax benefits). In response to a letter from the IRS, taxpayers must provide documentation in support of their claims. For about half of correspondence audits in 2013, the taxpayer's refund was frozen until the disputed issues were resolved (GAO (2014a)). Taxpayers who claim the EITC are the subject of about half of correspondence audits, and most EITC audits are conducted through correspondence.

The scope of the other two types of audits extends to items reported on the entire tax return and requires face-to-face interaction between the IRS and the taxpayer. Those interactions can occur in the IRS office (office audits) or in the taxpayer's home, place of employment, or elsewhere (field audits).

[5] PATH accelerated the matching of W-2s and tax returns to occur during the filing season. However, those forms are still not completely edited at that point, which may result in more notices sent to taxpayers after the filing season has ended.

In total, the number of audits fell from 1.7 million in 2010 to 1 million in 2018 (*Internal Revenue Service Data Books*, various years). The audit rate—defined as the ratio of the number of audits closed in a given fiscal year to the number of tax returns filed in the prior tax year—fell from 0.9 percent in 2010 to 0.5 percent in 2018. For individual filers, the audit rate declined at about the same rate—by 1.1 percent to 0.6 percent. About three-quarters of audits in both 2010 and 2018 were conducted through correspondence.

Certain segments of the population are more likely to be targeted for audits than others. In 2010, the audit rate was 0.5 percent for taxpayers with relatively simple returns: they had positive income under $200,000, no self-employment income, and did not claim the EITC. Among EITC claimants, the audit rate was 2.4 percent. Audit rates were generally higher for individuals reporting business income and for C-corporations. For individual taxpayers with gross business (excluding farm) receipts in excess of $200,000, the audit rate was 3.3 percent. And nearly all the largest corporations—with $20 billion or more of assets—were subject to audits in 2010.

Since 2010, audit rates have fallen across all groups of taxpayers. In 2018, only 0.2 percent of the simplest returns were audited. For EITC claimants, the audit rate fell by one percentage point—to 1.4 percent. For individual taxpayers with $200,000 or more of gross business income, the audit rate declined by 1.4 percentage points to 1.9 percent. And for the largest corporations, the audit rate dropped by about half.

Post-Audit

After audits, taxpayers and the IRS may continue to interact—either with collections or with taxpayers' challenges to the examiners' assessments and the collection process.

The collection process begins once a taxpayer underpays taxes and is not limited to examinations. Taxpayers first receive a notice informing them of the taxes owed plus penalties and interest (which will continue to accrue if taxes are not paid). If not paid, the next steps become increasingly labor intensive. They may involve establishment of an installment plan, requests for hardship delays, and imposition of a Federal tax lien on the taxpayer's property.

Taxpayers can turn to the IRS's Office of Appeals if they dispute a proposed tax assessment or have difficulty with collections. The appeals officials do not raise new issues or reopen issues on which the taxpayers and auditors have already reached agreement. If the taxpayer submits new information or evidence, Appeals will return the case to Examination for further review. A similar process occurs with respect to resolution of collection problems.

Disputes between taxpayers and the IRS may also end up in court. If the taxpayer disagrees with the IRS's assessment, a notice of deficiency is issued. Taxpayers have 90 days to file a petition with the Tax Court and are not required to pay the amounts owed before the case is settled. Attorneys in the IRS's Chief Counsel's offices represent the Government in those cases and others that end up in bankruptcy court. Other tax cases may be litigated in other Federal courts by attorneys from the Justice Department, in coordination with the IRS lawyers.

Enforcement Revenues

The IRS measures enforcement revenue as the sum of the amount collected from taxpayers as the consequence of the three major enforcement programs: the automated underreporting program, examinations, and collections. The agency's measure includes the amount collected in a fiscal year, which will include tax, interest, and penalties from multiple years.

As enforcement funding fell after 2010, enforcement revenue also declined—from $66 billion in 2010 to $60 billion in 2018 (2019 dollars). However, the average return on investment—defined by the IRS as enforcement revenue collected in a fiscal year to enforcement funding in that year—increased from $8.80 (Treasury Department (2013)) for a dollar of funding to $10.70 (Treasury Department (2019)). The IRS measure of the return on investment does not necessarily link the costs of audits in a particular year to the amounts ultimately collected for those audits, unless the audit and the amount collected occurred within the same year.

Methodology

We define the average return on investment as the amount collected by the IRS relative to the costs of the enforcement activities. Following Hodge, et al. (2016), we limit the amount collected to taxes, excluding the interest and penalties attributable to the late payment.[6] We include any amounts paid by taxpayers audited in 2010 or 2017 from the beginning of an enforcement activity (starting with the automated underreporting program) through the collections process. Similarly, the costs of the enforcement action include all those associated for the individuals who were audited in either 2010 or 2017—and thus extend over several years. As a result, our estimates of enforcement revenue and costs differ from those reported in the IRS's budget documents, which include interest and penalties and do not necessarily link the costs of an audit of a taxpayer to the amounts ultimately collected from that particular taxpayer.

Only the direct enforcement revenues are included in our estimates. Enforcement actions may spur taxpayers to become more compliant, but the estimation of the indirect savings from those improvements in compliance is outside the scope of this analysis. Nor can we determine whether the IRS's assessments of the amounts owed by taxpayers were correct.

Enforcement Data

Our analysis relies on the Enforcement Revenue Information System (ERIS), an IRS data set that follows each tax return from the inception of an enforcement activity (including the use of more-automated systems that may precede or supplant audits) through collections. ERIS contains information on the issues that triggered the enforcement action, how the issues were identified, the duration of the process, and the number of hours worked by the IRS's personnel, and their grade (level) on the Government's pay scale. Information on the amounts of assessments and enforcement revenues is also included in ERIS.

We focus on all tax returns (including both individuals and corporations) undergoing examinations in 2010 and 2017. Because we are interested in the impact of the IRS's declining enforcement resources, we include both audits initiated in 2010 (or 2017) as well as those that began in a prior fiscal year but had not been completed before October 1, 2009 (or 2016). Moreover, some audits in our sample were not completed in 2010 (or 2017). Thus, the total number of audits in our analysis is greater than the counts shown in the *IRS Data Books*: in our sample, 3.2 million audits in 2010 and 1.8 million in 2017, compared to 1.7 million and 1 million, respectively, in the *Data Books*. Moreover, the decrease in audits between 2010 and 2017 was driven by reductions in newly-initiated audits. The number of newly-initiated audits in 2017 was nearly half of the number of audits begun in 2010, whereas previously-initiated examinations fell by about a third relative to 2010.

ERIS also contains more detailed data by type of audit than contained in the *IRS Data Books*. Whereas the *Data Books* combined office and field audits into one category, ERIS separates the two categories. In both years, the number of field audits was about double that of office audits, but about two-thirds of all examinations were conducted by mail (Table 1).

TABLE 1. Types of Examinations, by Percentage Distribution, Fiscal Years 2010 and 2017

Type of Examination	2010	2017
Percentage distribution of examinations		
Field	23	21
Office	12	11
Correspondence	65	68
Total	100	100
Number of examinations (thousands)	3,206	1,827

SOURCE: IRS Enforcement Revenue Information System

[6] In their analysis of ROIs, Hodge, *et al.* exclude interest and penalties because it is not the IRS's objective to maximize such payments.

Despite the fall in the total caseload, the composition of the caseload did not change substantially. The share of total returns undergoing correspondence audits rose by 3 percentage points, offset by a drop in the share of field examinations (by 2 percentage points) and office examinations (by 1 percentage point). But compared to 2010, a substantially smaller share of field examinations in 2017 were new: 56 percent of all field examinations in 2010 had been initiated that year, whereas 45 percent of field examinations in 2017 were new. In contrast, the share of correspondence examinations that were new declined by only 4 percentage points between 2010 and 2017. This difference suggests that a greater share of audits will be conducted through correspondence over time, if those trends continue.

Measuring Costs

Our estimates of the IRS costs are limited to labor compensation, including both salaries and benefits, of the IRS employees directly involved in the enforcement activity (i.e., we do not have information on the time spent by support staff or managers). We thus do not account for the costs of buildings, computers, and other physical infrastructure that support the work of the IRS. That omission may not significantly affect our estimates. Ninety-four percent of the IRS enforcement budget is attributable to personnel compensation with the remainder—about $275 million in 2017—paying for travel, rent, utilities, operations and maintenance of facilities, research and development, equipment, and so forth (*IRS Data Book* (2018)). Most of the infrastructure supporting enforcement activities is shared with other programs and would probably be needed by the IRS even if the enforcement budget was not increased.

We also limit our analysis to the IRS's costs, although other agencies may incur expenses related to tax enforcement. For example, tax disputes that end up in Federal and State courts (other than in the United States Tax Court or bankruptcy courts) are often tried by lawyers in the Justice Department's Tax Division. In 2017, the division's appropriation was set at $107 million, and the Justice Department estimates that its civil litigation (about three-quarters of its budget) brought in $451 million each year, on average, between 2013 and 2017 (Justice Department (2019)).

To estimate the labor costs of IRS, we multiplied the number of hours worked by personnel by their hourly wage. From ERIS, we know the worker's pay grade at each point in the enforcement process, but we do not know their step within the grade. We assumed that each person was in the middle of the pay schedule for their grade (which is about step 5). Each year, the Office of Personnel Management adjusts Federal salaries for differences, by major metropolitan areas, for the disparity between public and private sector pay as well as for differences in the cost of living. IRS enforcement personnel are spread throughout the country, but workers' locations vary by their roles: Different types of enforcement activities are concentrated in different regions of the country. To account for those differences, we computed the median locality adjustment by type of activity. We then applied the activity-specific median to the basic wages of workers in that particular category. To the hourly wage estimates, we added the costs of employee benefits, based on findings of Congressional Budget Office's reports on Federal pay (Congressional Budget Office (2012); Falk (2012); Congressional Budget Office (2017)).

Although our sample is limited to taxpayers who were subjects of audits in 2010 and 2017, we include all costs incurred—from any associated with the automated underreporting program that precedes the audits to those associated with appeals, counsel, and collections. Thus, some costs may have been incurred prior to 2010 or 2017 or after those years.

Adjustments to Data

Before computing the average ROIs, we made several adjustments to the data. The first two adjustments removed audits for which the data were incomplete. A third adjustment excluded a very small number of audits, which concluded with extremely large payments that were not representative of 99.5 percent of tax returns examined in 2010 or 2017. The fourth adjustment was to limit taxpayers' payments to those made over the same number of months after either 2010 or 2017 (Table 2). In later sections of the paper, we consider the extent to which the third and fourth adjustments affected our estimates of the overall ROIs.

TABLE 2. Number of Tax Returns in Examination and Resulting Enforcement Revenue, Fiscal Years 2010 and 2017

Item	Tax Returns (thousands)		Enforcement Revenue ($ millions)[1]	
	2010	2017	2010	2017
Total[2]	3,206	1,827	80,566	37,191
Exclude returns with Earned Income Tax Credit	2,302	1,185	80,157	36,920
…and exclude if reported hours = 0	1,921	1,080	77,208	35,536
…and exclude "outliers"[3]	1,912	1,074	9,674	4,760
…and limit to cases where enforcement completed by March 31, 2012 (2019)[4]	1,333	918	4,434	3,930

[1] In nominal dollars
[2] For both years, total enforcement revenue through April 30, 2019. Hence, the amount of enforcement revenue received as a result of audits in 2010 covers over 8 years but only 30 months for the audits occurring in 2017.
[3] Outliers are audits resulting in enforcement revenue in the top 0.5 percent. The cutoffs were: 2010: Field: $1,500,000; Office: $42,000; Correspondence: $38,000; 2017: Field: $1,100,000; Office: $52,000; Correspondence: $34,000
[4] Limiting to cases where enforcement was completed by March 31, 2012 (2019) reduced the outlier cutoffs. The adjusted outliers are audits resulting in enforcement revenue in the top 0.5 percent. The cutoffs were: 2010: Field: $630,000; Office: $33,000; Correspondence: $23,000; 2017: Field: $980,000; Office: $49,000; Correspondence: $32,000
SOURCE: Enforcement Revenue Information System

Pre-refund audits. ERIS does not categorize the amount of savings resulting from a pre-refund audit as enforcement revenue. There are two barriers to inferring the amount of "protected revenue" resulting from a pre-refund audit. First, pre-refund audits are not flagged in the ERIS data and are grouped with other revenue protection projects. Second, the protected revenue cannot be distinguished from prepayments.

As a proxy, we excluded audits that had been prompted by an EITC-related issue. Three-quarters of EITC-related audits with W-2 earnings and 90 percent of those with self-employment income occur before refunds are paid out (Guyton, *et al.* (2019)). Excluding tax returns with EITC-related audits reduced the number in our sample by about 900,000 in 2010 and by over 600,000 in 2017. Almost all the reduction occurred in the correspondence audit category, causing the number of correspondence audits in our sample to fall by over 40 percent.

The impact of the exclusion of the EITC audits on the overall ROI is uncertain. Correspondence audits—as will be shown—cost less, on average, than office or field examinations. All other things equal, inclusion of the EITC audits in the analysis would cause the overall ROI to increase. However, EITC audits also probably yield less revenue, on average, than other audits, even among correspondence audits. According to the *IRS Data Book*, the average assessment for an EITC correspondence audit in 2017 was about $4,700 compared to an average of $6,000 for all correspondence audits of individual income tax returns. Whether the EITC exclusion caused the overall ROI to rise or fall depends on which of those two effects dominates.

Hours worked. After removing the EITC tax returns from the sample, there were about 400,000 returns in 2010 and 100,000 in 2017 for which no hours had been recorded. We excluded those returns from our analysis.

Outliers. In each year, a small number of examinations resulted in very large final payments. Those payments were large enough to skew the average return on investment to levels that vastly overstated the impact of nearly all other audits on enforcement revenue. For our main analysis, we removed the outliers, defined as returns above the 99.5th percentile in tax collected as a result of the IRS's enforcement for each type of audit. Although the number of taxpayers removed from the sample was very small, their removal caused enforcement revenues to decline by about 80 percent in each year, with nearly all the excluded revenue coming from field examinations of taxpayers filing corporate income tax returns.

Years. One key difference between our samples for 2010 and 2017 is that our data covered at least a decade for the former but just 30 months for the latter. For the portion of our analysis that compared 2010 and 2017 returns on investments, we limited the analysis to examinations and subsequent activities that had been closed by the end of March 2012 or March 2019. That exclusion eliminated an additional 600,000 returns from the 2010 sample and 160,000 from the 2017 sample.

Data for analysis. In combination, the first three restrictions reduce the sample from 3.2 million to 1.9 million audits in 2010 and from 1.8 million to 1.1 million audits in 2017. Constraining the years of enforcement activity further reduces our sample to 1.3 million audits in 2010 and 900,000 in 2017. The restrictions shift the composition of audits somewhat more in the direction of field and office audits.

Comparison of Average Returns on Investments in 2010 and 2017

We compare the average return on investment (ROI) for examinations occurring in 2010 and 2017, using the sample that retains only enforcement activities ending, for 2010 audits, by March 31, 2012 or, for 2017 audits, those ending by March 31, 2019. The estimates of the ROIs depend on the number of hours worked, labor costs, and collections.

Hours

Not surprisingly, the amount of time spent on correspondence examinations and follow-up activities is much lower than on office and, in particular, field examinations. For the 2010 examinations, the average hours worked per examined return ranged from 2 for correspondence audits to 45 for field audits (Table 3). Overall, over 95 percent of the hours working a case occurred during the examination period, with the remaining time largely split between appeals and collections.

TABLE 3. Average Hours in Enforcement Activities for Examinations Conducted in Fiscal Years 2010 and 2017

Type of Examination	Hours	
	2010	2017
Field	45	57
Office	10	11
Correspondence	2	2
Average for all types	15	19

NOTE: Reflects enforcement activities ending by March 31, 2012 (for 2010 examinations), or by March 31, 2019 (for 2017 examinations).
SOURCE: Enforcement Revenue Information System

Although the number of completed examinations dropped by 31 percent for the 2017 sample relative to 2010, the total number of hours devoted to examinations fell by only 15 percent, largely because the average hours spent completing field audits rose from 45 for audits in 2010 to 57 in 2017. In contrast, the average time spent on correspondence and office audits changed very little during this period—remaining, on average, at about 2 and 10 to 11 hours, respectively.

Another difference across type of examinations was in the pay grade levels of examiners assigned to a case. The highest-paid examiners—typically at the general schedule (GS) grades ranging from 12 to 14—were responsible for most of the hours worked on field examinations. For office and correspondence audits, nearly all the hours were attributed to IRS personnel at lower grades: GS grades 7 through 11 for office audits and 5 through 8 for correspondence audits. Between 2010 and 2017, there was a reduction in the share of hours spent

by grade 7 employees on office audits that was offset by an increase in the share done by grade 8 employees. For correspondence audits, though, the share of hours worked by grade 4 employees increased from 1 percent to 13 percent over the period, whereas the share of hours spent by workers in grades 5 through 7 declined.

Costs

For examinations in place in 2010, total labor costs equaled $1.2 billion. Of that amount, 89 percent was attributable to field examinations, with the remainder nearly evenly split between office and correspondence audits. Labor costs remained at about $1.2 billion for the examinations occurring in 2017, with the split by type of audit remaining about the same as in 2010.

Though there was wide variation in the cost per tax return by type of audit, the gaps in the hourly costs were much narrower. In 2010, the cost per return ranged from $78 for a correspondence audit to $2,861 for a field audit (Table 4). But the hourly cost was $39 for correspondence audits and $63 for field audits. Overall, average costs rose from 2010 to 2017 by 40 percent per return and by 16 percent by hour, with the greatest increase in the cost per return of a field audit (from $2,861 to $4,148).

TABLE 4. Average Costs Per Tax Return and Per Hour for Enforcement Activities Related to Examinations Conducted in 2010 and 2017

Type of Examination	Per Return		Per Hour	
	2010	2017	2010	2017
Field	2,861	4,148	63	72
Office	442	552	46	52
Correspondence	78	97	39	43
Average for all types	913	1,278	60	69

NOTES: In nominal dollars. Reflects enforcement activities ending by March 31, 2012 (for 2010 examinations), or by March 31, 2019 (for 2017 examinations).
SOURCE: Enforcement Revenue Information System, Office of Personnel Management, and Congressional Budget Office

Collections

Additional tax payments totaled $4.4 billion as a result of the 2010 audits and dropped to $4 billion from the 2017 audits. In 2010, the average collection per return for field audits was 10 times the comparable amount for correspondence audits; that gap narrowed for 2017 audits, with the average for field audits equal to 8 times that of correspondence audits (Table 5). In contrast, the average collection per hour for correspondence audits was about double the amount for both office and field audits in 2010 and was about triple the amount for the 2017 audits.

TABLE 5. Average Enforcement Revenue Per Tax Return and Per Hour for Enforcement Activities Related to Examinations Conducted in 2010 and 2017

Type of Examination	Per Return		Per Hour	
	2010	2017	2010	2017
Field	9,019	11,186	199	195
Office	2,036	2,551	211	239
Correspondence	867	1,440	435	636
Average for all types	3,327	4,284	218	230

NOTES: In nominal dollars. Reflects enforcement activities ending by March 31, 2012 (for 2010 examinations), or by March 31, 2019 (for 2017 examinations).
SOURCE: Enforcement Revenue Information System, Office of Personnel Management, and Congressional Budget Office

Average Return on Investment

Overall, the ROI was $3.60 for a dollar of appropriations for the 2010 audits and $3.40 for the 2017 audits (Table 6). Given that the number of hours and the hourly labor cost were much lower for correspondence audits than for the more intensive types of examinations, it is not surprising that the average ROI for the former was much higher than the overall levels: $11.10 for a dollar of appropriations for the 2010 examinations, rising to $14.90 for the 2017 audits. That growth was generated by the rise in average collections and increased reliance on lower-grade staff, with average hours remaining about the same. Largely because of the increase in the average hours worked, the ROI for field examinations fell from $3.20 for a dollar of appropriations to $2.70. On net, the increase in the average costs of field examinations outweighed the higher net returns from correspondence audits, causing the overall ROI to be lower for the 2017 audits compared to those conducted in 2010.

TABLE 6. Average Dollars of Return on $1 of Investment for Enforcement Activities Related to Examinations Conducted in Fiscal Years 2010 and 2017

Type of Examination	2010	2017
Field	3.2	2.7
Office	4.6	4.6
Correspondence	11.1	14.9
Average for all types	3.6	3.4

NOTE: Reflects enforcement activities ending by March 31, 2012 (for 2010 examinations), or by March 31, 2019 (for 2017 examinations).
SOURCE: Enforcement Revenue Information System

Average Return on Investment in 2010 through April 2019

For audits that occurred in 2010, we can estimate the average return on investment for a period spanning nearly a decade. We expand the sample to include examinations and collections that were still ongoing after March 31, 2012. For this analysis, we again exclude returns claiming the EITC, with zero hours reported, or in the top 0.5 percent of enforcement revenues. Extending to the longer time span increases the number of returns in the sample by 600,000, also causing the thresholds for outliers to rise (especially for field audits, where the threshold more than doubles). With the longer-time span, the average return on investment increases slightly from $3.60 (Table 6) for a dollar of appropriations to $3.70 (Table 7).

TABLE 7. Average Dollars of Return on $1 of Investment for Enforcement Activities Related to Examinations Conducted in Fiscal Year 2010, Including Collections Through April 2019

Type of Examination	2010
Field	3.2
Office	5.3
Correspondence	12.0
Average for all types	3.7

SOURCE: Enforcement Revenue Information System

Outliers

As noted earlier, we excluded 0.5 percent of returns that resulted in the largest amounts of collections. For returns examined in 2010, the collection thresholds for the period through April 2019 were $38,000 for correspondence audits, $42,000 for office audits, and $1,500,000 for field audits, resulting in nearly 10,000 returns being dropped from our analysis.

We excluded the outliers for two reasons. First, they skewed the ROI substantially upwards and were not reflective of the bulk of examinations conducted by the IRS. We also were concerned about the reliability of some of the data in the top 0.5 percent. For example, over half of the outlier cases in 2010 were examinations conducted solely through correspondence. Even though they resulted in only 4 percent of total tax collections from the outlier cases through April 2019, the average tax collection per correspondence examination was over $450,000, which seems remarkably high for audits conducted solely through the mail.

The findings on the other types of audits are more consistent with our expectations. Nearly all audits of C corporations are conducted in the field. Although C corporations represented less than a quarter of all outlier audits, about 84 percent of the tax collections attributed to the outliers' examinations were from audits of C corporations. And although the outlier C corporations represented only about 3 percent of C corporations audited in 2010, nearly all the tax collections attributable to examinations of C corporations came from the outlier cases.

For all outlier cases (including the correspondence audits), the average costs and average collections over that period were much larger than for the typical returns. On average, per return, outlier examinations cost about $54,000 and yielded over $7 million per return—resulting in an average ROI of $129 for a dollar of appropriations. For corporate outliers, the ROI was $128; in contrast, the ROI for the non-outlier corporations was less than $2.

Inclusion of the outliers would have boosted the overall ROI from $3.70 to $25. In future research, we will look at the characteristics of the outlier audits in greater depth and, in particular, whether those findings are repeated in other years.

Revenue Effect of Restoring 2010 IRS Enforcement Budget

In 2019, the IRS received an appropriation for enforcement of $4.9 billion—$1.8 billion less than its appropriation for this account in 2010 (2019 dollars). Restoring that funding would increase revenues, but the effect would not be immediate because the IRS would have to hire and train new employees. Moreover, the magnitude of the revenue effect would depend on how those additional funds were used.

Thus far in this paper, we have estimated average ROIs for examinations that occurred in 2010 and 2017. When estimating the revenue savings from a new initiative, however, the appropriate measure is not the average ROI but the marginal ROI—that is, the additional amount of revenues received from an additional dollar of funding (Holtzblatt and McGuire (2016)). We made several adjustments to our estimates of average ROIs to move them closer to being marginal measures:

- We assume that it would take 3 years for the IRS to hire and train new examiners. As a result, the IRS enforcement activities do not reach full potential until the third year after the funding is restored.
- Over time, however, taxpayers begin to identify the types of issues that are more likely to be targeted for the additional new audits. Our analysis accounts for taxpayers adjusting their evasion methods to avoid detection and the resulting decline in ROIs.
- That effect is somewhat offset because we anticipate that the IRS would revise its detection algorithms in response to taxpayers' adoption of new forms of noncompliance.
- With additional increments of funding, the IRS would select more difficult cases to audit.

For this analysis, we started with the average ROIs for audits conducted in 2010 and included all costs and collections through April 2019. Unlike the ROIs shown earlier, interest payments and penalties were added to the taxes collected, when estimating the budgetary impact of an increase in appropriations. We did not include the outlier cases in the ROIs.

Under our options, funding would be used entirely to initiate new examinations; that is, none of the funding would be used to intensify or prolong examinations begun before funding was increased. Moreover, we assume that the existing infrastructure—buildings, computers, managers—would be sufficient to support the new hires. Thus, the funding would go entirely to hiring and training staff to conduct the new audits.

We estimate the impact of the increased funding for two options. In both cases, funding would be increased in three increments, roughly rising by an additional $600 million a year over a 3-year period. After 3 years, the total additional appropriations would reach $2 billion and would remain at that level, with adjustments for inflation.

Under the first option, funding would be allocated across the new audits in the same proportions as was the case for new audits in 2010 (27 percent for field, 15 percent for office, and 58 percent for correspondence). For the initial increase of funding of $620 million, the estimated return on investment in the first year would be $1.40 for an additional $1 of appropriations and would rise to a peak of $5.70 in the third year when new employees were hired and fully trained. The ROI, however, on the level and types of audits financed by the first installment of funding would fall to $4.60 by the end of the decade as taxpayers shifted to less detectible forms of tax evasion.

Over the next 2 years, appropriations would rise in increments: by an additional $640 million in 2021 (on top of the added funding in 2020) and by another $665 million in 2022 (on top of the added funding in 2020 and 2021). With each increment, the IRS would select returns with increasingly difficult issues. As a result, the ROI on cases selected with each additional increment of funding would fall—at full implementation, from the peak of $5.70 for the audits funded by the first installment to a peak of $5.40 for the additional audits funded by the 2021 increment and to a maximum of $5.00 for the 2022 increment.

Over a 10-year period, the option would increase appropriations by $20 billion, causing revenues to rise by $65 billion. On net, the option would reduce the deficit by $45 billion.

Under the second option, the additional appropriations would fund new field audits only. After 3 years, the ROI would peak at $5.00 for an additional dollar of appropriations. The option would increase revenues by $57 billion over 10 years. With increased appropriations still totaling $20 billion, the net reduction in the deficit would be $37 billion. Still, the ROI estimates for the outlier cases suggests much larger net savings if some of the new field audits were targeted at very large corporations.

Conclusions

Both the decline in the IRS's funding and audit rates have been widely publicized (Kiel and Eisinger (2018)). Less known has been the impact of those reductions on the IRS's efficiency. We find the average ROI for enforcement activities fell by 6 percent between 2010 and 2017. It is likely that decline was related to the decrease in funding, but other factors—such as an unrelated change in compliance behavior or IRS detection algorithms—might have contributed to the reduction in the average ROI. That overall effect, however, masks differences across types of enforcement actions. The ROI associated with field examinations declined by 16 percent, largely because of an increase in the number of hours worked on each case. That increase could reflect the departure of experienced revenue agents and officers. In contrast, the ROI for correspondence audits increased by 34 percent, in part fueled by a greater reliance on lower-grade employees.

Although the impact of outliers is difficult to interpret, the analysis suggests that the ROI for auditing some corporations is very high. Given that those audits and follow-up actions probably extend over many years, we do not yet have enough data to evaluate the impact of the recent cutbacks in appropriations on the ROI associated with audits of large corporations. However, the halving of the audit rate of those very large corporations probably has resulted in sizable reductions in enforcement revenue.

Future research should extend the analysis to other years as well as to other types of IRS enforcement activities. One key extension would include pre-refund exams in the analysis. Another would expand the focus to other types of IRS enforcement-related activities. In particular, the IRS has more flexibility in dealing with returns where "mathematical and clerical" errors are detected during return processing. Whereas math error procedures (the common shorthand used to refer to that process) were originally limited to inconsistencies in the returns, the scope has broadened since the mid-1990s to apply to more compliance-related items (such as provision of invalid social security numbers when claiming certain child-related tax benefits). Understanding the costs and revenue savings from those extensions would provide more insight into the effectiveness of different types of IRS enforcement actions.

Finally, this study does not reflect two very recent changes to the IRS's enforcement procedures. First, PATH allows the IRS to conduct audits at the partnership level, beginning after December 31, 2017. And in May 2019, the IRS announced a new large corporate compliance program (LCC) that will employ automated techniques to identify large corporations and then data analytics to detect the returns with the highest compliance risk. Both changes have the potential to increase the IRS's efficiency in the long term.

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